hitbullseye

DOWNLOAD

CAT

SAMPLE PAPERS

Section - I: Verbal Ability

DIRECTIONS ***for questions 1 to 6:*** *Read the passage and answer the question based on it.*

Passage - I

BEWARE of habitual monopolists bearing gifts—especially if they operate in shamefully uncompetitive markets. AT&T's proposed $39 billion takeover of T-Mobile USA would create a dominant mobile-phone operator, with a 39% market share in America, and a near-duopoly with Verizon, the current market leader: together their combined share would be 70%. It is a mark of the mess that the United States has made of telecoms not just that such a deal is being considered, but also that a duopoly might actually bring genuine short-term benefits. All the same, it would be far better if the Federal Communications Commission (FCC) and the Department of Justice blocked the T-Mobile merger—and tried to reform the market instead.

The bait for Barack Obama is that the deal could speed up his commitment to make broadband available to more Americans. AT&T says the acquisition will let it expand its fourth-generation (4G) technology—which will provide faster data connections on mobile devices—to a further

46.5m Americans, including many in rural areas who cannot get fixed-line broadband. This is much the same argument that AT&T's grandmother, Ma Bell, made a century ago when it lobbied successfully to be allowed to swallow up lots of other telephone operators and become a monopoly, on the ground that this was the best way to ensure decent coverage, especially in a huge country with a thinly spread population. In the 1970s the government decided that technological gains had undermined such "natural monopoly" arguments: AT&T's local phone services were subsequently hived off, and it was forced to accept competition for long-distance services.

Why reverse history? AT&T argues that by making better use of the two firms' combined infrastructure it could improve the quality of connections. It says the merger, by making it a stronger rival to Verizon, would improve the industry's competitiveness. Consumers everywhere would have a choice between two strong national companies.

This new-found zeal for serving consumers needs to be taken with a pinch of salt: AT&T now gets the worst customer-satisfaction ratings among the main mobile operators. The deeper question is whether two is enough,


Need Tips, Tricks & Strategy for your Prep?
Interact with
IIM Faculty
Join
Free Master Classes
Register Now
hitbullseye

especially in a business that is evolving as fast, and becoming as important to people's lives, as mobile communications. Canada—also vast and sparsely populated—concluded that lack of competition had contributed to its having some of the rich world's most expensive call rates, and has been trying for three years to promote new entrants. The FCC's British counterpart wants to manage its 4G auction to guarantee consumers have at least four operators with nationwide coverage.

AT&T points out that consumers in many American metropolises already have a choice of five or more operators; and it is prepared to give up market share in some localities where the merger would make it dominant. But many consumers want a mobile operator with good national coverage. That is why AT&T and Verizon each spend so heavily on advertisements claiming they are the best for this.

The suspicion is that Mr Obama, desperate both to build some broken fences with big business and to make progress on connecting every American home to the internet, will give in. In fact he should push the FCC to promote more competition—by, for instance, allowing other firms to buy bulk wireless capacity from AT&T and resell it, by freeing up underused spectrum and by

making local phone and cable firms share their wires. A duopoly would in the end reduce choice for American consumers, and be hard to reverse.

1. How will the merger be beneficial for American consumers?

A) When competition is restricted, consumers always end up with better call rates and faster data access

B) Connections will be available to more states and consumer will have a chance to define the call rates

C) The fast evolving business, which involves considerable investment, will be now the dominion of two companies only

D) It will lead to faster data connections, rural accessibility, improved connection quality and good national coverage

2. Which of the following is the author likely to agree with?

A) Curtailing competition would make the consumer and government lose out in the long run

B) If government settles for duopoly then it must allow consumers to fix mobile call rates

C) Verizon and AT&T should first get better customer satisfaction ratings before converting the market into one in which only two operators would be king

D) FCC makes coverage to all remote areas mandatory for any new or existing operator and allow for wireless capacity sharing obligatory for Verizon and AT&T

3. The tone of the passage is best described as

A) candid and suggestive

B) speculative yet invigorating

C) sarcastic and disparaging

D) optimistic yet satirical

4. The author of the passage:

A) clearly exhibits a distrust for large corporations.

B) believes in maintaining the impartial sanctity of the business environment.

C) highlights how the needs of the consumer take precedence over everything else.

WONDERING HOW TO CRACK CAT ?

Presenting Bigbull's

One to One Video Counselling with IIM Alumni

- Personalised Strategy
- Tips & Tricks

Book your slot

hitbullseye

D) exhibits limited knowledge of an industry that demands precise knowledge.

5. It can be inferred from the passage that:

I. Not having sufficient competition in an industry can impact the talent pool for the given industry.

II. Insufficient competition in an industry can skewer the consumer costs for that industry.

III. Big brands use advertising as a means to portray that these brands fulfills the needs of consumers from a specific industry.

A) I & II
B) II & III
C) I & III
D) All of the above

6. It can be deduced from the passage that:

A) Goethe abhorred commercial transactions.

B) Goethe devalued profit based transactions.

C) Goethe underestimated profit-based ventures.

D) Goethe did not appreciate profit-driven enterprises.

DIRECTIONS for questions *7 to 9:* *Read the passage and answer the question based on it.*

Passage - II

The way book authors get paid these days is pretty straightforward: publishers keep careful track of how many books they sell and pay authors a royalty — agreed upon when the contract is signed — of each sale. Authors can check sales figures using resources like Bookscan or their own accountants. Royalty rates are well established throughout much of the industry. Everyone is protected by copyright. Easy peasy.

The playing field hasn't always been so level. As Johann Wolfgang von Goethe observed in 1797, "the publisher always knows the profit to himself and his family whereas the author is totally in the dark." This problem of lopsided information was aggravated by the near-absence of copyright protection in the 18th and 19th century. A bestseller could be expected to spawn an abundance of pirated versions. Charles Dickens, on his first trip to the United States in 1842, complained endlessly about the pirating of his works for the U.S. market. This lack of intellectual property protection led to further conflicts of interest and opinion between authors and publishers: it was standard practice among

publishers — even respectable ones — to have multiple print runs without an author's permission, and writers sometimes tried to sell near-identical editions of the same title to multiple publishers. Because authors couldn't trust the sales numbers if and when their publishers provided them, 19th-century book contracts were for a fixed fee rather than per-copy royalty payments.

All of this drove Goethe nuts. Like many artists, Goethe had an uneasy relationship with money in the first place. He was on the one hand disdainful of the profit motive (he once wrote to a publisher, "I look odd to myself when I pronounce the word Profit"), and yet he referred to the asymmetry of information as "the main evil" of publishing. He wanted to ensure that he got his fair share of the fruits of his labors, and to this end he employed various ruses and strategies to ensure that his more materialistically minded publishers didn't exploit him. Among the most intriguing of these schemes was the peculiar auction he devised for the sale of the manuscript for his epic poem, Hermann and Dorothea.

Goethe wasn't planning on awarding the manuscript to the highest bidder — the kind of auction you might picture at Sotheby's for fine art, where the auctioneer

raises the price with each bid until the sale price is reached (what's known as an "open ascending price" or "English auction"). Instead, Goethe engineered the following mechanism, as he explained to Mr. Vieweg, his publisher, in a letter dated January 16, 1797:

I am inclined to offer Mr. Vieweg from Berlin an epic poem, Hermann and Dorothea, which will have approximately 2000 hexameters. …Concerning the royalty we will proceed as follows: I will hand over to Mr. Counsel Bottiger [Goethe's lawyer] a sealed note which contains my demand, and I wait for what Mr. Vieweg will suggest to offer for my work. If his offer is lower than my demand, then I take my note back, unopened, and the negotiation is broken. If, however, his offer is higher, then I will not ask for more than what is written in the note to be opened by Mr. Bottiger.

What's going on here?According to Moldovanu and Tietzel, scholars had treated Goethe's proposition as one of the enigmas left behind by one of history's greatest literary figures. But the economists argue that there's no mystery to Goethe's choice of mechanism. The author wanted to know how much he was worth to Vieweg (perhaps with an eye to extracting higher royalties from

his publishers over the longer run), and he devised this peculiar "auction" to get Vieweg to tell him.

7. From the information given in the passage, it can be figured out:

I. Intellectual property rights were not stringent in the 18th century.

II. The desired levels of transparency between authors and publishers did not exist in the 18th century.

III. It was not that publishers would keep authors in the dark with respect to their actions.

A) I & II B) II & III

C) I & III D) All of the above

8. The mechanism adopted by Goethe for awarding his manuscript to the highest bidder:

A) was a enigmatic mechanism adopted by Goethe to confuse his buyers.

B) was a clever mechanism adopted by Goethe to derive the maximum value for this work.

C) was a clever manoeuvre adopted by Goethe to establish his worth.

D) was a clever subterfuge adopted by Goethe to trick publishers.

9. From the information provided in the passage, how many of the following character traits can be ascribed with certainty to Goethe:

1. reclusive and reticent

2. commercially astute

3. intellectually driven

4. monetarily covetous

A) Only one out of four

B) Only two out of four

C) Only three out of four

D) All four

DIRECTIONS ***for questions 10 to 15 :*** *Read the passage and answer the question based on it.*

Passage - III

The way book authors get paid these days is pretty straightforward: publishers keep careful track of how many books they sell and pay authors a royalty — agreed upon when the contract is signed — of each sale. Authors can check sales figures using resources like

Bookscan or their own accountants. Royalty rates are well established throughout much of the industry. Everyone is protected by copyright. Easy peasy.

The playing field hasn't always been so level. As Johann Wolfgang von Goethe observed in 1797, "the publisher always knows the profit to himself and his family whereas the author is totally in the dark." This problem of lopsided information was aggravated by the near-absence of copyright protection in the 18th and 19th century. A bestseller could be expected to spawn an abundance of pirated versions. Charles Dickens, on his first trip to the United States in 1842, complained endlessly about the pirating of his works for the U.S. market. This lack of intellectual property protection led to further conflicts of interest and opinion between authors and publishers: it was standard practice among publishers — even respectable ones — to have multiple print runs without an author's permission, and writers sometimes tried to sell near-identical editions of the same title to multiple publishers. Because authors couldn't trust the sales numbers if and when their publishers provided them, 19th-century book contracts were for a fixed fee rather than per-copy royalty payments.

All of this drove Goethe nuts. Like many artists, Goethe had an uneasy relationship with money in the first place. He was on the one hand disdainful of the profit motive (he once wrote to a publisher, “I look odd to myself when I pronounce the word Profit”), and yet he referred to the asymmetry of information as “the main evil” of publishing. He wanted to ensure that he got his fair share of the fruits of his labors, and to this end he employed various ruses and strategies to ensure that his more materialistically minded publishers didn’t exploit him. Among the most intriguing of these schemes was the peculiar auction he devised for the sale of the manuscript for his epic poem, Hermann and Dorothea.

Goethe wasn’t planning on awarding the manuscript to the highest bidder — the kind of auction you might picture at Sotheby’s for fine art, where the auctioneer raises the price with each bid until the sale price is reached (what’s known as an “open ascending price” or “English auction”). Instead, Goethe engineered the following mechanism, as he explained to Mr. Vieweg, his publisher, in a letter dated January 16, 1797:

I am inclined to offer Mr. Vieweg from Berlin an epic poem, Hermann and Dorothea, which will have approximately 2000 hexameters. …Concerning the

royalty we will proceed as follows: I will hand over to Mr. Counsel Bottiger [Goethe's lawyer] a sealed note which contains my demand, and I wait for what Mr. Vieweg will suggest to offer for my work. If his offer is lower than my demand, then I take my note back, unopened, and the negotiation is broken. If, however, his offer is higher, then I will not ask for more than what is written in the note to be opened by Mr. Bottiger.

What's going on here?According to Moldovanu and Tietzel, scholars had treated Goethe's proposition as one of the enigmas left behind by one of history's greatest literary figures. But the economists argue that there's no mystery to Goethe's choice of mechanism. The author wanted to know how much he was worth to Vieweg (perhaps with an eye to extracting higher royalties from his publishers over the longer run), and he devised this peculiar "auction" to get Vieweg to tell him.

10. The tone of the author of the passage can be said to be:

A) descriptive

B) Incendiary

C) criticizing

D) objective

11. In the given context of the passage, ostracism refers to:

I. exile
II. expulsion
III. cold-shouldering
IV. Blackballing

A) I, II & III
B) II, III & IV
C) I, II & IV
D) All of the above

12. The author of the passage seems to raise which one of the following questions in the passage?

A) Manipulation to the masses?

B) Democracy to the doers?

C) Franchise for disenfranchised?

D) Power to the people?

13. It can be inferred from the passage that:

A) Boris Johnson is a particularly popular politician

B) Boris Johnson is not a politician who is appreciated by all

C) Boris Johnson does not truly understand the Athenian institution of 'ostracism'

D) None of the above

14. Identify the apt option as per the information given in the passage.

A) There are nations where rulers make a sham out of democratic processes.

B) Electoral fraud is not uncommon in democracies.

C) Both (A) and (B)

D) Neither (A) nor (B)

15. It can be inferred from the passage that "the establishment" was:

A) pro-leave B) pro-remain

C) impartial and honest

D) unfair and manipulative

DIRECTIONS ***for questions 16 & 17:*** *Identify the most appropriate summary for the paragraph.*

16. Sociology, so far as it can be regarded as a fundamental science and not mere congeries of social-welfare programs and practices, may be described as the science of collective behavior. With this definition it is possible to indicate in a general and schematic way its relation to the other

social sciences. Historically, sociology has had its origin in history. History has been and is the great mother science of all the social sciences. Of history it may be said nothing human is foreign to it. Anthropology, ethnology, folklore, and archaeology have grown up largely, if not wholly, to complete the task which history began and answer the questions which historical investigation first raised. In history and the sciences associated with it, i.e., ethnology, folklore, and archaeology, we have the concrete records of that human nature and experience which sociology has sought to explain. In the same sense that history is the concrete, sociology is the abstract science of human experience and human nature.

A) Sociology, like the other sciences such as ethnology, folklore, and archaeology, finds its roots in history and is driven by historical factual analysis.

B) Sociology, like the other sciences such as ethnology, folklore, and archaeology, finds its roots in history and deals in abstract analysis of experience rather than the factual one we find in history.

C) Sociology, like the other sciences such as ethnology, folklore, and archaeology, finds its roots in history and is limited by the concrete records of human experience that history provides.

D) Sociology, like the other sciences such as ethnology, folklore, and archaeology, originates with the help of history but then takes a divergent path of its own.

17. In the 1990s, the Labour party could plausibly offer positive-sum redistribution and could therefore please both left and right. Take for example expanding higher education. This was leftist - because a higher supply of graduates would bid down the graduate premium and hence help reduce inequality. But it was also rightist because it improved skills and opportunity. Or take tax credits and minimum wages. These were leftist because they reduced poverty, but also rightist because they encouraged work. Similarly, the promise of policy stability was intended both to please business and to encourage job creation. Such policies were centrist, vote-winning and (within limits) reasonable economics.

A) The Labour party of the 1990s was cunning and manipulative.

B) The Labour party of the 1990s was hamstrung and in effect, centrist.

C) The Labour party of the 1990s was effective by being equivocal.

D) The Labour party of the 1990s was confused itself and acted in a non-committal manner.

DIRECTION *for the question:* *The six sentences (labelled A,1,2,3,4 and F) given in this question, when properly sequenced, form a coherent paragraph. Sentences A and F are fixed. Decide on the proper order for the numbered sentences and key in this sequence of four numbers as your answer.*

18. A. Most virtue ethics theories take their inspiration from Aristotle who declared that a virtuous person is someone who has ideal character traits.

1. Unlike deontological and consequentialist theories, theories of virtue ethics do not aim primarily to identify universal principles that can be applied in any moral situation.

2. For example, a virtuous person is someone who is kind across many situations over a lifetime because that is her character and not because she wants to maximize utility or gain favors or simply do her duty.

3 .however, once established, they will become stable.

4. These traits derive from natural internal tendencies, but need to be nurtured;

F. Virtue ethics theories deal with wider questions—"How should I live?" and "What is the good life?" and "What are proper family and social values?"

DIRECTIONS ***for questions 19 & 20:*** *Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.*

19. 1. He also decided that they should get drunk, and so they mixed rum and cocoa and drank it 'as if we were mainlining heroin'.

2. In love as in friendship Lowell was controlling and vulnerable, caring and neglectful, destructive and helpless to fix the damage.

3. Lowell decided that Clark should quit smoking and, when Clark resisted, chased him around and knocked him down.

4. Under Lowell's direction, they studied the Bible (with special attention to the Book of Job) and ate cereal with raw honey and 'badly' cooked eels.

5. In the summer of 1935, when he was 18, Robert Lowell and two friends from St Mark's School " Blair Clark and Frank Parker " rented a house in Nantucket.

(write the answer key)

20. 1. That's a very high price to pay for getting rid of Greece, and much more expensive than letting it stay.

2. It would be costly for the rest of Europe, too.

3. Rationally, then, this standoff should end with a compromise"relaxing some austerity measures, and giving Greece a little more aid and time to reform. And we may still end up there.

4. Even though a devalued currency would make Greece's exports cheaper and attract tourists, it would do so at a terrible price, destroying huge amounts of wealth and seriously harming the country's G.D.P.

5. Greece owes almost half a trillion euros, and containing the damage would likely require the recapitalization of banks, continent-wide deposit insurance (to prevent bank runs), and more aid to Portugal, Spain, and Italy, which seem to be the next countries in line to default.

(in numerical value)

DIRECTIONS ***for the question:*** *Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.*

21. 1. A simple but sincere "That's quite good." from someone who's opinion we respect (usually a fellow artisan) is worth infinitely more than any pay-rise or bonus.

2. The riches we crave are acknowledgment and appreciation of the ideas that we have and the things that we make.

3. Truly creative people tend not to be motivated by money.

4. Handing out the odd gold statuette is a whole lot cheaper than dishing out stock certificates or board seats.

5. That's why so few of us have any.

DIRECTIONS ***for the question:*** *Four sentences related to a topic are given below. Three of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.*

22. 1. The traditional view also requires soldiers to discriminate between legitimate and illegitimate targets when employing force.

2. The value of the military objective is measured against its contribution to the moral objective of war: to establish a better state of peace than the status quo ante bellum.

3. The restriction, referred to as proportionality, requires soldiers to limit the harm to civilians and civilian infrastructure they cause relative to the value of the military objective.

4. The utilitarian nature of military necessity rules out courses of action whose outcomes result in more harm than good.

Section - II: DI & Reasoning

DIRECTION ***for questions 23 to 26:*** *Read the information given below and answer the question that follows.*

For the next academic year, Santosh wants to hire at least two English trainers from amongst Sudeshana, Sharada and Savita and at least one Mathematics trainer from amongst Nikita, Rama, Vivek and Dinesh. Based on his budget constraints, Santosh realises that:

- He can hire only four of the seven trainers.
- Sharada and Nikita cannot both be hired together.
- Savita and Vivek cannot both be hired together.
- Vivek and Dinesh cannot both be hired together.

23. If Santosh does not hire Sharada, but hires Dinesh, which of the following correctly lists the four trainers who could be hired?

A) Sudeshana, Nikita, Rama, Dinesh

B) Sudeshana, Rama, Vivek, Dinesh

C) Sudeshana, Nikita, Savita, Dinesh

D) Sudeshana, Savita, Vivek, Dinesh

24. Which of the following trainers cannot be hired together?

I. Nikita and Vivek

II. Sharada and Savita

III. Nikita, Rama, Vivek

A) I, II and III B) I and II only

C) I and III only D) III only

25. Which of the following statements must be false?

I. If Savita is hired, Dinesh is also hired.

II. If Sharada is not hired, Vivek is hired.

III. If Savita is hired, Nikita is also hired.

A) I only B) II only

C) III only D) None of these

26. Which of the following is necessarily true?

I. If Savita is hired, Nikita is also hired.

II. If Vivek is hired, Sharada is also hired.

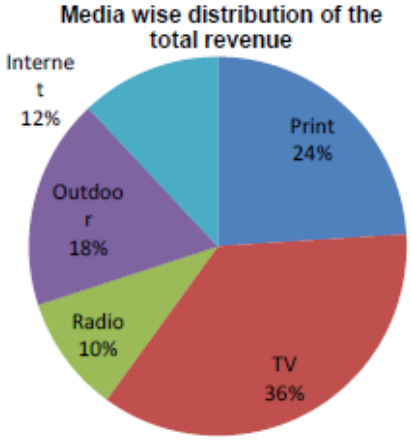
III. If avita is not hired, Nikita is also not hired.

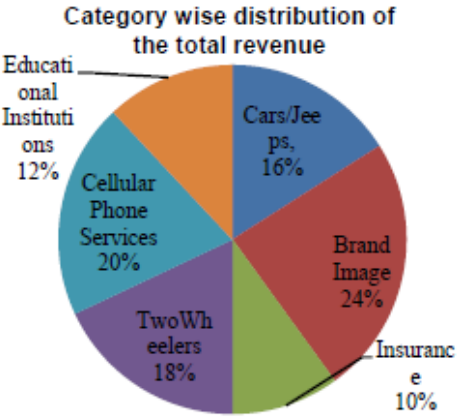
A) I and II only B) I and III only

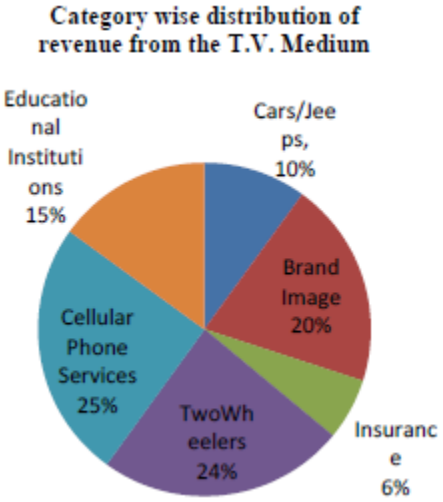
C) II and III only D) I, II and III

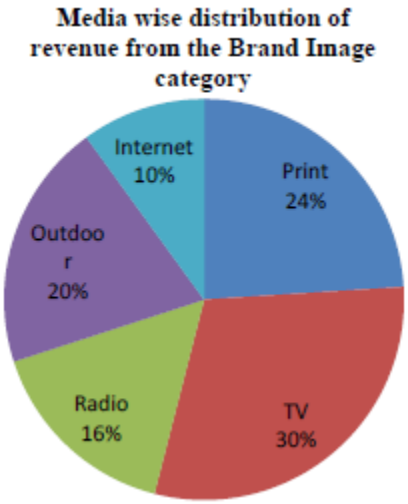
DIRECTIONS ***for questions 27 to 30:*** *Go through the pie chart/s given below and answer the question that follows.*

PVC Ltd., and advertising agency, while announcing its annual revenue, fudged some of the data to accommodate for its future plans. It understated its revenue from the T.V. medium in the Brand Image category by a certain amount. For all other sources of revenue, it stated the correct revenues. The following pie-charts were then prepared using the announced revenues of the agency.









27. If in the actual results of the company, 20% of the revenue from the T.V. medium was from the Two-wheeler category, the actual percentage share of the Print medium in the total revenue was approximately

A) 21.7%

B) 22.4%

C) 23.6%

D) 25.4%

28. If the actual total revenue of the company is Rs. 450 crores and the revenue from the Two-wheeler category forms 16% of the actual total revenue, the announced revenue from the T.V. medium is what percentage of the actual revenue from that medium?

A) 74.2% B) 76.8% C) 79.3% D) 84.2%

29. If the actual revenue from the Internet medium is known, how many of the following statements, each when considered independently along with the given information, will be necessary as well as sufficient to find the actual revenue from the Brand Image category?

1. Actual revenue from the Outdoor medium in the Brand Image category.

2. Actual revenue from the Educational Institutions category.

3. Actual revenue from the T.V. medium in the Insurance category.

4. Actual revenue from the Internet medium in the Brand Image category.

A) 0 B) 1 C) 2 D) 3

30. The revenue from Educational Institutions forms what percent of the actual revenue from the TV medium?

A) 40% B) 50%

C) 45% D) Cannot be determined

DIRECTIONS ***for questions 31 & 32:*** *Read the information given below and answer the question that follows.*

The Metro Project was up for voting before the standing committee of the PMC. Each of the seven corporators on the standing committee voted either for or against the project. Of the seven corporators, two belong to the AFA, two belong to the IMA and three belong to the NDA. No corporator belongs to more than one party. A journalist reported the following about the way the corporators voted.

- Of the seven corporators, at least two voted for the Metro Project and at least two voted against the Metro Project.
- If the three NDA corporators voted the same way as each other i.e. either all in favor or all against the project, then no AFA corporator would vote in the same way i.e. if all NDA are in favor, then all AFA would be against and vice versa.

- At least one AFA corporator voted against the Metro Project.
- If the two AFA corporators and at least one NDA corporator voted the same way as each other, then both IMA corporators voted that way

31. If the two IMA corporators did not vote the same way as each other, then which of the following could be true?

A) Exactly one AFA corporator and one NDA corporator voted for the Metro Project

B) Exactly one AFA corporator and all three NDA corporators voted for the Metro Project

C) Exactly two AFA corporators and one NDA corporator voted for the Metro Project

D) Exactly two AFA corporators and two NDA corporators voted for the Metro Project

32. If the three NDA corporators voted the same way as each other, which of the following must be true?

A) Both IMA corporators voted for the Metro Project

B) All three NDA corporators voted for the Metro Project

C) Of the two AFA corporators, one voted for the Metro Project and one voted against it

D) Of the two IMA corporators, one voted for the Metro Project and one voted against it

DIRECTIONS ***for questions 33 to 36:*** *Study the table & information given below and answer the question that follows.*

Mr. Mukherjee and his assistant were making a data table of GDP (simple average of the rate of all the sectors) of some years and plans given below. But due to a virus attack in the computer, some data was lost. His assistant remembers some data and tries to create the table:

	Rate of Growth of GDP at Factor Cost at 2000-2001 Prices							
	X Plan	2003-04	2004-05	2005-06	2006-07	2007-08	XI Plan	2008-09 (Revised Estimates)
Agriculture & Allied		7.2	10		5.9	3.8	2.5	4.5
Mining	4		3.1	7.2	4.9	5.7	7.1	4.7

Manufacturing	3.3	6.2	6.6	8.7		12	8.6	8.8
Electricity	4.8	4.7		8.9	4.7	6	7.6	6.3
Construction	7.1	7.9	12	16.5	16.5	12	12.9	9.8
Trade and hotels		6.9	10.1	7.7	9.4	8.5	8.5	12
Transport & Communication	8.9	14.1	15.3	15.6	14.6	16.6	12.3	0
Financing, Real Est., Housing	8		5.6	7.7	11.4	13.9	9.5	11.8
Community	7.7	3.9		7.9		6.9	6.8	7.3
GDP	5.97	7.52	8.1	8.96		9.48		7.24

C1: Rate of growth of Trade & Hotels is 3 times more than the rate of growth of Agriculture in the X plan. Also, the rate of growth of mining in 2003-04 is 20 % more than the rate of growth of Financing, Real Est., and Housing in 2003-04.

C2: Ratio of the Rate of growth of Electricity to the rate of growth of Community in 2004-05 is 8 : 9. The ratio of the rate of growth of Community in 2004-05 to rate of growth of Community in 2006-07 is 3: 4. Value of rate of growth of Manufacturing in 2006-07 is 9%. GDP rate is always calculated up to 2 decimal points, but rate of growth of all sectors is calculated up to only 1 decimal point.

33. What is the ratio of rate of growth of Agriculture in X Plan to the rate of growth of Agriculture in 2005-06?

A) 1 : 2 B) 4 : 1

C) 5:1 D) None of these

34. If the rate of growth of anufacturing in 2006 - 07 were equal to the simple average of the rates of growth of Manufacturing from 2003 - 04 to 2007 - 08 and the rate of growth of Community in 2004 - 05 and 2006 - 07 were both equal to the simple average of the rates of growth of Community from 2003 - 04 to 2007 - 08, what would be the GDP in 2006 - 07?

A) 8.66 B) 9.04

C) 8.82 D) 9.11

35. What is the ratio of the rate of growth of Community in 2006-07 to the rate of growth of Trade & Hotel in X plan?

A) 9/10 B) 24/25

C) 19/18 D) 19/23

36. If the values of the rates of growth of sectors which are missing from the table are increased by 10%, then the total would be approximately what percentage of the total GDP of 2008-09 (revised estimate) ?

A) 83% B) 90%

C) 75% D) 79%

DIRECTIONS ***for questions 37 to 40:*** *Read the information given below and answer the question that follows.*

There is a sports club which includes members with a varied taste in sports.

Some of those who enjoy basketball also enjoy cricket.

Those who enjoy cricket dislike carrom.

Some of those who enjoy cricket also enjoy football.

All those who enjoy carrom also enjoy hockey.

Some of those who enjoy hockey also enjoy cricket.

Some of those who enjoy football dislike carrom.

All those who enjoy hockey also enjoy volleyball.

All those, who like polo also like basketball but dislike volleyball.

37. Amod is a national player of hockey. He may also enjoy any of the following games except:

A) Basketball

B) Cricket

C) Polo

D) Hockey

38. Miss Sheetal enjoys the game of polo. Which of the following may be false?

A) She enjoys cricket

B) She may or may not enjoy football

C) She doesn't like hockey

D) None of these

39. Based on the information, which of the following statements may be true regarding the members of the club?

A) Some of those who like polo also enjoy volleyball

B) All who like cricket dislike hockey

C) Some of those who like basketball also like carom

D) None of those who like hockey dislike football

40. If the people who enjoy polo started disliking Football and started enjoying Volleyball, then which of the following must be true?

A) None who enjoy Hockey and Basketball also like Polo

B) There is not a single person who likes Carrom, Hockey, Volleyball, Basketball and Polo

C) People who like Polo may or may not enjoy Carrom

D) None of these

DIRECTIONS ***for questions 41 to 44:*** *Read the information given below and answer the question that follows.*

The fifty students at an IB School need to choose one or more amongst four subjects – Economics, Business Administration, Statistics and Mathematics. 54% of the students choose Economics, 48% choose Business Administration, 38% choose Statistics and 44% choose Mathematics. 24% of the students choose Economics and Business Administration, 20% choose Economics and Statistics, 16% choose Economics and Mathematics, 18% choose Business Administration and Statistics, 20% choose Business Administration and Mathematics and 16% choose Statistics and Mathematics. 20% of the students choose Economics and at least two more subjects, 22% of the students choose Business Administration and at least two more subjects, 20% choose Statistics and at least two more subjects, and 18% choose Mathematics and at least two more subjects.

41. How many of the students have chosen exactly two subjects? (in numerical value)

42. How many of the students have chosen exactly three subjects? (in numerical value)

43. How many more students have chosen Economics and exactly two other subjects than the students who have chosen Mathematics and exactly two other subjects. (in numerical value)

44. How many more students have chosen Business Administration and exactly one other subject than the students who have chosen Statistics and exactly one other subjects (in numerical value)

Section- III: Quantitative Ability

45. A 50 metre long pipe is connected to a tank. Water flows through the pipe at 10 km/hr to fill 2200 m3 of the tank in 7 hours. What is the radius of the pipe?

A) 14 cm B) 31 cm C) 22 cm D) 10 cm

46. The simple interest accrued on an amount of Rs. 25,000/– at the end of three years is Rs. 7,500/–. What would be the compound interest accrued on the same amount at the same rate in the same period?

A) Rs. 7,750/– B) Rs. 8,275/–

C) Rs. 8,500/– D) Rs. 8,250/–

47. If a, b, c and d are positive integers such that $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ and $\frac{1}{d}$ form an arithmetic progression, which of the following is true?

A) ab > cd

B) ab < cd

C) ab = cd

D) Cannot be determined

48. A grasshopper hops 1 meter in four directions – north, south, east and west – and leaves a blot wherever it lands, and returns to the original position before hopping again. In the first stage, the grasshopper starts from a point S and hops in all four directions. In the second stage, the grasshopper uses the previous blots as starting points and hops in all four directions. In the third stage, the grasshopper uses the new blots left in the second stage as starting points and hops in all four directions. If the grasshopper continues this pattern of hopping from new starting points and leaving blots where ever it lands, which of the following cannot be the total number of distinct blots, other than S, left by the grass hopper after any stage?

A) 112 B) 312 C) 480 D) 860

49. In the festival of Diwali, Vishnu lights some diyas. At 6:30 p.m. he lights one 'diya', at 7:30p.m. he lights two 'diyas', at 8:30 p.m. he lights 3 diyas and so on. But due to wind the 'diyas' extinguish exactly after burning for half an hour, i.e. at 7:00 p.m. , 8:00 p.m. and so on. The oil in the diyas lasts for exactly one hour. Knowing this, Vishnu reuses

the 'diya' without changing the oil. Find the minimum number of 'diyas' if Vishnu lights the last set of diyas at 12:30 am.

A) 11 B) 14 C) 16 D) 28

50. What is the sum of the series 2014^2 " 2013^2 + 2012^2 - ¦¦¦+ 2^2 " 1^2?

A) 1007 × 2015 B) 1007 × 2014

C) 1008 × 2015 D) 1008 × 2014

51. A container consists of 30 L of a mixture of A and B. The ratio of the volumes of A and B is 3 : 2. From this container 6 L of solution is removed and replaced with C. The same process is repeated once more.

What is the amount of C in the solution at the end of the second operation?

A) 4.8 L B) 3.6 L

C) 10.8 L D) None of these

52. Two trains T_1 and T_2 are travelling on parallel tracks and in opposite directions. P_1 and P_2 are two persons who are travelling in T_1 and T_2 respectively. When the two trains just start to cross each other, P1, who is at the tail end of T_1,

starts running towards the front end of T_1, at a speed of 6 m/s, and P_2, who is at the front end of T_2 starts running towards the tail end of T_2 at a speed of 4 m/s. If the lengths of T_1 and T_2 are 216m and 432 m respectively, and the speeds of $T_1$and T_2 are 108km/hr and 144 km/hr respectively, in how much time (from the time T_1 and T_2 start to cross each other) will the two persons cross each other?

A) 5 seconds B) 9 seconds

C) 6 seconds D) None of these

53. There are 50 students divided into two group P and Q with 20 and 30 students respectively. One student from group P shifts to group Q. As a result of this the average weight of group P decreased while the average weight of group Q increase. Which of the following holds true?

A) The weight of the student is greater than the initial average weights of either group

B) The weight of the student is less than the initial average weights of either group

C) The weight of the student is less than the initial average weight of group Q but greater than the initial average weight of group P

D) The weight of that student is less than the average weight of group P but greater than the average weight of group Q

54. In a school fete, a participant arranged a total of 1000 balls, of four types, in a long straight line. If he first placed one green ball, then two red balls, three blue balls, four yellow balls, five green balls, six red balls, seven blue balls, eight yellow balls and so on (with green balls followed by red balls followed by blue balls followed by yellow balls) up to 1000 balls, what was the position of the 100^{th} red ball? (in numerical value)

55. It is given that $\log_6 a + \log_6 b + \log_6 c = 6$, where a, b, and c are positive integers that form an increasing geometric sequence and (b – a) is the square of an integer. Find a + b + c. (in numerical value)

56. What is the value of f(2), if f(x) = |5 – 3x|?

A) f(–1) B) f(1) C) f(4/3) D) f(7/3)

57. The longest side of a scalene triangle is 11. If all sides are of integral length, how many such triangles are possible?

58. Tejas and Swatej were sitting on a bench around the perimeter path of Sarasbaugh, a garden with a circular layout. They saw a dog at the edge of the garden, who was, as the crow flies, 120 meters away from them. Tejas walked towards the dog at 9 km/hr in order to pat it. After patting the dog, he started walking back towards Swatej, who at the same time started walking towards Tejas both taking the shortest route. They met mid-way on Tejas's journey back to the bench. In the meantime the dog had taken the radial route to reach the temple, which was at the centre of Sarasbaugh. After meeting, Tejas, Swatej also wanted to have a closer look at the dog. He took the shortest route from their meeting point to reach the temple in 18

seconds. How much had the dog walked to reach the temple? (answer in metres)

59. Find the number of two-digit numbers [where neither digit is zero] whose product of the digits is a perfect square? (in numerical value)

60. A function is defined as f(x + y) = f(x).f(y), for all natural numbers x and y. If f(1) = 2 and a and n are natural numbers such that f(a + 1) + f(a + 2) + f(a + 3) + ... + f(a + n) = 16(2n - 1), what is the value of a? (in numerical value)

62. The traffic on a certain east-west highway moves at a constant speed of 60 miles per hour in both directions. An eastbound driver passes 20 west-bound vehicles in a five minute interval. Assume vehicles in the westbound lanes are equally spaced. Which of the following is the closest to the

number of westbound vehicles present in a 100-mile section of highway?

A) 120 B) 200

C) 240 D) 400

62. A rabbit is feeding on some carrots at the corner of a square field. It has its burrow at an adjacent corner. During its carrot-chewing, the rabbit spots a fox at the other adjacent corner and starts running towards its burrow. The fox keeps on running towards the rabbit during the chase (of course it does not know about the burrow). If the rabbit's speed is 10 m/s and given that the fox follows the shortest route then what should be the range of fox's speed, so that he is just able to catch the rabbit as it enters the burrow?

A) Between 10 m/s and 13.9 m/s

B) Between 14.14 m/s and 20 m/s

C) Between 20.1 m/s and 24.2 m/s

D) Between 5.2 m/s and 9.1 m/s

63. Fresh grapes 90% water by weight while dry grapes contain 10% of water. What is the weight (kg) of dry grapes available from 270 kg of fresh grapes.

64. Ms. Kala Dalal bought three types of antique items for Rs.1,20,000; Rs.2,00,000 and Rs.2,40,000 each. She sold each type in the ratio 4:9:3 and made a profit of 20%, 15% and –30% respectively. What was her overall profit or loss (in percentage)?

65. Raghu and Raj have got 70% of the marbles accumulated by four of the friends. Kala and Dev 30%; and Dev and Raghu together have 50%. If Raj has 25 more marbles than Kala and Kala in turn has 25 more marbles than what Dev has, then what is the total number of marbles?

A) Cannot be determined B) 100

C) 150 D) 250

66. How many combination of coffee are possible for a person suffering from diabetes and hypertension who can take zero to mild sugar, zero to mild coffee and zero to low fat milk? Given that there are three coffee variants Cappuccino (Mild), Espresso (Mild) and Instant (Strong) with zero, mild and extra sugar; with no milk, zero fat milk, low fat milk and high fat milk, in cold and hot variants.

Answer Key & Explanation

Q No	Key	Explanations
1.	D	Option A is incorrect because when competition is restricted, normally the company which has monopoly in the market dictates the terms for its customers. Option B is wrong as there is no mention of call rates being defined or decided by the consumers. Option C is wrong as there is no mention of investment which is restricting more companies from investing.
2.	A	The author states that if AT & T and Verizon are the only two players in the market then American consumers will actually end up having a very restricted choice (only to choose between two operators) and keeping in mind the Ma Bell experience, chances of this surviving and benefiting consumers look bleak. Reversing the decision also may become hard. Option B – This is an unrealistic suggestion which the author would not give as, if something cannot be put into practice what is the point in such an action. Option C – The problem with customer satisfaction lies with AT&T and not with

		Verizon. Option D – The author wants the FCC to not allow the merger and to instead reform the market. Moreover making wireless capacity sharing obligatory is again an unrealistic proposition as chances are that both the companies may not want to do so. (America is a capitalistic market and every company would want profits. Capacity sharing would mean profit sharing which is something that a company will least likely agree with)
3.	A	The author talks very frankly and gives his opinion and suggestions regarding actions which he feels Obama government should take – one, block the merger, try to reform the market, new found zeal for serving consumers should be taken with a pinch of salt, asking whether two operators are sufficient and so on. Option B – Speculative means guessing or hypothesizing which is not the case here. Option C and Option D – The passage is not mocking or making fun of any action or person, hence sarcastic or satirical do not fit the tone of the passage.
4.	B	In the given case, the author of the passage argues for maintaining an environment where competition is allowed and monopolies do not

		come into existence. Considering this sentiment, we can see that option B is the best answer in the given case. Option A cannot be derived from the given context as the author is speaking about only one context and we cannot extend this to other industries and corporations. Options C and D cannot be derived from the passage. If anything, option C is quoted as an excuse being used by AT&T to expand its reach.
5.	B	Statement I is not mentioned in the passage. Statement II can be derived from the lines: Canada—also vast and sparsely populated—concluded that lack of competition had contributed to its having some of the rich world's most expensive call rates, and has been trying for three years to promote new entrants. Statement III can be derived from the lines: But many consumers want a mobile operator with good national coverage. That is why AT&T and Verizon each spend so heavily on advertisements claiming they are the best for this.
6.	D	The answer can be derived from the lines: All of this drove Goethe nuts. Like many artists, Goethe had an uneasy relationship with money in the first place. He was on the one

		hand disdainful of the profit motive (he once wrote to a publisher, “I look odd to myself when I pronounce the word Profit”), and yet he referred to the asymmetry of information as “the main evil” of publishing. We can see that option D is the best answer in this case.
7.	A	In this case, statement III is incorrect. It cleverly uses a double negative and negates the original sentiment of the author of the passage. Statements I & II are direct derivations from the passage.
8.	C	The answer to this question can be derived from the lines: The author wanted to know how much he was worth to Vieweg (perhaps with an eye to extracting higher royalties from his publishers over the longer run), and he devised this peculiar "auction" to get Vieweg to tell him. Remember, the intent of the action was not necessarily to adopt a win to the highest amount (for which he would hold an open auction) but to rather establish his worth.
9.	A	From the given options, only "intellectually driven" is an option that can be used to describe Goethe. A finds no mention in the passage.

		B is tough to conclude as we cannot say with certainty that Goethe's strategies were successful. D goes against the information of the passage. 'The author wanted to know how much he was worth to Vieweg ' Had he been coveting money, he would have kept an open auction.
10.	A	In this case, the best option is A. We can only safely say that the author is describing a certain piece of history here. Option D Objective is incorrect as author does give his views "The way book authors get paid these days is pretty straightforward". "Easy peasy." "The playing field hasn't always been so level." Option C Criticizing is incorrect as The author is giving positive view too so can't be called criticizing "The way book authors get paid these days is pretty straightforward: publishers keep careful track of how many books they sell and pay authors a royalty — agreed upon when the contract is signed — of each sale. Authors can check sales figures using resources like Bookscan or their own accountants. Royalty rates are well established throughout much of the industry. Everyone is protected by copyright. Easy

		peasy." Option B is incorrect as Incendiary means Causing strong feelings especially stirring up conflict.
11.	C	Let us explore the individual word meanings to identify the correct answer: Exile: Expel from a country. Expulsion: The act of forcing out someone or something. Cold-shouldering: Pay no attention to, disrespect. Blackballing: Expel from a community or group. We can see that I, II and IV perfectly fit the given context.
12.	D	The author of the passage is essentially questioning whether the systems developed in democracy truly provide power to the electorate or not. Refer to the lines: Electoral fraud of that kind is as old as democracy itself, and was an issue even in the famous ancient Athenian institution of "ostracism" usually taken to be a canny system of keeping the elite in check, and a far more radical deployment of popular power than any modern referendum....Boris Johnson has been a particularly enthusiastic supporter, seemingly unaware of his own vulnerability:

		"That was people power", he once said; it only needed enough citizens to show up and vote, and "kerpow, you were spending the next ten years twiddling your thumbs in Bulgaria . . . . Imagine the exhilaration of catapulting someone off like that".....You can get away with a lot if the electorate cant read: it was more popular manipulation than popular power....Did it really deliver direct people power, and to what effect? Connecting the dots, we can see that option D is the best answer in the given case.
13.	B	The answer to the this question can be derived from the lines: Boris Johnson has been a particularly enthusiastic supporter, seemingly unaware of his own vulnerability: "That was people power", he once said; it only needed enough citizens to show up and vote, and "kerpow, you were spending the next ten years twiddling your thumbs in Bulgaria . . . . Imagine the exhilaration of catapulting someone off like that".
14.	C	Option A can be derived from the lines: There is a tiny glimpse here of the edgy anxieties of Western democracy. It seems inconceivable to most of us that "our" leaders should stoop to the tactics of the worlds worst pseudo-democratic dictators who would go to almost

		any lengths, the less ingenious the better, to claim a popular mandate (and, for what it is worth, in my view it is inconceivable). Option B can be derived from the lines: Electoral fraud of that kind is as old as democracy itself, and was an issue even in the famous ancient Athenian institution of "ostracism" usually taken to be a canny system of keeping the elite in check, and a far more radical deployment of popular power than any modern referendum.
15.	B	The answer can be derived from the lines: Their worry was that, somewhere along the electoral line, a pencil cross in the "Leave" box could easily be erased by those working on behalf of "the establishment", and replaced with a vote for "Remain"
16.	B	Option 1 is incorrect as sociology is not limited by factual analysis. Option 2 is the perfect choice as it covers all aspects of the paragraph. Option 3 is limited in its scope as sociology goes beyond facts. Option 4 finds no mention in the passage.
17.	C	The given paragraph tells us one thing: how the Labour party acted in the 1990s, and how it used the centrist viewpoints to win both sides of the political spectrum. By using

		measures that were sold to both the left and the right, the Labour party was able to win favour with the voters. This sentiment is best reflected in option 3, which points out that the Labour party was effective by not taking extreme viewpoints and adopting an equivocal stance (synonymous with the centrist viewpoint mentioned in the paragraph).
18.	4321	Theme of this paragraph talks about straits of a virtuous person. Pairs- A and 4 are pairs as 4 elaborates ideal character traits. 3 & 2 are pairs as 2 gives an example of the stable trait mentioned in 3 1 and F are linked as 1 talks about what theories of virtue ethics don't do while F talks about what they do/deal with
19.	2	The set of connected statements in this case is: 5-4-3-1 5 introduces the para by telling that the 3 friends rented a house 5 is followed by 4 which with "Under Lowell's direction" begins to elaborate what all they did under Lowell's direction. 3 and 1 give other examples of things done In this case, statement 2 is the odd one out. If you carefully observe the given sentences, you

		will see that statement 2 is different from the other statements. How so? "In love as in friendship" in stt 2 necessitates that 2 be followed by sth relating to Lowell's love life which isn't any of the other stts
20.	4251 3	We can rule out 3 as the first sentence because of the word this, which tells us that there are to be something mentioned earlier which we are referring to. 4 states that devaluing the Greek currency will lead to harming the country. This would be followed by2 which states that that devaluation will be costly for Europe too. How is this so is mentioned in 5.
21.	4	The paragraph talks about the nature of truly creative people and their motivations. It indicates that usually creative people crave for acknowledgement and praise from their peers. They are not interested so much in money and often do not have enough of it. Hence 3 – 5 – 2 – 1 is a sequence that explains the concept.. Statement 4 is a related statement but is not core to the concept. It indicates how people take advantage of this streak within creative people – they hand out accolades that cost far less than handing out money or power in the corporate world.
22.	1	The lines 4, 3 and 2 (4-3-2) given here

		constitute a logical paragraph but line 1 seems to have come out of nowhere to create a block in the ongoing thought process.
23.	C	Santosh has a choice of hiring two English and two Math trainers or three English and one Math trainer. If Santosh hires Dinesh as the only Mathematics trainer, then he can hire all three English trainers. If Santosh hires two Mathematics trainers, he can hire Dinesh and Nikita or Dinesh and Rama. If Dinesh and Nikita are hired, then the two English trainers are Savita and Sudeshana. If Dinesh and Rama are hired, then the two English trainers could be Sharada and Sudeshana or Sharada and Savita or Sudeshana and Savita. Option 3 is the best answer. Alternately, option 1 is ruled out as there is only one English trainer. Options 2 and 4 are ruled out as Dinesha and Vivek cannot both be hired. That leaves us with option 3 as the correct answer.
24.	C	If Nikita and Vivek are hired, then Santosh needs to hire two English trainers from amongst Sudeshana, Sharada and Savita. Since Nikita has been hired, Sharada cannot be hired. Since Vivek has been hired, Savita cannot be hired. In this case, it is not possible to hire at least two English trainers. So, Nikita

		and Vivek cannot be hired together. If Sharada and Savita are hired, then Santosh needs to hire one English and one Mathematics trainer or two Mathematics trainers. Since Sharada has been hired, Nikita cannot be hired. Since Savita has been hired, Vivek cannot be hired. So, Santosh can now hire any two trainers from amongst Sudeshana, Rama and Dinesh. So, Sharada and Savita can be hired together. Nikita, Rama and Vivek cannot be hired together as they are Mathematics Trainers and Santosh can then hire only one English trainer.
25.	B	If Savita is hired, then Vivek cannot be hired, and therefore, Dinesh can be hired. So statement I need not be false. If Sharada is not hired, then the two English trainers are Sudeshana and Savita, in which case, Vivek cannot be hired. So statement II is definitely false. If Savita is hired and the only other English trainer is Sudeshana, then Nikita can be hired. So, statement III need not be false.
26.	C	If Savita is hired, and Sharada is one of the other English trainers, then Nikita cannot be hired. So statement I need not be true. If Vivek is hired, then Savita cannot be hired,

		and therefore, the two English trainers must be Sudeshana and Sharada. So statement II is definitely true. If Savita is not hired, then the two English trainers must be Sudeshana and Sharada, and if Sharada is hired, then Nikita cannot be hired. So statement III is definitely true.
27.	B	Let the announced revenue of T.V. medium = 100. Revenue from Two-wheelers = 24% of 100 = 24 As Two-wheelers from 20% of actual revenue of T.V. medium, actual revenue of T.V. medium is 100/20 × 24 = 120 In the first pie chart, announced revenue of T.V. medium is given as 36 Therefore, Actual revenue of T.V. = 36/100 × 120 = 43.2 ∴ Total revenue = 100 + 7.2 = 107.2 Actaul percentage share of Print medium = 24/107.2 × 100 = 22.4%
28.	A	In this ease. the actual revenue (i.e.. absolute value) is not required to answer the question Let the announced total revenue = W Let She actual total revenue = C. Green, 18% w = 16% C ⇒ C = 1125W Let W = 100 ⇒ C = 112.5 Hence the announced total revenue is 12.5 less than the actual.

		All of this 12.5 has been reduced from T.V. medium alone. ⇒ Actual revenue from TV. Medium = (Annotmced revenue from TN. medium) + (12.5) = 36% of W 12.5 = 36% of 100 + 12.5 = 48.5. Thus when actual revenue from T.V. is considered, the annoimced revenue for T.V. forms = 36/48.5 × 100 ≈ 74.2%
29.	A	If only the actual total revenue from the Internet medium is known, it is possible to calculate all the values in all the four pie-charts. Hence, the announced values for all the four pie-charts will be known. Now, these announced values will be the same as the actual values for all the segments mentioned across all the pie-charts, except for Brand Image category in T.V. medium and hence for total T.V. medium and total Brand image category, which will be wrong.Thus, unless any of these three values (actual values) are given, the actual value of the revenue from the Brand Image category cannot be found. So, none of the four statements provides the required information. No such statements, hence answer is 0.

30.	D	The value of revenue from Educational Institutions will remain constant, but the value of revenue from the TV medium will change according to the value by which it has been fudged. Since this value is not known, we cannot calculate the percentage. The best answer is option 4.
31.	A	Option 1 seems to satisfy all the given criteria. In option 2, if the three NDA corporators voted for the Metro Project, then both AFA corporators must vote against the Metro Project. In option 3, if the the AFA corporators and one NDA corporator voted for the Metro Project, then both IMA corporators should have voted for the Metro Project. Also 3rd condition is voilated. In option 4, if the the AFA corporators and two NDA corporator voted for the Metro Project, then both IMA corporators should have voted for the Metro Project. Also 3rd condition is voilated. Hence option 1 is the best answer.
32.	B	It is given that "If the three NDA corporators voted the same way as each other, then no AFA corporator voted the same way" and "At least one AFA corporator voted against the Metro Project". From this, we can conclude

		that both AFA corporators voted against the Metro Project and the three NDA corporators voted for the Metro Project. Hence option 2 is true.
33 - 36.		In 2005-06 Total sum of the rates of growth of all the sectors = 7.2 + 8.7 + 8.9 + 16.5 + 7.7 + 15.6 + 7.7 + 7.9 = 80.2 % Given that, GDP = Average of the sum of rates growth of all sectors. So, sum of the rate of growth of all the sectors = 8.96 × 9 = 80.64 So, rate of growth of Agriculture & Allied in 2005-06 = 0.44 or 0.4 (Because rate of all the sectors is always calculated up to 1 decimal point) In XI Plan, GDP = (2.5 + 7.1 + 8.6 + 7.6 + 12.9 + 8.5 + 12.3 + 9.5 + 6.8)/9 = (75.8)/9 = 8.42 % In X Plan, sum of the rates of growth of all the sectors = 5.97 × 9 = 53.73 or 53.7 Given that , the rate of growth of Trade & Hotels is 3 times more than the rate of growth of Agriculture in the X Plan, so let the value of Rate of growth of agriculture be a, Rate of Trade & Hotels = 4a The total sum of rates of growth of all the sectors in X Plan = a + 4 + 3.3 + 4.8 + 7.1 + 4a + 8.9 + 8 + 7.7 = 43.8 + 5a = 53.7 So a = 1.98 or 2.0

	Hence, 4a = 8.0 In 2003-04 Sum of the rate of growth of all sectors = 7.52 × 9 = 67.68 or 67.7 Let's assume the rate of growth of financing, Real Est, Housing be b So the rate of growth of Mining = 1.2b The total sum of rate of growth of all the sectors is X plan = 7.2 + 1.2b + 6.2 + 4.7 + 7.9 + 6.9 + 14.1 + b + 3.9 = 50.9 + 2.2b Now, 50.9 + 2.2b = 67.7 Or, b = 7.63 or 7.6 1.2b = 9.12 or 9.1 In 2004-05, sum of the rate of growth of all the sectors = 8.1 × 9 = 72.9 Given that the ratio of the rate of growth of Electricity to Community in 2004-05 is 8:9 So let's assume the value of rate of growth of Electricity = 8c and value of rate of growth of Community = 9c Now the total sum of rate of growth of all the sectors = 10 + 3.1 + 6.6 + 8c + 12 + 10.1 + 15.3 + 5.6 + 9c = 62.7 + 17c So, 62.7 + 17c = 72.9 c = 0.6 So, the value of rate of growth of Electricity = 8 × 0.6 = 4.8% The value of rate of growth of Community = 9 × 0.6 = 5.4%

In 2006-07
Given that the ratio of the rate of growth of Community in 2004-05 to 2006-07 is 3:4
Value of rate of growth of Community in 2004-05 = 5.4%
So, the value of Community in 2006-07 = (5.4 × 4)/3 = 1.8 × 4 = 7.2
Now, the total sum of the rate of growth of all the sectors in 2006-07 = 5.9 + 4.9 + 9 + 4.7 + 16.5 + 9.4 + 14.6 + 11.4 + 7.2 = 83.6
So the GDP growth rate = 83.6/9 = 9.28%

Rate of Growth of GDP at Factor Cost at 2000-2001 Prices

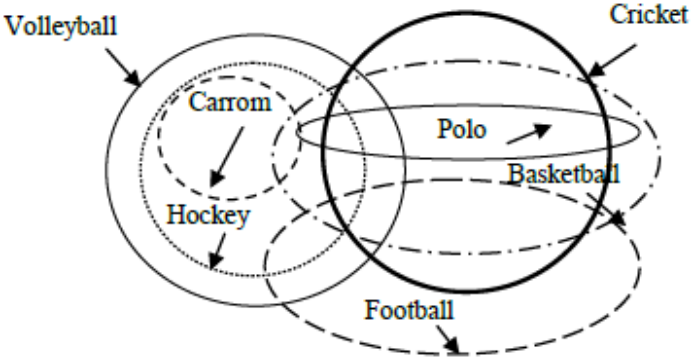
	X Plans	2003-04	2004-05	2005-06	2006-07	2007-08	XI Plan	2008-09 (Revised Estimates)
Agriculture & Allied	2.0	7.2	10	0.4	5.9	3.8	2.5	4.5
Mining	4	9.1	3.1	7.2	4.9	5.7	7.1	4.7
Manufacturing	3.3	6.2	6.6	8.7	9	12	8.6	8.8

Electricity	4.8	4.7	4.8	8.9	4.7	6	7.6	6.3
Construction	7.1	7.9	12	16.5	16.5	12	12.9	9.8
Trade and hotels	8.0	6.9	10.1	7.7	9.4	8.5	8.5	12
Transport & Communication	8.9	14.1	15.3	15.6	14.6	16.6	12.3	0
Financing, Real Est., Housing	8	7.6	5.6	7.7	11.4	13.9	9.5	11.8
Community	7.7	3.9	5.4	7.9	7.2	6.9	6.8	7.3
GDP	5.97	7.52	8.1	8.96	9.28	9.48	8.42	7.24

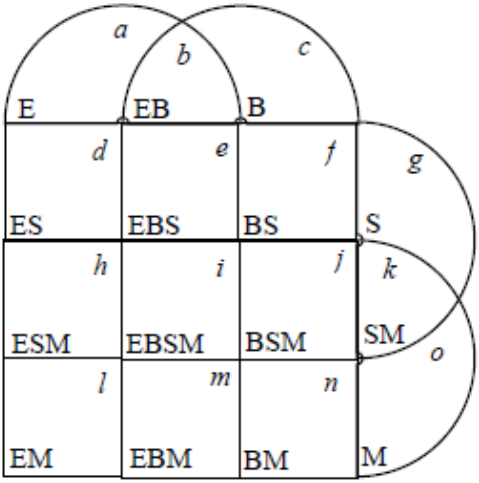
33.	C	Rate of growth of agriculture in X Plan = 2.0% Rate of growth of agriculture in 2005-06 = 0.4% The required ratio = 2: 0.4 = 5: 1

34.	D	Suppose the simple average of the rates of growth of Manufacturing from 2003 - 04 to 2007 - 08 were x. Then, (6.2 + 6.6 + 8.7 + x + 12)/5 = x 5x = x + 33.5 4x = 33.5 x = 8.375 or 8.4. So the growth rate of Manufacturing in 2006 - 07 would be 8.4. Suppose the simple average of the rates of growth of Community from 2003 - 04 to 2007 - 08 were y. Then, (3.9 + y + 7.9 + y + 6.9)/5 = y 5y = 2y + 18.7 3y = 18.7 y = 6.233 or 6.2. So the growth rate of Community in 2004 - 05 and 2006 - 07 would both be 6.2. Using these values, the GDP in 2006 - 07 would be (5.9 + 4.9 + 8.4 + 4.7 + 16.5 + 9.4 + 14.6 + 11.4 + 6.2)/9 = 82/9 = 9.11
35.	A	Rate of growth of Community in 2006-07 = 7.2 % Rate of growth of Trade & Hotels in X plan = 8.0% So, the required answer = 7.2/8.0 = 9/10

36.	B	Rates which are not given in the table are 1. Rate of growth of Agriculture & Allied in 2005-06 = 0.4% 2. Rate of growth of Agriculture in X Plan = 2.0% 3. Rate of growth of Trade and Hotels in X Plan = 8.0 % 4. Rate of growth of Mining in 2003-04 = 9.1% 5. Rate of growth of Financing , Real Est., Housing in 2003-04 = 7.6% 6. Rate of growth of Electricity in 2004-05 = 4.8% 7. Rate of growth of Community in 2004-05 = 5.4% 8. Rate of growth of Community in 2006-07 = 7.2% 9. Rate of growth of Manufacturing in 2006-07 = 9% Total sum = 53.5% Increasing this by 10% = (110 × 53.5)/100 = 58.85 Total GDP of 2008-09 (revised estimate) = 7.24 × 9 = 65.16 Required percentage = (58.85 × 100)/65.16 = 90.3% or 90%
37.	C	Hockey circle can passes through all the circles except polo circle. So, Amod doesn't enjoy Polo. Hence, [3].

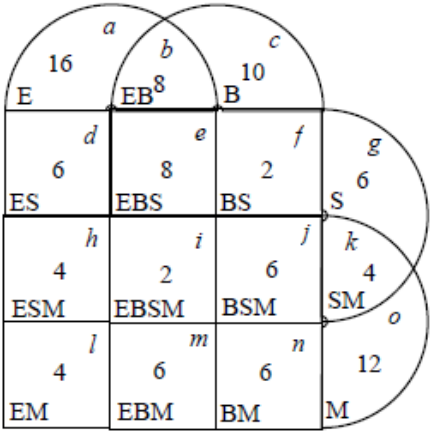
38.	A	All those who like polo enjoy Basketball, and some people who like Basketball may not enjoy Cricket. Therefore, definitely there may be some people who like Polo and Basketball but don't like Cricket. Hence, I. Alternatively, From the figure, it is clear that [3] is the correct statement. Also, it is not necessary that Sheetal should like Cricket. Polo region intersects Football region. ˆ´ She may or may not enjoys Football. Hence, [1].
39.	C	Refer to the diagram-Basket ball circle may overlap with carrom. Polo people don't like Volleyball. There is an overlap between Cricket and Hockey circle. There are people who like Hockey but dislike Football as per diagram of non overlapping part of Hockey and Football circle. Hence, [3],
40.	C	One possible configuration is as follows. 

		There is some part where Hockey and Basketball circle overlap and also overlap with polo circle. There is a common portion where Carrom, Hockey, Volleyball, Basketball and Polo circles meets. Some part of Polo circle may overlap with Carrom circle. So, there may be people who enjoy both Carrom and Polo. Hence, [3],
41 - 44.		Since there are four subjects, we know that the total number of students is E∪B∪S∪M = 100 = E + B + S + M – E∩B – E∩S – E∩M – B∩S – B∩M – S∩M + E∩B∩S + E∩B∩M + E∩S∩M + B∩S∩M – E∩B∩S∩M. So, 100 = 54 + 48 + 38 + 44 – 24 – 20 – 16 – 18 – 20 – 16 + E∩B∩S + E∩B∩M + E∩S∩M + B∩S∩M – E∩B∩S∩M, which gives us 30 = E∩B∩S + E∩B∩M + E∩S∩M + B∩S∩M – E∩B∩S∩M. Consider the diagram below, where, the letter or combination of letters represents the number of students studying that subject only or that combination of subjects only. We can now state that 30 = $e + i + m + i + h + i + j + i - i = e + m + h + j + 3i$.

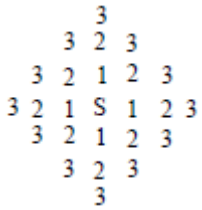


Now, the number of students studying Economics and at least two more subjects is 20 = $e + h + i + m$, the number of students studying Business Administration and at least two more subjects is 22 = $e + i + j + m$, the number of students studying Statistics and at least two more subjects is 20 = $e + h + i + j$ and the number of students studying Mathematics and at least two more subjects is 18 = $h + i + j + m$.

Substituting 20 = $e + h + i + m$ in 30 = $e + m + h + j + 3i$, we get $2i + j = 10$, substituting 22 = $e + i + j + m$ in 30 = $e + m + h + j + 3i$, we get $2i + h = 8$, substituting 20 = $e + h + i + j$ in 30 = $e + m + h + j + 3i$, we get $2i + m = 10$ and substituting 18 = $h + i + j + m$ in 30 = $e + m + h + j + 3i$, we get $2i + e = 12$. Adding these four equations, we get $e + m + h + j + 8i = 40$. Since 30 = $e + m + h + j + 3i$, we now get $5i = 10$ or $i = 2$. Substituting this value in the earlier

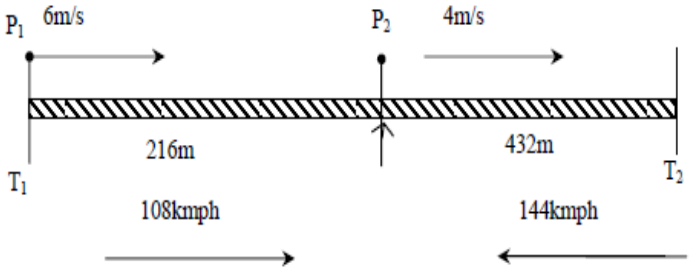
	equations, we get $j = 6$, $h = 4$, $m = 6$, $e = 8$, $b = 8$, $k = 4$, $d = 6$, $l = 4$, $f = 2$, $n = 6$, $a = 16$, $c = 10$, $g = 6$ and $o = 12$. We now have the percentage of students studying the various combinations of subjects as shown below - 	
41.	15	The number of students who have chosen exactly two subjects is $d + f + l + n$ + b + k = 6 + 2 + 4 + 6 + 8 + 4 = 30% of 50 = 15.
42.	12	The number of students who have chosen exactly three subjects is $e + h + j + m = 8 + 4 + 6 + 6 = 24\%$ of 50 = 12.
43.	1	The number of students who have chosen Economics and exactly two other subjects is $e + h + m = 8 + 4 + 6 = 18\%$ of 50 = 9. The number of students who have chosen Mathematics and exactly two other subjects is $h + j + m = 4 + 6 + 6 = 16\%$ of 50 = 8. The required difference is 1.

44.	2	The number of students who have chosen Business Administration and exactly one other subject is $n + f + b = 6 + 2 + 8 = 16\%$ of $50 = 8$. The number of students who have chosen Statistics and exactly one other subject is $k + f + d = 4 + 2 + 6 = 12\%$ of $50 = 6$. The required difference is 2.
45	D	Water flows at 10 kmph i.e.,. 50/18 m/s. This means that the volume of water flowing through the pipe in 1 second $50/18 \times \pi r^2$, where r is the radius of the pipe. In 7 hours, the volume of water flowing through the pipe is $50/18 \times \pi r^2 \times 60 \times 60 \times 7 = 2200$. Solving the equation gives $r^2 = 1/100$ m $\Rightarrow$ r = 1/10m = 10 cm
46.	B	$R = \frac{7500 \times 100}{25000 \times 3} = 10\%$ $A = 25000\left(1 + \frac{10}{100}\right)^3$ = 33275; So CI = 33275 - 25000 = Rs. 8275
47.	D	We do not know whether it is an increasing AP or a decreasing AP. What we can say with surety though is that 1/a – 1/b = 1/c – 1/d So (b – a)/ab = (d – c)/cd We cannot be sure if b – a = d – c, hence the answer is option 4.

48.	D	 Refer to the Magram above The grasshopper starts from point S and leaves 4 blots labelled 1. Then, with the I's as starting, points, the grasshopper hops in all 4 directions to leave new blots Labelled 2. So, the total number of distinct blots m now 12. Then, with the 2's as starting points., the grasshopper hops in all 4 directions to leave new blots Labelled 3 So, the total number of distinct blots is now 24. If we continue in this fashion, then, with the 3's as stating points, the grasshopper will hop in all 4 directoins to leave new blots labelled 4. The number of distinct blots wdl now be 40. So, the series defining the total number of blots is 4, 12 24, 40.... The terms in this series cn be defined as (1 x 4). (2 × 6), (3 × 8), (4 x I0),..... ,where I. 2, 3,..... represent the number of the term and the multiplication factors from an AP with a = 4 & d= 2. So, n^{th} term of this series can be defined as $T_n = n[4 + 2(n - 1)]$.

		In option 1, 112 = n[4+ 2(n-I)] ⇒ 112 = n(2n+2) ⇒ $2n^2$ + 2n - 112 = 0 ⇒ n^2 + n - 56 = 0 n =7, -8 . Since n Is 7, the total number distinct blots at the end of the 7^{th} stage will be 112. In option 2, 312 = n[4 +2(n - 1)] ⇒ 312 = n(2n + 2) ⇒ n^2 + n - 156 = 0 ⇒ n = 12 or -13 Since n Ls 12, the total number of distinct blots at the end of the 12^{th} stage will be 312. In option 3, 480 = n[4+ 2(n — I)] ⇒ 480 = n(2n + 2) ⇒ n^2 + n - 240 = 0 ⇒ n = 15 or -16. Since n is 15, the total number of distinct blots at the end of the 15^{th} stage will be 480. In option 4, 860 = n[4+ 2(n- 1)] ⇒ 860 = n(2n + 2) . ⇒ n^2 + n - 430 = 0 Since it is possible to find a value of n that Is a natural number, the total number of distinct blots at the end of any stage cannot be 860. Alternately, If we take 4 common, we can write the series as 4 × (1, 3, 6, 10...). The differences between these numbers are 2, 3, 4,...and are consecutive natural numbers . So, the n^{th} term of originalsereis can be defined as 4 tiems the sum oof the 1^{st} n natural numbers.

49.	B	1st diya is lighted at 6:30 pm which will extinguish at 7:00 pm 2 new diyas are lighted at 7:30 pm which will extinguish at 8:00 pm 3 new diyas are lighted at 8:30 pm which will extinguish at 9:00 pm 4 new diyas are lighted at 9: 30 pm which will extinguish at 10 pm 4 new and 1 old (total 5) are lighted at 10:30 pm which will extinguish at 11 pm. Now we need 6, 7 (total = 13) diyas to be lighted at 11: 30 pm and 12:30 am and we had 13 diyas in which oil is still there. So, minimum diyas required by Vishnu is (1 + 2 + 3 + 4 + 4) = 14.
50.	A	Pairing terms, we can rewrite the series as (2014 + 2013)(2014 " 2013) + (2012 + 2011)(2012 " 2011) + (2010 + 2009)(2010 " 2009) + ¦ + (2 + 1)(2 " 1) = 4027 + 4023 + 4019 + ¦ + 3. This series contains 1007 terms and is an AP with first term 4027, last term 3 and common difference - 4. The required sum is (1007/2)(4027 + 3) = 1007 - 2015.
51.	C	After adding 6 L of C the first tiem we are removing 1/5 of it. We are left with 4.8L. Then we add 6 L of C. Hence, the amount of C left at the end of the 2nd operation is 10.8L

52.	D	Let the two persons be P_1 and P_2, as shown below.  The initial distance between the two persons is 216 m. The speed of person P_1 with respect to the tracks = 5/18 (108) + 6 = 36m/s (to the right) The speed of persons P_2 with respect to the tracks = 5/18(144) - 4 = 36m/s (so the left) $\therefore$ Time taken = $\frac{\text{Relaative Distance}}{\text{Relative Speed}} = \frac{216}{72} = 3 \text{ seconds}$
53.	A	Let the average weights of students in groups P and Q be p and q respectively. Total weights of students in groups P and Q are 20p and 30q respectively. Let the weight of the student who shifted be w, so the average weights of groups P and Q

		becomes $\frac{20p-w}{19}$ and $\frac{30p+w}{31}$ respectively Given that $\frac{20p-w}{19} < p$. Hence $w > p$ Also given that $\frac{30q+w}{31} > q$. Hence $w > q$. Alternative method: If a higher-average group joins or a lower-average group leaves, the average increases. If a lower-average group joins or a higher-average group leaves, the average decreases. The student leaves P and the average decreases. Therefore the student's weight is more than the initial weight of P. He joins Q and the average increases. Therefore, the student's weight is more than the initial (or final) average weight of Q.
54.	437	The balls are arranged as shown in the table below

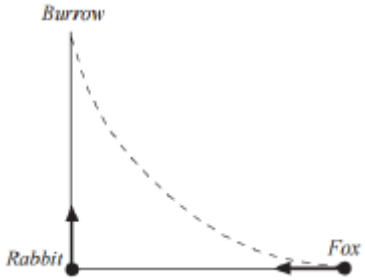
Green	RED	Blue	Yellow
1	2	3	4
5	6	7	8
-	-	-	-
-	-	-	-
21	22	23	24
25	26	27	28
-	-	-	-
-	-	-	-
41	42	43	44

		If the last 'complete' group has n BALLS $\Rightarrow$ = 44 The red balls occur in separate groups containing The following numbers 2, 6,10,14,18,22, 26, 30 The sum of the first 7 of these (2 to 26) is 7[(2 + 26)/2] or 98. The 100^{th} red ball is the 2^{nd} one in the 2^{nd} group of in the 8^{th} set (row). The number of all the balls upto that is [29(30)/2] + 2 or 437
55.	111	Since a, b, and c form an increasing geometric sequence, we can write b = ar and c = ar^2 for some constant r > 1. $6 = \log_6 a + \log_6 b + \log_6 c = \log_6(abc)$ Thus, $abc = 6^6$ $a(ar)(ar^2) = 6^6$ $(ar)^3 = 6^6$ $(ar)^3 = 36^3$ ar = 36 b = 36 Since (b – a) must be a square of an integer and a is positive, b – a must be one of the following 1, 4, 9, 16, or 25. That is, a = 35, 32, 27, 20, or 11 Now, $c = ar^2 = br = 36r = 36^2/a$ is an integer, which means that a divides $36^2 = 2^4 \times 3^4$. Among

		the five possible values of a listed above, only a = 27 works. Then c = $36^2/27$ = 48. Therefore, a + b + c = 27 + 36 + 48 = 111.
56.	C	f(2) = |5 – 3(2)| = |–1| = 1. f(–1) = |5 – 3(–1)| = |8| = 8. f(1) = |5 – 3(1)| = |2| = 2. f(4/3) = |5 – 3(4/3)| = |1| = 1. f(7/3) = |5 – 3(7/3)| = |–2| = 2. Thus, f(2) = f(4/3).
57.	20	Let a, b, c be the sides then a < b < c as the triangles are scalene. Also c = 11, hence, by triangle inequality 7 ≤ b ≤ 10 and c – b < a < b. Thus, as b decreases by 1, the range of a decreases by 2. For b = 10, we have 2 ≤ a ≤ 9. Hence, the number of triangles = 8 + 6 + 4 + 2 = 20. Following triangles are possible. (11, 7, 5) (11, 8, 5) (11, 10, 4) (11, 10, 6) (11, 8, 4) (11, 9, 4) (11, 8, 7) (11, 10, 7) (1 9, 3) (11, 10, 3) (11, 9, 6) (11, 9, 8) (11, 10, 2) (11, 8, 6) (11, 10, 5) (11, 10, 8) (11 7, 6) (11, 9, 5) (11, 9, 7) (11, 10, 9)
58.	75	Chord is of 120 metres. Since Tejas and Swatej met midway on the chord i.e. at 60m, it means the speed of Tejas and Swatej is same. Hence, Swatej's speed is 9 km/hr i.e., 2.5 m/s. he walked for 18 seconds means 45 metres.He took the

		shortcut means he went perpendicular. So the distance to the center from the meeting point is 45 metres. If Base is 60 metres, height is 45 metres then hypotenuse will be 75 metres. So, the distance the dog had walked to the temple is 75 metres.
59.	17	Numbers are 11, 22, 33_____99, 14, 19, 28, 41, 49, 82, 94, 91.... Hence there are 17 such numbers.
60.	3	f(a+ 1) = f(a). f(1) = 2f(a).f(a+2) = f(a +1 + 1) = f(a +1). F(1) = 2 × 2f(a). f(a + 3) = f(a+2+1) = f(a+2) . f(1) = 2 × 2^2f(a) . f(a + 4) = f(a + 3 +1) = f(a+3) .f(1) = 2 × 2^3 f(a) Constinuing in this fashion, f(a + n) = 2 × 2^{n-1} f(a) = 2^nf(a). We observe that the above values form a GP with 1st term 2f(a) and common ratio 2 The sum of this GP is $\frac{2f(a)(2^n-1)}{(2-1)} = 16(2^n-1)$. So, 2f(a) = 16 ⇒ f(a) = 8 Now, f(a) = f(a - 1+ 1) = f(a -1). f(1) = 2f(a-1) = 8 ⇒ f(a - 1) = 4 f(a - 1) =f(a-2 + 1) = f(a-2).f(1) = 2f(a-2) = 4

		⇒ f(a-2)= 2 But we know that f(1)= 2 Since both valus are equal to 2, the respective arguments must be equal So, a -2 = 1 ⇒ a = 3
61.	B	It is mentioned in the question that the constant speed on that way is 60 miles per hour on both the sides and if a east bound driver passes the west bound vehicles implies they are moving in the opposite directions. So the relative speed is 60 + 60 = 120 miles per hour. So in 50 min it will cover 120x50/60 = 100 miles relatively. So he will cover 100 miles in 50 min. At 120 miles/ hr relative speed. In 5 min he passes 20 vehicles. So in 50 min 20 × 10= 200 vehicles
62.	B	letv side of square = 1 so diagonal = √2 as fox follows the shortest route so. If the fox had moved in a straight line towards the burrow, to get to the burrow at the same time as the rabbit, he would need a speed of √2 × 10 m/s = 14.14 m/s However he takes a longer path as shown in the diagram.

		 So he would take more than 14.14 m/s. Also the maximum speed will be 2 × 10 = 20 m/s Hence the asnwer is option 2
63.	30	In fresh grapes water is 90% so pulp is 10% and in dry grapes water is 10% so pulp is 90% Let dry grapes = x kg $\text{ATQ.} x \times \frac{90}{100} = \frac{10}{100} \times 270$ x = 30kg
64.	5	The ratio of costs is 3:5:6. The ratio of numbers sold is 4:9:3.Therefore, total SP of items will be in the ratio 12:45:18 = 4:15:6. Considering the SP of the items as 4, 15 and 6 respectively, 20% of 4 is 0.8; 15% of 15 is 2.25 and –30% of 6 is –1.8. Hence, the net profit = 0.8 + 2.25 – 1.8 = 1.25 over total SP of 25. Therefore, Net profit = 1.25 × 100/25 = 5% (Note: Net profit/loss cannot be found in absolute Rs. terms as the ratio of the sold items

		is given and not the actual numbers)
65.	D	Let x be the total number of marbles. Raghu + Raj = 0.7x Kala + Dev = 0.3x Dev + Raghu = 0.5x Kala + Raj = 0.5x If Kala has y marbles, Raj has y + 25 and Dev has y – 25. Therefore, y + (y + 25) = 0.5x and y + (y – 25) = 0.3x Solving these two equations we get x = 250
66.	24	She has the following options: Two from coffee, two from sugar, three from milk and two from temperature. Thus the combinations available are 2 × 2 × 3 × 2 = 24

Section - I: Verbal Ability

DIRECTIONS ***for questions 1 to 24:*** *Read the passage and answer the question based on it.*

Passage - I

Children are masters of imitation. Copying parents and other adults is how they learn about their social world – about the facial expressions and body movements that allow them to communicate, gain approval and avoid rejection. Imitation has such a powerful influence on development, for good and ill, that child-protection agencies across the world run campaigns reminding parents to be role models. The conventional view, inside and outside academia, is that children are 'wired' to imitate.

The idea that humans have cognitive instincts is a cornerstone of evolutionary psychology. The cognitive processes or 'organs of thought' with which we tackle contemporary life have been shaped by genetic evolution to meet the needs of small, nomadic bands of people – people who devoted most of their energy to digging up plants and hunting animals. It's unsurprising, then, that today our Stone Age instincts often deliver clumsy or

distasteful solutions, but there's not a whole lot we can do about it.

In the late 1970s, the psychologists Andrew Meltzoff and Keith Moore at the University of Washington reported that newborn babies – some of them just a few hours old – could copy a range of facial expressions, including tongue protrusion, mouth opening and lip pursing. This launched the idea that humans have an instinct to learn by imitation. Surely such a precocious achievement could only be due to clever genes; after all, it's impossible to imagine how the average baby could learn what it would feel like to produce the expressions they see on the faces around them, just a few hours or days after birth.

Cracks began to appear in Meltzoff and Moore's picture as soon as it was published in Science magazine. Some other experts on child development were unable to replicate the crucial results. They found that newborns copied sticking out their tongues, but not other facial gestures – so perhaps instead of an elaborate imitation mechanism, it was a simple reflex in response to excitement. Further chinks appeared when it was discovered that fully functional adults can't imitate facial expressions unless they've had something called mirror

experience. This is what you get when you do an action at the same time as seeing it being done. For example, I get mirror experience for eyebrow raising if I do it while looking in a mirror, or while looking at you as you register surprise in the same way, or while looking at you as you imitate me.

If we were born with a piece of cognitive kit that connects 'felt but unseen movements of the self with the seen but unfelt movements of the other' – or even if we developed such a mechanism later in childhood – we should be able to improve our imitation without mirror experience

1. With which of the following is the author likely to agree with?

A) If you use language which a child understands, he or she will follow what you are doing.

B) Young children emulate their parents only in actions that the children are happy to perform.

C) If you don't want your kids to scream at other children, don't scream at them.

D) Adults lose the ability to imitate others which hinders their mental development.

2. All of the following support the fact that children are "wired" to imitate, except

A) We are 'Homo imitans', animals born with a burning desire to copy the actions of others.

B) Imitation is 'in our genes'.

C) Birds build nests, cats meow, pigs are greedy, while humans possess an instinct to imitate.

D) touched a hot iron, the child is weary of everything that heats up.

3. All of the following substantiate that Andrew Meltzoff and Keith Moore's work was questionable except,

A) Experts on child development were unable to replicate the crucial results.

B) What was thought of as an imitation could just be a reflex action.

C) Barring one action, the newborns were unable to copy other facial gestures.

D) Genes are responsible for the way we react to facial expressions.

4. Which of the following best explains the meaning of the line "we should be able to improve our imitation without mirror experience"

A) Parents, other adults and peers help the child to copy through games that synchronise actions and by reacting in the same way and at the same time to the action of the child.

B) It shouldn't be necessary to feel the facial movement while seeing the result, because we could instinctively work out what each felt movement looks like when viewed from the outside.

C) We are not wired to imitate, and imitation is not in our genes.

D) Rather than hard-wired cognitive instincts, our heads are much more likely to be populated bycognitive gadgets, tinkered and toyed with over successive generations.

Passage - II

Nobody really likes large-scale organisation: nobody likes to take orders from a superior who takes orders from a superior who takes orders.... Even if the rules devised by bureaucracy are outstandingly humane, nobody likes to

be ruled by rules, that is to say, by people whose answer to every complaint is: 'I did not make the rules: I am merely applying them.' Yet, it seems, large-scale organisation is here to stay. Therefore it is all the more necessary to think about it and to theorise about it. The stronger the current, the greater the need for skilful navigation.

The fundamental task is to achieve smallness within large organisation. Once a large organisation has come into being, it normally goes through alternating phases of centralising and decentralising, like swings of a pendulum. Whenever one encounters such opposites, each of them with persuasive arguments in its favour, it is worth looking into the depth of the problem for something more than compromise, more than a half-and-half solution. Maybe what we really need is not either-or but the-one-and-the-other- at-the- same-time.

This very familiar problem pervades the whole of real life, although it is highly unpopular with people who spend most of their time on laboratory problems from which all extraneous factors have been carefully eliminated. For whatever we do in real life, we must try to do justice to a situation which includes all so-called extraneous factors.

For we always have to face the simultaneous requirement for order and freedom.

In any organisation, large or small, there must be a certain clarity and orderliness; if things fall into disorder, nothing can be accomplished. Yet orderliness as such, is static and lifeless; so there must also be plenty of elbow-room and scope for breaking through the established order to do the thing never done before, never anticipated by the guardians of orderliness, the new, unpredicted and unpredictable outcome of a man's creative idea. Therefore any organisation has to strive continuously for the orderliness of order and the disorderliness of creative freedom. And the specific danger inherent in large scale organisation is that its natural bias and tendency favour order, at the expense of creative freedom.

We can associate many further pairs of opposites with this basic pair of order and freedom. Centralisation is mainly an idea of order; decentralisation, one of freedom. The man of order is typically the accountant and, generally, the administrator: while the man of creative freedom is the entrepreneur. Order requires intelligence and is conducive to efficiency; while freedom calls for and opens the door to, intuition and leads to innovation.

Excerpted from pages 726-734 of 'Small is Beautiful' by EF Schumacher

5. *Order* has been associated with all of the following, except?

A) Centralisation B) Bean counters

C) Entrepreneurs D) Efficiency

6. The central idea of the passage is expressed in which of the following sentences?

A) Nobody likes to be ruled by rules.

B) Large scale organisation's natural bias and tendency favour order.

C) We always have to face the simultaneous requirement of order and freedom.

D) The stronger the current, the greater the need for skilful navigation.

7. ***The fundamental task is to achieve smallness within large organisation***.

This sentence from the passage represents what figure of speech?

A) Paradox B) Hyperbole

C) Irony D) Metaphor

8. Why is breaking an order important in organization?

A) To become a better administrator.

B) To follow bureaucracy

C) To become more creative

D) To become more intelligent

9. Why does nobody likes large scale organization?

A) It gives people freedom

B) It makes you an administrator

C) Its focus on order

D) Rules of the organisation are the worst

Passage - III

Seen through the filter of a military analogy, writing might be like nuclear weapons (which were developed specifically by the military), or it might be like gunpowder, which was discovered by alchemists searching for life-prolonging substances hundreds of years before its use in weapons.

Writing is actually more like gunpowder than like nuclear weapons. For one thing, in the four wellsprings of writing, it never (as far as we know) sprang forth as fully

phonographic but evolved to become that – there's usually some kind of proto-writing, and some kind of proto-proto-writing. I like to think of writing as a layered invention. First there's the graphic invention: the notion of making a durable mark on a surface. Humans have been doing this for at least 100,000 years – the bureaucracy didn't give humans that power. Then the symbolic invention: let's make this mark different from all other marks and assign it a meaning that we can all agree on. Then there's the linguistic one: let's realise that a sound, a syllable and a word are all things in the world that can be assigned a graphic symbol. This invention depends on the previous ones, and itself is made of innovations, realisations, solutions and hacks. Then comes the functional invention: let's use this set of symbols to write a list of captives' names. All these moves belong to an alchemy of life that makes things go boom.

When you consider these layers of invention, you discover that early writing in Mesopotamia, for instance, had no overtly political function. .....In the 1960s, the archaeologist Denise Schmandt-Besserat began studying clay tokens – cylinders, pyramids, discs, balls – which were markers for objects: one cone per unit of grain, one diamond per unit of honey, and so forth. At

first, tokens that denoted goods and objects were stored in groups; one storage method was sealing them into hollow clay balls. To overcome the obvious drawback that the contents of a sealed envelope can't be checked, early accountants pressed the tokens into the soft, wet surface of the envelope. By the fourth millennium, scribes realised that the impressed signs made the envelopes redundant – just press the tokens into the clay, or better yet, create written signs that mimicked tokens. Then one more step of abstraction completed the journey: create written signs that capture speech-sounds and word-meanings. The implications are clear, at least for Mesopotamia. Early states functioned without writing for nearly 3,000 years before the invention of cuneiform because they had the token system for counting. And tokens didn't need the conditions of the state to develop – they preceded the state by 2,000 years.

In China the earliest writing samples, which were divination texts carved into bone and turtle shell, date to approximately 1320 BCE, but archaeologists don't know whether there was also administrative, propagandistic or literary writing happening at the same time. Further mysteries are posed by writing in Mesoamerica. All the existing examples of Mesoamerican writing are

engravings on rock or murals; writing on other materials, such as palm leaf, were either lost to decay or destroyed by the Spanish conquerors. Before phonetic writing there was iconography, and early writing itself featured leaders, rulers, prisoner-taking, and conquests. Nothing economic or administrative exists.....

The French anthropologist Pierre Déléage studies the invention of writing in many cultural contexts, and distinguishes 'unbound' forms of writing from 'bound' ones. 'Unbound' writing includes the phonetically flexible, multifunctional information tool called the Latin alphabet. Less familiar is 'bound' writing, which is used to represent narrow types of speaking and often only by a small number of people. All of the writing invented in Egypt, Mesopotamia, Mesoamerica and China was bound when it emerged. Eventually, bound writing can become unbound in the interests of the state, whether to further royal politics, run an economy, fund the elite – or all three.

10. Referring to example of Mesopotamia, which of the following does the author imply?

A) Counting precedes complex economic organisation and phonetic writing precedes political functions.

B) The clay tokens validated the administrative hypothesis that the state had to develop before counting could develop.

C) The clay tokens refuted the administrative hypothesis because they showed that only after writing developed, did the counting develop.

D) Mesopotamia worked with written form of record keeping right from the time that it started to trade.

11. Which of the following come in the correct sequence as per the passage?

A) Symbolic Invention, Linguistic Invention, Graphic Invention, Functional Invention

B) Graphic Invention, Functional Invention, Symbolic Invention, Linguistic Invention

C) Graphic Invention, Functional Invention, Linguistic Invention, Symbolic Invention

D) Graphic Invention, Symbolic Invention, Linguistic Invention, Functional Invention

12. Which of the following does the sentence (at the end of para 2) "*All these moves belong to an alchemy of life that makes things go boom*" support?

A) Nothing economic or administrative exists.

B) Writing is actually more like gunpowder than like nuclear weapons.

C) The state is a recording, registering, and measuring machine.

D) Writing was devised by religious specialists, with tightly restricted, revelatory functions.

13. All of the following could be an example of the functional invention, except

A) a contract about feeding workers

B) a letter to a distant garrison commander

C) a schedule of the working hours of labourers

D) a vertical line with a horizontal line at the top depicting alphabet T

14. All the following are untrue as per the passage except,

A) Unbound writing can become bound in the interests of the state.

B) In China the earliest writing samples, divination writing and administrative, propagandistic or literary writing all took place at the same time.

C) Unbound writing furthers royal politics, runs an economy, and funds the elite.

D) Mesoamerican writing such as engravings on rock or murals was destroyed by the Spanish conquerors.

Passage - IV

The modern West has placed a high premium on the value of equality. Equal rights are enshrined in law while old hierarchies of nobility and social class have been challenged, if not completely dismantled. But hierarchies have not disappeared. Society is still stratified according to wealth and status in myriad ways. On the other hand, the idea of a purely egalitarian world in which there are no hierarchies at all would appear to be both unrealistic and unattractive. Nobody, on reflection, would want to eliminate all hierarchies, for we all benefit from the recognition that some people are more qualified than others to perform certain roles in society.

Yet hierarchy is an unfashionable thing to defend or to praise. We live in a time when no distinction is drawn

between justified and useful hierarchies on the one hand, and self-interested, exploitative elites on the other. What then, should be said in praise of hierarchy? First, bureaucratic hierarchies can serve democracy. Bureaucratic hierarchies can instantiate crucial democratic values, such as the rule of law and equal treatment.

Apart from their civic importance, hierarchies can be surprisingly benign in life more broadly. Hierarchy is oppressive when it is reduced to a simple power over others. But there are also forms of hierarchy that involve power with, not over. A common Confucian ideal is that a master ought to aim for the student to surpass him or her. Confucian hierarchies are marked by reciprocity and mutual concern. The correct response to the fact of differential ability is not to celebrate or condemn it, but to make good use of it for the common pursuit of the good life. .....

As well as being empowering, hierarchies should be dynamic over time. Hierarchies are often pernicious not because they distinguish between people, but because they perpetuate these distinctions even when they are no longer merited or serve a good purpose. In short, hierarchies become ossified. All legitimate hierarchies

therefore must allow for changes over time in order for them not to lead to the unjust accumulation of power. This is built into the age-based hierarchies endorsed by Confucians, since the young will eventually rise to take on the elevated status and authority of the old. To protect against abuse by those with higher status, hierarchies should also be domain-specific: hierarchies become problematic when they become generalised, so that people who have power, authority or respect in one domain command it in others too. Most obviously, we see this when holders of political power wield disproportionate legal power, being if not completely above the law then at least subject to less legal accountability than ordinary citizens. Hence, we need to guard against what we might call *hierarchical power drift.*

One reason why hierarchy is offensive to the modern, egalitarian mind is that it implies deference to those higher up than them. Good hierarchies signal the right kinds of deference, oppressive hierarchies demand the wrong ones. Deference requires acknowledging that we are not all equal in our excellences. That there are some legitimate rankings of human beings does not mean that those who are closest to the bottom of some of them are not also above a certain threshold that makes them worthy of full respect.

Hierarchy has been historically much-abused. However there is a much-needed conversation about the role of hierarchy in a world that is in many ways now fundamentally egalitarian because though we give equal rights and dignity to all, we do not and cannot give equal power and authority to all.

15. What does the author mean by the words "*hierarchical power drift"* as used in last line of para 4*?*

A) The extension of power from a specific, legitimate domain to other, illegitimate ones.

B) The authority moves from business to the personal arenas

C) The power extends from the ordinary citizens to those in the political field

D) The power is extended to other members of the family

16. All of the following are true as per the passage, except

A) Hierarchies still exist in society according to wealth and status.

B) Hierarchies are not welcomed by society because they imply deference to those higher in rank.

C) All of us are not equal when it comes to expertise, and neither can we get equal power and authority.

D) Hierarchies are always marked by reciprocity and mutual concern.

17. All of the following support the following statement in para 1 "**Nobody, on reflection, would want to eliminate all hierarchies..... certain roles in society**" EXCEPT

A) We prefer to be treated by senior surgeons and not by medical students.

B) We want to get financial advice from professionals not interns.

C) We want our car to be serviced by a mechanic and not an apprentice.

D) We want a middle-aged housemaid than an energetic young one to do the physically demanding housework.

18. The author considers hierarchies can be harmful because

A) Hierarchies tend to create difference in rank that lead to stress and tension.

B) Over time hierarchies become dynamic and the constant change leads to disorder.

C) Hierarchies become rigid and difference in rank persists even if not warranted.

D) Hierarchies become a veil for nepotism.

19. With which of the following is the author *least likely* to agree ?

A) Inequalities of status and power are acceptable to the extent that these inequalities are embedded in relationships of reciprocity and mutual concern, and are conducive to the advancement of those lower in the hierarchy.

B) Deference expresses recognition of one's finite and fallible nature, communicates both to oneself and to others the centrality of relationality to one's identity and wellbeing, contributes to fluid – and even graceful or beautiful – social functioning.

C) Relationships between parents and children, teachers and students, or employers and employees work best when the person higher in the hierarchy uses that position to dominate those lower down

D) The call for 'distinction' between husbands and wives, for example, has lent itself to the support of an oppressive, hierarchical social system of gender relations.

Passage - V

He spent his childhood sitting on the sofa set in his father's commercial photography studio. Immersed in the advertising aesthetic, and surrounded by "photographic equipment everywhere, bright red Agfa and yellow-orange Kodak cartons and a chemical smell", Andreas Gursky says he used to rifle through the "treasure-trove of equipment" for "anything that looked like it might be fun to play with". It is unsurprising that Mr Gursky later stated that his vocation was "not a conscious decision".

In the 1980s he studied at the renowned Düsseldorf Academy under Bernd and Hilla Becher. A German conceptual-art duo, they shot industrial buildings and arranged them into grids, like the kind of pictures you

find scientifically categorising a plant species. These formative years encouraged a new perspective on the artistic subject, and Mr Gursky quickly became a master of the hyperreal. His works look like they document reality as it is, but instead use technical trickery and skill to cram in minute details—more than the human eye could possibly perceive in a single blink. “

This week a retrospective of the past four decades of Mr Gursky’s work opened at the Hayward Gallery in London, a brutalist building perched unapologetically on the banks of the Thames. It is the first exhibition to be hosted at the gallery since its refurbishment, an extensive project that saw the building closed for nearly two years.

Many of Mr Gursky’s photographs fill entire walls of this slick new space. Works like “May Day IV” (2000), of people at a rave, and “Paris, Montparnasse” (1993), of an apartment block, span more than four metres. These huge images are often stitched together digitally from multiple shots, allowing for improbably high definition.

And they swamp the viewer. In “99 Cent”, his iconic photo of a gleaming convenience store, the viewer’s eye flicks between perfectly packed KitKats, Almond Joys and Peppermint Patties, all neatly lined up like the stuff of a

neat-freak's dreams. A stray pack of bagels threatens to disrupt the perfection, but the eye quickly moves back to the flow of perfectly presented products, giving the photograph a meditative quality. Nothing is prioritised over anything else in the frame, so the act of looking at one of his pictures can loop perpetually. "Figuratively speaking what I create is a world without hierarchy," says Mr Gursky.

Critics have described Mr Gursky as an arbiter of something they call the "contemporary sublime". In the late 18th and 19th century, the Romantic conception of the sublime took nature as it object, capable of inspiring astonishment and awe—"that state of the soul in which all its motions are suspended", according to Edmund Burke. The contemporary sublime instead takes technology and the capitalist-industrial system as its focus.

The emotive power of Mr Gursky's photographs will make the show a blockbuster—as it deserves to be. In both skill and subject, Mr Gursky is one of the most significant artists of the era. His work depicts the underlying and ever-unfurling patterns of our world as driven by the crowds that populate it: a fitting statement of intent by the Hayward.

20. The passage above is most likely to be a/an-

A) A critical review of Mr Gursky's works and early life

B) Description of Mr Gursky's photographical vision

C) A study on contemporary sublime by evaluating Mr Gursky's photography

D) An excerpt from the brochure used to attract visitors to Mr Gursky's exhibition

21. Which of the following statements is/are true as per the information given in the passage?

I) His attention to detail about his artistic 'subject'

II) He studied under Bernd and Hilla Becher

III) Technology plays a trifling role in Gursky's works

IV) The exhibition is the first ever amalgamation of Gursky's works at Hayward Gallery at London

A) Only I and IV B) Only IV

C) Only III D) Only II

22. As per the passage, Mr Gursky's works can be best described as-

A) Capturing the holistic image as the symbol of aestheticism

B) An effort to capture all the pictorial elements representing the whole as each is as important as the other

C) A photographic delight capturing the 'undisturbed' elements of the whole

D) Hyperreal captured in its true nature

23. Which of these is true as per Mr Gursky's work?

A) His work is like what we see

B) His work has minute details

C) His work is highly commercial in nature

D) His work is magnanimous

24. All of these are Gursky works except:

A) May Day IV B) Paris, Montparnasse

C) Hayward D) 99 cents

DIRECTIONS *for question:* *Four sentences related to a topic are given below. Three of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.*

25. 1. It all seems real enough and simple enough, for language is second nature with the adult and he does not think much about it.

2. In spite of the abstract quality of language, there is a comforting familiarity about the printed page, for the words can be appreciated as common sounds and meanings remembered from conversation.

3. It is the alienation that does so much damage, that allows the writer to grow careless in his art and the reader to become casual and uncritical.

4. Even when the words are unfamiliar, the dictionary will tell the reader the correct sound and meaning.

DIRECTIONS *for the question:* *Identify the most appropriate summary for the paragraph.*

26. The history of each science, be it mathematics or astronomy, botany, zoology or geology, shows us that it is not enough to have the intelligent observer, or even the interpretative thinker with his personally expressed doctrine. This must be clearly crystallised into a definite statement, method, proposition, "law" or theory, stated in colourless impersonal form before it is capable of acceptance and incorporation into the general body of science. But while astronomer and geologist and naturalist can and do describe both the observational results and their general conceptions in literary form, requiring from the ordinary reader but the patience to master a few unfamiliar terms and ideas, they also carry on their work by help of definite and orderly technical methods, descriptive and comparative, analytic and synthetic. These, as far as possible, have to be crystallised beyond their mere verbal statement into formulae, into tabular and graphic presentments, and thus not only acquire greater clearness of statement, but also become more and more active agencies of inquiry—in fact, become literal *thinking-machines*.

A) Each science requires its analytical method of observation in order to arrive at the correct set of conclusions

B) Each science needs parallel accompaniment of observation, interpretation and notation in order to achieve its desired objectives

C) Observation and interpretation are the driving forces for the delivery of a science as thinking machines

D) Subjects can only be converted into solidified thinking machines if they follow the right course of analysis

27. Conflict theory emphasizes the role of coercion and power in producing social order. This perspective is derived from the works of Karl Marx, who saw society as fragmented into groups that compete for social and economic resources. Social order is maintained by domination, with power in the hands of those with the greatest political, economic, and social resources. When consensus exists, it is attributable to people being united around common interests, often in opposition to other groups. Marx theorized that the work of producing consensus was done in the

"superstructure" of society--which is composed of social institutions, political structures, and culture--and what it produced consensus for was the "base," the economic relations of production. Following on the heels of Marx, Italian scholar and activist Antonio Gramsci argued that consensus to rule is achieved in large part through cultural hegemony, which refers to the dominant group's ability to attain consent to their rule through ideas, norms, values, and beliefs.

A) Conflict theory, as established by Marx and taken forward by Gramsci, highlights how coercion and power are used by the powerful and dominant groups of society to establish social order.

B) Conflict theory, a theory with major derivations of Marx and Gramsci, goes on to establish the rules for establishment of social order and how power and force are used to structure society.

C) Conflict theory, in part driven by the works of Marx and Gramsci, explores the superstructures of society and highlights how those in power take control of social structures and effectively run the world.

D) Conflict theory, using works of scholars such as Marx and Gramsci, highlights how force and common interests brings together powerful elements in societies, which in turn use their dominion to produce social order.

28. Echolocating bats emit sounds in patterns characteristic of each species – that contain both frequency - modulated (FM) and constant-frequency(CF) signals. The broadband FM signals and the narrow band CF signals travel out to a target, reflect from it, and return to the hunting bat. In this process of transmission, and reflection, the sounds are changed, and the changes in the echoes enable the bat to perceive features of the target. The FM signals report information about target characteristics that modify the timing and the spectrum, of echoes – for example, the target's size, shape, texture, surface structure, and direction in space. Because of their narrow bandwidth, CF signals portray only the target's presence and, in the case of some bat species, its motion relative to the bat's. Responding to changes in the CF echo's frequency, bats of some species correct in flight for the direction and velocity of their moving prey.

Which of the following best summarises the passage?

A) CF echoes enable the bat to discriminate the size of its target, the features of the target and the direction in which the target is moving

B) The configuration of the target is reported to the echolocating bat by changes in the delay between transmission and reflection of the CF signals

C) Bats emit and receive two radio signals, CF and FM, which jointly help bats hunt by determining the characteristics and presence of the target.

D) Information from CF echoes differs from that provided by FM echoes in bats in that only CF echoes alert the bat to moving targets

DIRECTIONS *for the question:* *Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.*

29. 1. The most notable distinction between living and inanimate things is that the former maintain themselves by renewal.

2. A stone when struck resists and if its resistance is greater than the force of the blow struck, it remains outwardly unchanged; otherwise, it is shattered into smaller bits.

3. Never does the stone attempt to react in such a way that it may maintain itself against the blow

4. As long as it endures, it struggles to use surrounding energies in its own behalf.

5. While the living thing may easily be crushed by superior force, it none the less tries to turn the energies which act upon it into means of its own further existence and if it cannot do so, it does not just split into smaller pieces (at least in the higher forms of life), but loses its identity as a living thing.

DIRECTIONS ***for the question:*** *The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.*

30. 1. The majority of those who reject human laws and proclaim their liberty and their decision to "live their own life" do so only in obedience to the most ordinary vital movements which they disguise and

try to justify, if not to their own eyes, at least to the eyes of others.

2. The child can be taught, as he grows up, the relativity of all moral and social laws so that he may find in himself a higher and truer law.

3. To give a moral law to a child is evidently not an ideal thing; but it is very difficult to do without it.

4. But here one must proceed with circumspection and insist on the difficulty of discovering that true law.

5. They give a kick to morality, simply because it is a hindrance to the satisfaction of their instincts.

DIRECTIONS *for the question:* *The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.*

31. 1. If this difference between aspiration and emotion, between the true light and the perturbations produced in the individual by that light, be kept in mind, and the closer consonance of philosophy with aspiration, the relation of

Theosophy to Mysticism can be more clearly apprehended.

2. Aspiration differs widely from emotion and yet is equally akin to devotion, and when once centred in the soul is less liable to transitions and oscillations and is nearer related to philosophy.

3. It is only through the establishment of a perfect equilibrium between faith and reason that the Divine Life and the Divine Wisdom can become manifest in man; Faith without reason becomes fanaticism; reason divorced from faith becomes sordid materialism, and while prating of order and law begets anarchy.

4. Another point should also be held clearly in view, viz.: the philosophical relation between Faith and Reason; between the existence, immutability, and beneficence of the Divine Life, and the orderly sequence of its manifestation, and apprehension by the mind of man.

5. Meditation or contemplation may coexist with either the emotional or aspirational nature, and both mystic and theosophist recognize the Divine Unity and aim at the union of the human with the divine.

DIRECTIONS *for the question:* *The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.*

32. 1. Humans' curiosity about other animals, and the seeming impossibility of knowing what it is like in their minds, if they have them, has persisted for the whole history of our species.

2. Animist spirituality, the first human philosophy, posits open channels of communication between predator and prey.

3. Yet many societies display a parallel tendency to brand animals as lesser beings, or even automatons, locked into the lower rungs of a great chain of being in which humans are at the apex.

4. Medieval Europeans made animals stand trial for crimes and misdemeanours, but did not grant the animals "souls" or "access to heaven" and even to this day, we worry about our dogs getting bored while we are at work, but think nothing of feeding them the exact same food every day of their lives.

5. This ambivalence points to our own uncertainty and fear when confronted with the possibility of minds unlike our own

DIRECTIONS *for the question:* *The five sentences (labelled 1,2,3,4, and 5) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of five numbers as your answer.*

33. 1. But there is no apparent means to climb it, only a thin piece of thread hanging over the top and coming down both sides.

2. Then he will tie the end of the string to a strong rope and pull the rope over.

3. A clever person will tie a thicker string onto one end of the thread, walk over to the other side of the wall, then pull on the thread bringing the string to the other side.

4. Suppose there is a towering wall from the top of which one can see vast distances.

5. When the rope has reached the bottom of one side and is secured on the other side, the wall can be easily scaled.

DIRECTIONS ***for the question:*** *Five sentences related to a topic are given below. Four of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.*

34. 1. I think we should be a bit more willing, perhaps, to look at the beautiful sight of the sunlight bursting out from behind the clouds and go, "Wait a minute, that's two cats dancing the salsa!"

2. There are two methods of naming clouds in their respective layers of the atmosphere; Latin and common

3. Aristophanes, the ancient Greek playwright, described the clouds as the patron godesses of idle fellows two and a half thousand years ago, and you can see what he means.

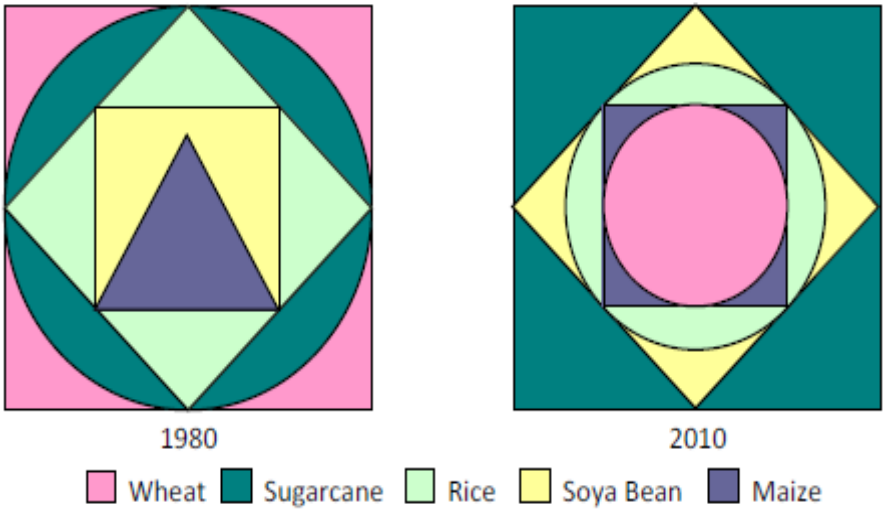
4. I think we should perhaps do a bit more of it.

5. It's just that these days, we adults seem reluctant to allow ourselves the indulgence of just allowing our imaginations to drift along in the breeze, and I think that's a pity.

Section - II: DI & Reasoning

DIRECTIONS ***for questions 35 - 38:*** *Go through the following graph/information and answer the question that follows.*

The total production of Wheat, Sugarcane, Rice, Soya Bean and Maize in 1980 was 324 million tonnes and in 2010 was 1024 million tonnes. The diagrams below show the percent share of each of these five crops in total production in the respective years. The outermost square in each diagram has an area of 100 and all figures drawn are regular.



35. If the five crops were ranked according to their respective shares in the total production, for how many crops has the rank changed from 1980 to 2010?

A) 5 B) 3 C) 4 D) 2

36. For how many crops was the production in 2010 greater than that in 1980?

A) 5 B) 3 C) 4 D) 1

37. In 2010, the production of Sugarcane was approximately what percent of that of Wheat?

A) 250% B) 450% C) 150% D) 320%

38. For how many crops was the production in 2010 more than twice the production in 1980?

A) 3 B) 5 C) 1 D) 2

DIRECTIONS ***for questions 39 - 42:*** *Read the information given below and answer the question that follows.*

The Medical Association conducted a research on the nutrient retention and utilization in the people. The research indicates that out of a total body weight gain in a week for a particular person, the contribution of fats is 12%, proteins contribute 6% and minerals contribute 2% to body weight gain. Based on this, a quick diet plan was

created, the result of which was the Diet Chart. It had all the protein, mineral and fat requirement of the body for a week. (Exactly 70% of body weight gain was due to carbohydrates but it wasn't included in the making of the Diet Chart)

For the next week, the research was continued; except for the change that Diet Chart was introduced in the diet plan of the patients. The five patients (M, N, O, P and R) on which the new study was conducted now show the follow result:

"P has the highest body weight gain. N gained 15000 units of body weight more than M did, who scored least. The contribution of minerals in the body weight gain of O was second highest. The contribution of fats to body weight gains of the 5 patients were 3000, 4800, 7200, 4200 and 6000 units (in some order)."

39. What was the contribution of fats to body weight growth in R?

A) 4800 units. B) 7200 units

C) 4200 units D) 6000 units

40. How many percent more did O gain over N (approx) in the Minerals contribution in total body weight gain?

A) 37.5% B) 20% C) 25% D) 40%

41. What was the total contribution of Diet Chart to the body weight growth of the five patients?

A) 42000 units. B) 21000 units

C) 70000 units D) 50760 units

42. If the remaining body weight gain was from a combination of elements like roughage, vitamins, acids, etc collectively referred to as "others" then what was the contribution of this segment to the total body weight growth?

A) 19330 units B) 18440 units

C) 21000 units D) 31000 units

DIRECTIONS ***for questions 43 - 46:*** *Study the following information carefully and answer the given question.*

The following table gives the details of the students in all the classes of The Junior Smart wonder School. Students join the school only in class I and do not leave until they pass out of class VI. The students who pass the annual exams in any year are promoted to the next

higher class in the next year, while the students who fail have to study in the same class the next year also. No student fails in the same class more than once and the school had a 100% pass percentage in class VI in all the years.

Year / Class	1990	1991	1992
I	112	114	124
II	86	104	106
III	112	100	112
IV	110	104	100
V	96	102	96
VI	80	90	84

43. How many students in the school failed in the annual exams in the year 1990?

44. What is the difference in the number of students who joined the school in the year 1991 and those who joined the school in the year 1992?

45. In how many of the given classes was the number of students who failed in that class in 1991, more than the corresponding value in 1990?

46. How many students in the school failed in the annual exams in the year 1991?

DIRECTIONS ***for questions 47 - 50:*** *Read the information given below and answer the question that follows.*

A certain code changes in accordance with two rules. C_0 : Every letter at the odd position in the word is written as the alphabetically next letter and every letter at the even position in the word is written as the alphabetically previous letter. The order of the letters is then reversed. e.g., ZOOM is firstly written as ANPL, then finally becomes LPNA after reversing the order of the letters.

For n = 1, 2, 3, ...,

C_n : Each letter is written as the alphabetically n^{th} letter after it.

e.g., with C_3, ZOOM is coded as CRRP.

47. C_0, C_3, C_0 and C_2 are applied to a word in that order so that it is coded as KJJGQJ. What was the original word?

A) FEEBLE B) KETTLE

C) METTLE D) LITTLE

48. Which of the following is the number of times that C_0 should be applied to a word repeatedly so that the original word appears again?

A) 13 B) 26

C) 52 D) Insufficient data

49. Which of the following is the number of times that C_n should be applied to a word repeatedly so that the original word appears again?

A) 16 B) 26

C) 52 D) Insufficient data

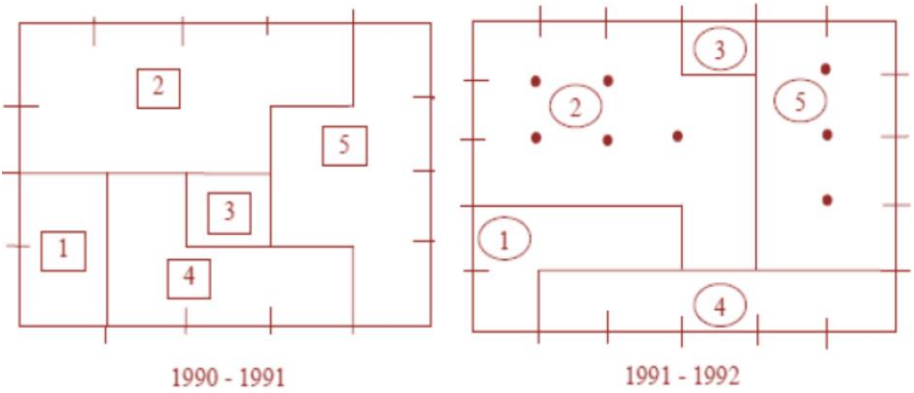
50. What will RHYTHM be coded as when C_2, C_0, C_4, C_0 and C_3 are applied?

A) AQHCQV B) COJAST

C) TSAJOC D) VQCHQA

DIRECTIONS ***for questions 51 - 54:*** *Go through the following graph/information and answer the question that follows.*

A rectangular area of 60 acres is divided into 5 parts (i.e. 1,2,3,4 and 5) to grow 5 types of crops- P, Q , R, S and T respectively. The configuration of crops grown in the farm for the two years period is shown below.



1990 - 1991 1991 - 1992

Crop	No. of Kgs produced per acre in 1990-1991	Price per kg in 1990-1991 (Rs.)
P	15	8
Q	18	7.5
R	20	6
S	12	11
T	10	14

Between 1990-1991 and 1991-1992 prices of all crops rise by 10%. Production of P, R and T decrease by 20% while that of Q and S increase by 10%. Value coefficient of crop is defined as value-wise yield of crops produced per acre.

51. How many kgs per acre can be produced on an average in 1991-1992?

A) 14.39kg B) 13.52kg

C) 17.32kg D) 18.62kg

52. What was the total yield (value-wise) during 1990-1991 ?

A) Rs. 7361 B) Rs. 8019 C) Rs. 6531 D) Rs. 9832

53. Which crop has the highest value coefficient during 1990-1991 ?

A) Q B) S

C) T D) None of these

54. To maximise the value- wise yield during 1991-1992, how many areas of crops should have been swapped among themselves ?

A) 0 B) 2 C) 4 D) CBD

DIRECTIONS ***for questions 55 - 58:*** *Read the information given below and answer the question that follows.*

In preparation for Valentine's Day, the Richie's Gallery has stocked on seven different soft toys – tortoise, doll, tiger, teddy bear, duck, elephant and dog – each available in four colours – green, yellow, pink and blue. Unfortunately, the store manager will be able to display only five of the seven toys in the store window. In order to attract customers to the store, the manager ensures that the toys displayed in the window are all different creatures and conform to the following specifications:

- A pink teddy bear must be displayed in the window.
- A dog must be displayed in the window only if the elephant is not.
- A tortoise can be displayed in the window only if it is green.
- Exactly two blue toys must be displayed in the window.
- The tiger is displayed in the window only if it is yellow.
- If the doll and the elephant are both displayed in the window, at least one of them must not be blue.

55. Which of the following soft toys cannot be displayed in the window if the duck is also not displayed in the window? (write the answer option)

1. a green tortoise
2. a blue dog
3. a blue elephant
4. a yellow tiger

56. Which of the following pairs of soft toys could be displayed in the window together? (write the answer option)

1. a green doll and a blue dog
2. a green doll and a yellow duck
3. a yellow duck and a green elephant
4. a yellow duck and a pink dog

57. If the tortoise and the elephant are both displayed in the window, then which of the following soft toys must also be displayed in the window? (write the answer option)

1. a blue duck
2. a blue elephant
3. a yellow doll
4. a yellow tiger

58. If two green soft toys are displayed in the window, then which of the following could be true?

1. Exactly one yellow soft toy is displayed in the window
2. A green duck is displayed in the window
3. Neither the doll nor the dog is displayed in the window
4. Neither the duck nor the dog is displayed in the window

DIRECTIONS ***for questions 59 - 60:*** *Study the following information carefully and answer the given question.*

Each of the 60 rooms in a hotel is occupied on Wednesday, Thursday, Friday and Saturday. One or more of three newspapers, the Daily Overview, the Daily News and the Daily Post, are delivered to each of the occupants of these rooms on each of these four days. The total number of newspapers delivered on Wednesday, Thursday, Friday and Saturday are 68, 76, 90 and 113 respectively. The number of copies of the Daily Overview delivered is the same on all four days. At least 20 copies of the Daily News were delivered on Wednesday. The same number of copies of the Daily News and the Daily Post were delivered on Wednesday.

The number of copies of the Daily News delivered on Wednesday through Saturday form a reducing arithmetic progression. The number of copies of the Daily Post delivered on Wednesday through Saturday increases by 50% as compared to the number of copies of the Daily Post delivered the day before.

59. How many copies of the Daily Overview were delivered each day?

A) 20 B) 24 C) 25 D) 28

60. How many copies of the Daily News were delivered on Saturday?

A) 8 B) 12 C) 20 D) 24

61. How many copies of the Daily Post were delivered on Saturday?

A) 24 B) 54 C) 64 D) 81

62. Over the four day period, how many more copies of the Daily Post were delivered than copies of the Daily News?

A) 8 B) 43 C) 83 D) 123

DIRECTIONS *for the question:* *Read the information given below and answer the question that follows.*

In a zoo, there are 5 types of animals – herbivores, carnivores, omnivores, frugivores and sanguinivores. It is also known that –

(a) Exactly $1/6^{th}$ of herbivores, $1/3^{rd}$ of carnivores, $1/5^{th}$ of omnivores, $1/10^{th}$ of frugivores and $1/12^{th}$ of sanguinivores are in the East Wing.

(b) Exactly $1/9^{th}$ of herbivores, $1/15^{th}$ of carnivores, $1/7^{th}$ of omnivores, $1/3^{rd}$ of frugivores, $1/6^{th}$ of sanguinivores are in the West Wing.

(c) Exactly $1/2^{th}$ of herbivores, $1/12^{th}$ of carnivores, $1/11^{th}$ of omnivores, $1/5^{th}$ of frugivores, $1/7^{th}$ of sanguinivores are in the South Wing.

(d) Exactly $1/5^{th}$ of herbivores, $1/10^{th}$ of carnivores, $1/3^{rd}$ of omnivores, $1/11^{th}$ of frugivores, $1/5^{th}$ of sanguinivores are in the North Wing.

(e) All the rest are in the Central Wing.

It is also known that at a time the zoo can support a maximum of 2290 animals and at all times, there are animals from each category in the zoo.

63. Which of the following cannot be the population of east wing?

A) 334 B) 349 C) 354 D) 350

64. Among the following, what is the most populated wing's maximum possible polpulation?

A) 635 B) 634 C) 636 D) 637

65. Which is the least populated wing?

A) North Wing B) South Wing

C) East Wing D) Cannot be determined

66. Which of the following can be the population of the Central Wing?

A) 606 B) 607 C) 608 D) 609

Section - III: Quantitative Ability

67. How many 3-digit positive integers are there, such that the average of two of the digits amongst them equals the third digit?

A) 42 B) 75 C) 70 D) 121

68. Δ ABC is a right angled triangle of area 20. If the legs of the right angle are x and y and the hypotenuse is 10, what is the value of $(x + y)^2$?

69. A beaker contained V litres of a mixture of milk and water with milk and water ratio of 3 : 2. The volume of liquid in the mixture was increased by 60% by adding water. Next 38.4 litres of the solution in the beaker was replaced by water. If the final ratio of milk and water in the beaker is 3 : 7, then find the value of V.

70. ABCD is a square. E, F, G and H are the mid-points of AB, BC, CD and GE respectively. Find the ratio of the area of AEFGDHA to the remaining area of the square ABCD.

A) 2 : 1 B) 1 : 2 C) 3 : 1 D) 1 : 1

71. If $-5 < x < 5$, what is the greatest value of $(13 - x)^7 \times (7 + x)^3$?

A) $3^{10} \times 2^{14}$ B) $13^3 \times 7^7 \times 2^{10}$

C) $7^7 \times 2^{16}$ D) $3^3 \times 7^7 \times 2^{10}$

72. A solid metal sphere is melted and smaller spheres of equal radii are formed. 10% of the volume of the sphere is lost in the process. The smaller spheres have a radius which is $1/9^{th}$ the larger sphere. If 10 litres of paint were needed to paint the larger sphere, how many litres are needed to paint all the smaller spheres?

A) 90 B) 81 C) 9 D) 810

73. Find the area (in sq.units) of the region bounded by the graphs of $x^2 = 4$ and $y^2 = 4$ but lying outside the region bounded by the graphs of $y = |x| - 2$ and $y = 2-|x|$

A) 4 B) 16

C) 8 D) None of these

74. $\text{Log}_4(x - 1) = \text{Log}_2(x - 3)$

Find the number of solutions?

75. Consider $x^2 - (k - 1)bx + c = 0$. If the roots of the equation are real and positive then,

A) $0 < b < c < k$ B) $0 < b \leq c < k$

C) $0 < b \leq c \leq k$ D) None of these

76. R's income is 40% less than S's income, M's income is 20% less than R's income, and Q's income is 40% less than R's income. If S gave 60% of his income to Q and 40% of his income to M, then M's new income would be what fraction of Q's new income?

A) 13/17 B) 13/19 C) 11/12 D) 12/19

77. Consider positive integers x and y such that the difference between $x^2 + y$ and $x + y^2$ is a prime number. How many different values can the ordered pair (x, y) take?

A) 1 B) 2

C) 5 D) infinitely many

78. In a game, Jack wins a rupee for a six and loses a rupee for any other number when a fair die is thrown. He decided to throw a die thrice but to quit as and when he gets a six. Find the expected value of the amount Jack wins / loses.

A) $\frac{2}{27}$ B) $\frac{5}{72}$ C) $\frac{11}{54}$ D) $\frac{-91}{54}$

79. If x and y are integers such that $|x| + 2|y| = 100$, how many different values can the ordered pair (x, y) take?

80. How many five lettered words which starts with 'S', that can be formed using the letters of the word RATIOS ? Repetition is not allowed.

A) 5 B) 5^4

C) 5! D) None of these

81. What is the last digit of $1! + 2! + 3! + \ldots + 100!$?

82. A and B started a business by investing Rs. 3,50,000 and Rs. 1,40,000 respectively. A gets 20% of the yearly profit for managing the business. There after the profit is divided in the ratio of the capital. If A receives totally Rs. 38,000 more than B at the end of a year, then the profit is

A) Rs. 28,000 B) Rs. 2,80,000

C) Rs. 1,05,000 D) Rs. 70,000

83. If 1 + 1/ 2 +1/3 +1/4 + 1/5 +1/6 +1/7 + 1/8 +1/9……..1/29 = N/ 29!

Find the remainder when N is divided by 19.

A) 7 B) 10 C) 9 D) 8

84. The ratio of the ages of a husband and his wife when they got married was 6 : 5. 4 years and 6 years after their marriage they had their 1^{st} and 2^{nd} children. The sum of the present ages of the husband and wife is 6.4 times the sum of the present ages of their children. The average age of the family at present is 18.5 years. Find the ratio of the ages of the husband and wife when their second child was born.

A) 7 : 6 B) 15 : 13

C) 6 : 7 D) None of these

85. By which of the following numbers, N=0.abccbaabccba……must be multiplied so that the product is an integer?

A) 990909 B) 90909 C) 9990 D) 99099

86. After a tiring day at her office, Arushri decided to soak in her tub. She turned on the *Hot* water tap to 75% and the *Cold* water tap to 25% of their capacities and returned 5 minutes before the tub should have been full. She then turned off the *Hot* tap and fully opened the *Cold* tap. If both taps have equal capacities, what is the volume of the tub (in litres)?

A) 600 B) 800

C) 1050 D) Cannot be determined

87. Find the number of pairs of positive integers (x, y) such that $x^6 = y^2 + 127$.

A) 0 B) 1 C) 2 D) 3

88. Two biscuits each 50 gm made up of an alloy of gold and silver costs Rs 73962 and 86338 respectively. If the price of 10 gm pure gold is Rs 31500, find the price of 1 kg silver, if the quantities of gold and silver are interchanged for the second

biscuit and also find the weight of gold in the second biscuit?

A) 56000, 23 gm B) 55550, 30 gm

C) 56000, 27 gm D) 55550, 20 gm

89. Santosh was the guest speaker at a seminar on "*Careers After Class XII*" at the Cummins College of Engineering. He left his office and travelled at a certain speed so that he would reach the college on time. After travelling half the distance, he realised that he had left his laptop in office. He turned back immediately and increased his speed by 50% and reached his office. As compared to his original speed, by what percent should Santosh increase his speed so that he still reaches the college on time?

90. In a class there are students belonging to three different streams A, B and C. On the day the movie *Dil Chahta Hai* was released exactly 76% of A, 25% of B and 58% of C were absent. What is the minimum possible number of students who were present in the class?

91. Three friends Arun, Tarun and Varun run a race of 100 m. All of them run at constant speeds. Tarun beats Varun by 20 m and Varun beats Arun by 20 m. How many meters does Tarun beats Arun?

92. A lender takes advantage of difficult situation of poor people and charges 40% interest. However he never gets caught because he gives 25% of his total capital i.e initial capital and profit as bribe. If in the beginning of 4th year, he has a capital of Rs 50000 to invest, how much bribe did he gave at the end of second year?

A) 15880 B) 15500 C) 16880 D) 16280

93. The greatest integer function, [x], is defined as the greatest integer not exceeding x. For n > 7, which of the following will always divide ${}^{n}C_{7} - \left[\frac{n}{7}\right]$?

1. 5 2. 7 3. 10 4. 13

94. A certain sum of money becomes 625/256 times of itself in 1 year. Find the rate of interest per annum if interest is compounded quarterly?

A) 5 B) 25 C) 50 D) 100

95. Find the minimum value of $\frac{a^2-a+1}{a^2+a+1}$, given a is real.

A) 1/3 B) 1 C) 0 D) 1/2

96. Raman Pasha purchased a bicycle for Rs.7000. Each year it depreciated by $1/7^{th}$ of its value. He sold the bicycle after four years at a profit of 20%. What was the approximate selling price of the bicycle?

A) 4500 B) 3500 C) 5400 D) 4300

97. What is the sum of all roots of the equation $|x+4|^2 - 10|x+4|=24$?

A) -8 B) 8 C) 16 D) -16

98. In a shop, the marked price of an article is Rs. 4000. The shopkeeper gives some discount on that article and earns profit of Rs. 550. Find the percentage discount on that article, if its cost price is Rs. 2250.

99. A magic ball is dropped from the terrace of a building and bounced 4 times, reaching three-fourths of its previous height with each bounce. After the fourth bounce, the ball reached a height of 25 cm. How high is the terrace from the ground?

A) < 0.8 m

B) Between 80 cm and 100 cm

C) Between 1 m and 1.5 m

D) > 1500 mm

100. A series in which any term is equal to the sum of the preceding two terms is called a Fibonacci series. Usually the first two terms are given initially and together they determine the entire series. Now, it is known that the difference of the squares of the ninth and the eighth terms of a Fibonacci series is 840. What is the 12^{th} term of that series?

A) 157 B) 142

C) 143 D) Data inadequate

Answer Key & Explanation

Q. No	Key	Explanation
1.	C	The passage states that children are wired to imitate. The author states that child-protection agencies remind children to be role models. Hence, the author would definitely agree with the statement that don't scream if you don't want your children to scream too.
2.	D	In options A, B and C, there is support for the children being "wired" to imitate, i.e. they have an inbuilt tendency to copy. Option D speaks about learning from experience.
3.	D	The first three options prove that Andrew Meltzoff and Keith Moore's claim that newborn babies can copy a range of facial expressions is incorrect. Option D which talks about genes is spoken about by the author of the article and not Andrew Meltzoff and Keith Moore.
4.	B	It shouldn't be necessary to feel the facial movement while seeing the result, because we could instinctively work out what each felt movement looks like when viewed from

		the outside. The passage states that a mirror experience is when you are seeing and doing something at the same time as stated in the penultimate paragraph. The author ends the passage with this statement implying that if we were born with a piece of cognitive kit that connects 'felt but unseen movements of the self with the seen but unfelt movements of the other' than this intuition will make a mirror experience unnecessary.
5.	C	Refer to the last paragraph - Centralisation is mainly an idea of order; decentralisation, one of freedom. The man of order is typically the accountant and, generally, the administrator: while the man of creative freedom is the entrepreneur. Order requires intelligence and is conducive to efficiency; while freedom calls for. and opens the door to, intuition and leads to innovation. Note that bean counter means a Finance guy.
6.	C	The passage is arguing that there is always a struggle between order and creativity, yet both are important. This is what is said by option C.

		A – is biased towards creativity. B – is just a statement of fact about large organizations; does not contain the author's opinion. D – is a specific warning about the dangers of 'excessive' order in the case of big organizations.
7.	A	A paradox is a statement which seems at first look to be combining opposites – counterintuitive, but on a closer scrutiny – contains some truth in it. Big and Small are opposites. But searching for smallness inside bigness is not all that futile an exercise – as discussed by the passage. B – A hyberbole is an exaggeration. C – An Irony is when you expect something, and something totally different happens D – A metaphor is an implied comparison.
8.	C	Refer paragraph 4: Yet orderliness as such, is static and lifeless; so there must also be plenty of elbow-room and scope for breaking through the established order to do the thing never done before, never anticipated by the guardians of orderliness, the new, unpredicted and unpredictable outcome of a man's creative idea. Therefore any organisation has to strive continuously

		for the orderliness of order and the disorderliness of creative freedom. And the specific danger inherent in large scale organisation is that its natural bias and tendency favour order, at the expense of creative freedom. Option A is wrong as mentioned - The man of order is typically the accountant and, generally, the administrator: while the man of creative freedom is the entrepreneur." Similarly Option B is wrong. Option D does not find any support in the passage.
9.	C	Refer to paragraph 1: Nobody really likes large-scale organisation: nobody likes to take orders from a superior who takes orders from a superior who takes orders.... Even if the rules devised by bureaucracy are outstandingly humane, nobody likes to be ruled by rules, that is to say, by people whose answer to every complaint is: 'I did not make the rules: I am merely applying them.' The focus on order creates problem. Becoming an administrator is not an issue but the focus on order is an issue. Option D is extreme.
10.	A	Option A. Counting precedes complex

		economic organisation and phonetic writing precedes political functions. The end of the 2nd paragraph clearly states that " Early states functioned without ..... state by 2,000 years.
11.	D	Graphic Invention, Symbolic Invention, Linguistic Invention, Functional Invention Refer the following lines: 'First there's the graphic invention: the notion of making a durable mark on a surface. Humans have been doing this for at least 100,000 years – the bureaucracy didn't give humans that power. Then the symbolic invention: let's make this mark different from all other marks and assign it a meaning that we can all agree on. Then there's the linguistic one: let's realise that a sound, a syllable and a word are all things in the world that can be assigned a graphic symbol. This invention depends on the previous ones, and itself is made of innovations, realisations, solutions and hacks. Then comes the functional invention: let's use this set of symbols to write a list of captives' names.'
12.	B	Option B. Writing is actually more like gunpowder than like nuclear weapons. The end paragraph states that the author

		likes to think of writing as a layered invention. Writing sprang forth as fully phonographic but evolved to become that – there's usually some kind of proto-writing, and some kind of proto-proto-writing.
13.	D	Option D. a vertical line with a horizontal line at the top depicting alphabet T It is an example of symbolic invention. All the others are functional inventions.
14.	C	The last sentence of the passage states that "Eventually, bound writing can become unbound in the interests of the state, whether to further royal politics, run an economy, fund the elite – or all three." A – Refer to the sentence above B- Archaeologists don't know whether there was also administrative, propagandistic or literary writing happening at the same time. D - writing on other materials, such as palm leaf, were either lost to decay or destroyed by the Spanish conquerors Options A, B and D are untrue except C as per the passage.
15.	A	The author suggests that hierarchies become problematic when they become generalised, so that people who have power, authority or respect in one domain command it in others too. Hence

		option A B - There is no mention of hierarchies moving from business to personal. C – It is the other way round. D – the situation here is not about a family.
16.	D	Refer 3rd paragraph, "Confucian hierarchies are marked by reciprocity and mutual concern", not all hierarchies as suggested by option D.
17.	D	Barring the last case, where we would prefer an energetic young housemaid over a middle-aged housemaid as the work is physically demanding, all other cases support that nobody wants hierarchy to disappear.
18.	C	The author states that "Hierarchies are often pernicious not because they distinguish between people, but because they perpetuate these distinctions even when they are no longer merited or serve a good purpose." Nepotism hasn't been talked about in passage.
19.	C	The passage states that there are forms of hierarchy that involve power with, not over and that in a hierarchy there must be mutual concern. Hence the author will not agree with using hierarchy to dominate or dictate, as said in option C.

		Option A can be inferred from paragraph 3. Option B can be inferred from last part of parafraph 1. Option D although cannot be inferred directly from the passage but it can't be marked as incorrect, like Option C.
20.	A	The passage delineates **Mr Gursky's early life and works**. And the author presents a critical review of the same making option A, a better answer. B is incorrect as focus isn't Gursky's photographic vision. C is a narrow choice as passage goes into his life too. D is incorrect as a brouchure isn't expected to have lines like "This week a retrospective of the past four decades of Mr Gursky's work opened at the Hayward Gallery in London, a brutalist building perched unapologetically on the banks of the Thames." from paragraph 3.
21.	D	From the options given only D- Only II is possible IV is incorrect as there's nothing in the passage to indicate it's the first ever amalgamantion "This week a retrospective of the past four decades of Mr Gursky's work opened at the Hayward Gallery in London, a brutalist building perched

		unapologetically on the banks of the Thames. It is the first exhibition to be hosted at the gallery since its refurbishment, an extensive project that saw the building closed for nearly two years." First exhibition to be hosted at the gallery since its refurbishment, not the first ever amalgamation III is incorrect as technology plays an important part in his works "These huge images are often stitched together digitally from multiple shots, allowing for improbably high definition."
22.	B	The question has close choices but option B fits best as it captures the main idea behind his works ""“Figuratively speaking what I create is a world without hierarchy,” says Mr Gursky." relates directly to following words in the option "all the pictorial elements representing the whole as each is as important as the other". Option A is incorrect as it isnt symbol of aestheticism(art for art's sake. where beauty of art is focus and art serves no other purpose be - political, philosphical, moral etc). Optiond C and D are narrow as compared to B.

23.	B	Check paragraph 2. **Gursky work focus on minute details.** Also option C is nowhere mentioned. His works look like they document reality as it is, but instead use technical trickery and skill to cram in minute details—more than the human eye could possibly perceive in a single blink.
24.	C	Check para 4 and 5. **Hayward is the name of gallery.** Many of Mr Gursky's photographs fill entire walls of this slick new space. Works like "May Day IV" (2000), of people at a rave, and "Paris, Montparnasse" (1993), of an apartment block, span more than four metres. These huge images are often stitched together digitally from multiple shots, allowing for improbably high definition. And they swamp the viewer. In "99 Cent", his iconic photo of a gleaming convenience store, the viewer's eye flicks between perfectly packed KitKats, Almond Joys and Peppermint Patties, all neatly lined up like the stuff of a neat-freak's dreams.
25.	3	The paragraph is talking about the abstract quality of language and that we are more comfortable with the printed page –

		concrete. Then it talks about that even if written words are unfamiliar the dictionary helps us in that. Hence 2-4-1 is the best sequence and 3 is a misfit 'the alienation' being talked about in 3 doesn't refer to anything in the psg. Also, Alienation meaning - becoming detached, isn't same as unfamiliar
26.	B	Option 2 is the correct answer. In order to identify the correct answer for this question, you need to understand the central gist of the paragraph, which is essentially about one thing: it is not sufficient to for a science to only compose of observation and interpretation; it also needs a systematic process where this information is put across to others. Keeping this in mind, we see that only option 2 covers all the aspects.
27.	D	Option D Option 1 incorrectly quotes Marx and Gramsci as founders of conflict theory. Option 2 is incorrect as there are no rules mentioned in the passage (rules with respect to conflict theory). Option 3 sporadically picks up words from the paragraph but actually does not stick to

		the main idea of the paragraph. Option 4 is the apt choice in this case as it covers all the important aspects of the paragraph.
28.	C	Bats use radio frequency signals to home in on their targets. 1 – It is not CF alone which does all this. 2- Is correct, but only forms part of what the paragraph has to say. 4 – Again it suffers from being incomplete.
29.	4	1-2-3-5 1 introduces the concept and sets the base for the rest of the sentences. 1 is followed by 2 which starts an illustration to examplify 1. 2 is followed by 3. 2-3 link is easily recognizable due to common word 'stone' 5 is in contrast with 3 talking about how living things differ from non living things Option 4 "it struggles to use surrounding energies in its own behalf." If we understand the meaning of stt 4, we will realize that 'it' in stt 4 is referring to a living thing as a non living thing will not struggle.
30.	32415	The paragraph talks about giving a moral law to the child and teaching the child the relativity of moral and social laws. Then it moves on to tell us why people

		reject human laws and proclaim their liberty.
31.	25143	The paragraph talks about aspiration and emotion. The opener will be 2 as it introduces 'aspirations are different from emotions yet similar to 'devotion'.After this 5 will come as it tells what aids aspirational nature' i.e. meditation & contemplation. We can understand that 4 and 3 are talking about the Faith and Reason. Hence 43 should be together.
32.	12345	The paragraph talks about man's curiosity about what animals have in their minds. The order is correct as it is. 1 and 2 are linked as 2 talks about the first human philosophy whilch examplifies human curiosity which has persisted for the whole history of our species. 3 follows 2 as these form a contrasting pair. 2 talks about "open channels of communication between predator and prey." while 3 says "Yet many societies display a parallel tendency to brand animals as lesser beings," 4 gives more examples of how humans considered themselves at apex "made animals stand trial", trials for crimes and misdemeanours in effect humans judging the lower rung beings and "did not grant the

		animals “souls” or “access to heaven”" 4 also talks about "think nothing of feeding them the exact same food every day of their lives." The contradiction in last part of 4th statement is the 'ambivalence' talked about in 5th
33.	41325	4 introduces 4-1 is a contrasting pair. also 'it' in 1 refers to wall in 4 3-2-5 talk about the process
34.	3541	3 introduces and is in contrast with 5 4 continues the thought and 1 gives an example 2 talks about clouds too but doesn't fit in the para
35-38.	Consider the diagram for 1980, where the outermost square has area 100 and side 10. Since the side of this square is the diameter of the circle, we know that the radius of the circle is 5. The area of the circle is 25π = 78.5. So, the percentage area under Wheat (the pink region) is the difference between the area of the square and the area of the circle and is 100 − 78.5= 21.5. Since the diameter of the circle is the diagonal of the 2nd square, we know that the side of the 2nd square is 5$\sqrt{2}$ and its area is 50. So, the percentage area under Sugarcane (the dark green region) is the difference	

between the area of the circle and the area of the 2nd square and is 78.5 — 50 = 28.5.
The 3rd square is formed by joining the mid-points of the 2nd square and so the diagonal of the 3rd square must equal the side of the 2nd square = 5√2.
The side of the 3rd square is therefore 5 and its area is 25.
So, the percentage area under Rice (the light green region) is the difference between the areas of the 2nd and 3rd squares and is 50 — 25 = 25.
The side of the equilateral triangle is the same as the side of the 3rd square and is 5.
The area of the equilateral triangle is 25√3/4= 10.825.
So, the percentage area under Soya Bean (the yellow region) is the difference between the area of the 3rd square and the area of the equilateral triangle and is 25 — 10.825 = 14.175.
The percentage area under Maize (the violet region) is the area of the equilateral triangle and is 10.825.
Consider the diagram for 2010, where the outermost square has area 100 and side 10.
The 2nd square is formed by joining the mid-points of the lg square and so the diagonal of the 2nd square must equal the side of the lg square = 10.
The side of the 2nd square is therefore 5√2 and its area is 50.
So, the percentage area under Sugarcane (the dark

		green region) is the difference between the areas of the 1st and 2nd squares and is 100 - 50 = 50. Since the side of the 2nd square is the diameter of the circle, we know that the radius of the circle is 5/42. The area of the circle is 25π√2 = 39.25. So, the percentage area under Soya Bean (the yellow region) is the difference between the area of the square and the area of the circle and is 50 — 39.25 = 10.75. Since the diameter of the circle is the diagonal of the 3rd square = 542, we know that the side of the 3rd square is 5 and its area is 25. So, the percentage area under Rice (the light green region) is the difference between the area of the circle and the area of the 3rd square and is 39.25 — 25 = 14.25. Since the side of the 3rd square is equal to the diameter of the 2nd circle = 5, we know that the radius of the 2nd circle is 5/2 and its area is 25π/4= 19.625. So, the percentage area under Maize (the violet region) is the difference between the area of the 3rd square and the area of the circle and is 25 — 19.625 = 5.375. The percentage area under Wheat (the pink region) is equal to the area of the 2nd circle and is 19.625.
35.	D	The ranks, from 1 to 5 in 1980 were

		Sugarcane, Rice, Wheat, Soya Bean and Maize respectively and in 2010 were Sugarcane, Wheat, Rice, Soya Bean and Maize respectively. Thus, the ranks for two crops changed from 1980 to 2010.
36.	A	One option is to actually calculate the values for production of the five crops across both the years and then compare. From the given information, we know that the total production in 2010 was more than thrice that in 1980. So, from the point of view of approximation, if we multiply all the percentages in 2010 by 3, we find that all the values will be greater than the corresponding percentages in 1980. Thus, the production for all five crops was greater in 2010 than in 1980.
37.	A	In 2010, the production of Wheat and Sugarcane was 19.625% and 50% of the total production. The required percentage is 50/19.625 ≈ 50/20 = 250%. The best answer is option 1.
38.	A	One option is to actually calculate the values for production of the five crops across both the years and then compare. From the given information, we know that the

		total production in 2010 was more than thrice that in 1980. So, from the point of view of approximation, if we multiply all the percentages in 2010 by 3, we find that the values will be greater than twice the corresponding percentages in 1980 for Wheat, Soya Bean and Sugarcane. Thus, the production for three crops in 2010 was more than twice the production of those crops in 1980.
39-42.	Given the contribution from fats to body weight growth, we can calculate the increase in total weight as: If the fat contribution was 3000 units, then total body weight gain was (3000/12) multiplied by 100, i.e. 25000 units. In this case, Mineral contribution becomes (25000/100 × 2) = 500 units and Protein contribution becomes (25000/100 × 6) = 1500 units. Similarly, the table can be filled up. Note that the others category is 10% (100 – 70 – 12 – 6 – 2) of the Total Weight gained. Total body weight gain of P = 720000/12 = 60,000 units. Total body weight gain of M = 300000/12 = 25,000 units. Total body weight gain of N = 15,000+ 25,000= 40,000 units. Total body weight gain of O = 600000/12 = 50,000 units.	

Total body weight gain of R = 420000/12 = 35,000 units.

Patient	Fats	Proteins	Minerals	Diet Chart Contribution	Carbohydrates	Others	Total Body weight Gain
M	3000	1500	500	5000	17500	2500	25000
N	4800	2400	800	8000	28000	4000	40000
O	6000	3000	1000	10000	35000	5000	50000
P	7200	3600	1200	12000	42000	6000	60000
R	4200	2100	700	7000	24500	3500	35000
Total	25200	12600	4200	42000	147000	21000	210000

39.	C	Hence contribution of fats to body weight growth in R is 4200 units.
40.	C	The absolute gain is (1000 – 800) =200 Hence required %age = 200/800 × 100 =25%
41.	A	Hence the total contribution of Diet Chart to the body weight growth of the five patients is 42000 units.
42.	C	Hence the contribution of "others" segment to the total body weight growth is 21000 units.
43-46.	To solve for number of students passed and failed in 1990 and 1991 we have to move backwards. Taking the case of 1991. As 84 students are passed in class VI, in 1992, they must have passed class V in 1991. But there were 102 students in class V in 1991, So 18 must have failed.	

Now in 1992 in class V there were 96 students, 18 students are those who failed in 1991 but 78 must have passed class IV in 1991. In 1991 there were total 104 students in class IV. Out of this 26 must have failed. Now in 1992 out of 100 students in class IV 26 are failed in 1991 and rest 74 must have passed class III in 1991. So moving in same manner we can make the following table.

Year	1990		1991	
Class	**Pass**	**Fail**	**Pass**	**Fail**
I	96	16	88	26
II	78	8	86	18
III	90	22	74	26
IV	96	14	78	26
V	90	6	84	18
VI	80		90	

43.	66	The number of students who failed in the year 1990 is 16 + 8 + 22 + 14 + 6 = 66
44.	0	Now we can also calculate the new joinees in class I in 1991 and in 1992 but not in 1990. In 1990 there were 112 students out of which 16 failed so these 16 shifted to class I in 1991. But in 1991 there were 114 students, so new joinees must be 114 " 16 = 98. Also in 1991, 26 students failed in class I, so they must have shifted to 1992, but in 1992 there were total of 124 students. So new joinees in 1992 = 124 "

		26 = 98. The number of students who joined class I in both 1991 and 1992 is the same, i.e.98. So the required difference is zero.
45.	5	In each of the classes from I to V, the number of students who failed in 1991 was more than that in 1990.
46.	114	The number of students who failed in the year 1991 is 26 + 18 + 26 + 26 + 18 = 114
47.	A	The question is best solved backwards. Since C_2 is applied last, we know that KJJGQJ has been obtained by replacing the letters in the previous step with letter that are two places ahead. So, the previous step was IHHEOH. This step was obtained by applying C0in which the order of letters is reversed. So, the earlier step must have been HOEHHI, which was obtained by replacing the odd numbered letter by the next letter and the even numbered letter by the previous letter. Continuing backwards in this fashion, each of the previous steps are GPDIGJ, DMAFDG, GDFAMD, FEEBLE. Thus the original word was FEEBLE.
48.	B	Superficially, it seems that the correct answer to this question must be option 4 as we do not know the size of the original word. Let us look at words containing different

		number of letters and rewrite the letters in terms of their positions in the alphabet so that it is easier to establish and understand the trend. Suppose the original word is IF, which can be expressed as (9, 6). We need to determine the number of times that C0 needs to be applied so that we arrive at the original set of values again. These steps are (9, 6), (5, 10), (9, 6). We see that we arrive at the original set (9, 5) after applying C_0 two times. Suppose the original word is SOFT, which can be expressed as (19, 15, 6, 20). We need to determine the number of times that C_0 needs to be applied so that we arrive at the original set of values again. These steps are (19, 15, 6, 20), (19, 7, 14, 20), (19, 15, 6, 20). We see that we arrive at the original set (9, 5) after applying C_0 two times. Suppose the original word is ARE, which can be expressed as (1, 18, 15). We need to determine the number of times that C_0 needs to be applied so that we arrive at the original set of values again. These steps are (1, 18, 15), (6, 17, 2), (3, 16, 7), (8, 15, 4), (5, 14, 9), (10, 13, 6), (7, 12, 11), (12, 11, 8), (9, 10, 13), (14, 9, 10), (11, 8, 15), (16, 7, 12), (13, 6, 17), (18, 5, 14), (15, 4, 19), (20, 3, 16), (17, 2, 21), (22, 1, 18), (19, 26,

		23), (24, 25, 20), (21, 24, 25), (26, 23, 22), (23, 22, 1), (2, 21, 24), (25, 20, 3), (4, 19, 26), (1, 18, 5). We see that we arrive at the original set (1, 18, 15) after applying C_0 26 times. Suppose the original word is SMILE, which can be expressed as (19, 13, 9, 12, 5). We need to determine the number of times that C_0 needs to be applied so that we arrive at the original set of values again. These steps are (19, 13, 9, 12, 5), (6, 11, 10, 12, 20), (21, 11, 11, 10, 7), (8, 9, 12, 10, 22), (23, 9, 13, 8, 9), 910, 7, 14, 8, 24), (25, 7, 15, 6, 11), (12, 5, 16, 6, 26), (1, 5, 17, 4, 13), (14, 3, 18, 4, 2), (3, 3, 19, 2, 15), (16, 1, 20, 2, 4), (5, 1, 21, 26, 17), (18, 25, 22, 26, 6), (7, 25, 23, 24, 19), (20, 23, 24, 24, 8), (9, 23, 25, 22, 21), (22, 21, 26, 22, 10), (11, 21, 1, 20, 23), (24, 19, 2, 20, 12), (13, 19, 3, 18, 25), (26, 17, 4, 18, 14), (15, 17, 5, 16, 1), (2, 15, 6, 16, 16), (17, 15, 7, 14, 3), (4, 13, 8, 14, 18(, (19, 13, 9, 12, 5). We see that we arrive at the original set (1, 18, 15) after applying C0 26 times. Note that we do not need to put down all values, We can identify the trend and figure out the number of steps required. Thus, we see that if C_0 is applied 26 times to the original word, we arrive at the same word, no matter what the number of letters is.
49.	B	In this example, the number of letters in the

		word does not matter as the order of letters is not reversed. We only need determine the number of times C_n is applied to arrive at the starting sequence. However, we need to find a value which will work irrespective of the value of n. For simplicity sake, let us assume that the word starts with and A, which is denoted by 1 in the alphabet. If we apply C_1, then obviously we will arrive at A again after 26 iterations. If we apply C_2, then the sequence is 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 1. So, C_2 is applied 13 times so that the original word appears again. If we apply C_3, then the sequence is 1, 4, 7, 10, 13, 16, 19, 22, 25, 2, 5, 8, 11, 14, 17, 20, 23, 26, 3, 6, 9, 12, 15, 18, 21, 24, 1. So, C_3 is applied 26 times so that the original word appears again. If we apply C_4, then the sequence is 1, 5, 9, 13, 17, 21, 25, 3, 7, 11, 15, 19, 23, 1. So, C4 is applied 13 times so that the original word appears again. We observe that when n is odd, C_n is applied 26 times so that the original word appears again and when n is even, Cn is applied 13 times so that the original word appears again. Thus, even though we do not know the value of n, we are certain that the original word will

<table>
<tr><td></td><td></td><td>appear again if C_n is applied 26 times.</td></tr>
<tr><td>50.</td><td>A</td><td>The order of operations yields the following sequence – RHYTHM, TJAVJO, UIBUKN, NKUBIU, ROYFMY, SNZENX, XNEZNS, AQHCQV. Hence option 1 is the correct answer.</td></tr>
<tr><td>51.</td><td>A</td><td>
<table>
<tr><th>Parts</th><th>Area under cultivation during 1990-1991(acres)</th><th>Area under cultivation during 1991-1992 (acres)</th></tr>
<tr><td>1 = P</td><td>$2\times\frac{60}{20}=6$</td><td>$4\times\frac{60}{30}=8$</td></tr>
<tr><td>2 = Q</td><td>7 × 3 = 21</td><td>12 × 2 = 24</td></tr>
<tr><td>3 = R</td><td>1 × 3 = 3</td><td>1 × 2 = 2</td></tr>
<tr><td>4 = S</td><td>4 × 3 *= 12</td><td>5 × 2 = 10</td></tr>
<tr><td>5 = T</td><td>6 × 3 = 18</td><td>8 × 2 = 16</td></tr>
</table>
<table>
<tr><th colspan="3">Number of Kgs produced per acre</th></tr>
<tr><th>Crop</th><th>During 1990-1991</th><th>During 1991-1992</th></tr>
<tr><td>P</td><td>15</td><td>12</td></tr>
<tr><td>Q</td><td>18</td><td>19.8</td></tr>
<tr><td>R</td><td>20</td><td>16</td></tr>
<tr><td>S</td><td>12</td><td>13.2</td></tr>
<tr><td>T</td><td>10</td><td>8</td></tr>
</table>
Total yield during 1991-1992 = 8 × 12 + 19.8 × 24 + 2 × 16 + 10 × 13.2 + 16 × 8 = 863.2 kg.
</td></tr>
</table>

<table>
<tr><td></td><td></td><td>∴Yield per acre = $\frac{863.2}{60}$ =14.39 kg.</td></tr>
<tr><td>52.</td><td>B</td><td>Total yield (value wise) during 1990-1991 = (6 × 15 × 8) + (21 × 18 × 7.5) + (3 × 20 × 6) + (12 × 12 × 11) + (18 × 10 × 14) = Rs. 8019.</td></tr>
<tr><td>53.</td><td>C</td><td>As per the definition of Value Coefficient,
For crop P, required value = 15 × 8 = 120
For crop Q, required value = 18 × 7.5 = 135
For crop R, required value = 20 × 6 = 120
For crop S, required value = 12 × 11 = 132
For crop T, required value = 10 × 14 = 140
Hence it is highest for crop T.</td></tr>
<tr><td>54.</td><td>B</td><td>To maximize the valuewise yield, crops with higher value coefficient should be cultivated under larger area. In 1991-1992
<table>
<tr><th>Crop</th><th>Value co-efficient</th><th>Area under cultivation (acres)</th></tr>
<tr><td>P</td><td>12 × 8 × 1.1 = 105.6</td><td>8</td></tr>
<tr><td>Q</td><td>19.8 × 7.5 × 1.1 = 163.35</td><td>24</td></tr>
<tr><td>R</td><td>16 × 6 × 1.1 = 105.6</td><td>2</td></tr>
<tr><td>S</td><td>13.2 × 11 × 1.1 = 159.72</td><td>10</td></tr>
<tr><td>T</td><td>8 × 14 × 1.1 = 123.2</td><td>16</td></tr>
</table>
∴ Only areas under S and T should have been swapped to maximize the valuewise yield.</td></tr>
</table>

		Hence (2)
55.	3	Since a dog must be displayed in the window only if the elephant is not, we know that either the dog or the elephant is displayed. So, there are 2 cases – first where all the soft toys except the duck and the elephant are displayed and the second where all the soft toys except the duck and the dog are displayed. Consider the first case. The pink teddy bear must be displayed in the window. Since the tortoise and the tiger are displayed, we know that they must be green and yellow respectively. So the doll and the dog must be blue. This case satisfies all the given conditions. Consider the second case. The pink teddy bear must be displayed in the window. Since the tortoise and the tiger are displayed, we know that they must be green and yellow respectively. So the doll and the elephant must be blue. This contradicts the sixth condition. Thus, a blue elephant cannot be displayed in the window.
56.	1	A pink teddy bear is always displayed in the window. Consider option 1. If a green doll and a blue dog are displayed in

		the window, we know that the elephant cannot be displayed and one more of the soft toys displayed must be blue. Suppose a green tortoise is also displayed in the window. Then the fifth soft toy, which must be blue can only be the duck. Suppose a yellow tiger is displayed in the window. Then the fifth soft toy, which must be blue can only be the duck. Thus, all the conditions are satisfied. Hence the answer is option 1. If required, we can try displaying five soft toys using option 2 through 4 and violate one or more of the given conditions to show that these options are incorrect.
57.	1	A pink teddy bear is always displayed in the window. If a tortoise is displayed, we know that it must be green and if the elephant is displayed, we know that the dog cannot be displayed. Suppose a yellow tiger is displayed in the window. Since we need two blue soft toys and the doll and elephant cannot both be blue, we can conclude that the two blue soft toys displayed in the window are the duck and the elephant. Suppose the tiger is not displayed. Then, the remaining two soft toys that are displayed in

		the window are the doll and the duck. Since the doll and the elephant cannot both be blue, the two blue soft toys are either the doll and the duck or the duck and the elephant. Thus, in both cases, a blue duck is displayed in the window.
58.	2	If two green soft toys are displayed in the window, then according to the given conditions, we know that there should be two blue soft toys and the pink teddy bear displayed in the window. In other words, a yellow soft toy and therefore a tiger cannot be displayed in the window. So option 1 cannot be true. Suppose, according to option 2, a green duck is displayed in the window. The other green soft toy must be the tortoise. The remaining two blue soft toys will therefore be the doll and the dog. Since all the given conditions are satisfied, we can conclude that option 2 could be true. Options 3 and 4 are not possible as Tiger can't be displayed and (doll or dog) OR (duck or dog) are also not displayed. Thus, only 4 types of toys are remaining while 5 toys have to be dispayed in the store window.
59-	Let the number of copies of the Daily Overview, the	

62. Daily News and the Daily Post delivered on Wednesday are x, y and y respectively. The number of copies of the Daily Overview delivered on Thursday, Friday and Saturday are x each. Suppose the number of copies of the Daily News delivered on Thursday, Friday and Saturday are (y – z), (y – 2z) and (y – 3z) respectively and the number of copies of the Daily Post delivered on Thursday, Friday and Saturday are 3y/2, 9y/4 and 27y/8 respectively.

The total number of newspapers delivered on Wednesday is x + 2y = 68.

The total number of newspapers delivered on Thursday is x + (y – z) + (3y/2) = 76 or 2x + 5y – 2z = 152.

The total number of newspapers delivered on Friday is x + (y – 2z) + (9y/4) = 90 or 4x + 13y – 8z = 360.

The total number of newspapers delivered on Saturday is x + (y – 3z) + (27y/8) = 113 or 8x + 35y – 24z = 904.

Consider Thursday – 2(Wednesday) = 2x + 5y – 2z – (2x + 4y) = y – 2z = 152 – 136 = 16.

Consider Friday – 2(Thursday) = 4x + 13y – 8z – (4x + 10y – 4z) = 3y – 4z = 360 – 304 = 56.

Now, 3y – 4z = 56 can be rewritten as 3y – 6z + 2z = 56.

Substituting y – 2z = 16, we get 48 + 2z = 56 or z = 4.

So, y – 8 = 16 yields y = 24, so that x + 48 = 68 yields x = 20. We can now tabulate the number of copies of each newspaper delivered on each of the days as shown below.

	Wednesday	Thursday	Friday	Saturday	Total

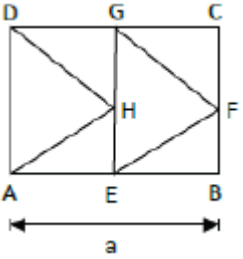
	Daily Overview	20	20	20	20	**80**
	Daily News	24	20	16	12	**72**
	Daily Post	24	36	54	81	**195**
	Total	**68**	**76**	**90**	**113**	**347**
59.	A	20 copies of the Daily Overview were delivered each day.				
60.	B	12 copies of the Daily News were delivered on Saturday.				
61.	D	81 copies of the Daily Post were delivered on Saturday.				
62.	D	The total number of copies of the Daily Post and the Daily News delivered over the 4-day period is 195 and 72 respectively. The required difference is 195 – 72 = 123.				
63-66.	This one can be solved in the following manner – Since, we know that animals cannot be living in parts, therefore, 1/n or 1/m of the same category will ensure that at least n × m of that particular type of animals populate the zoo. (n × m or a multiple of that). Thus, population of..... **Herbivores** – must be at least the LCM of (6, 9, 2, 5) = 90 or a multiple of 90 **Carnivores** – must be at least the LCM of (3, 15, 12, 10) = 60 or a multiple of 60 **Omnivores** – must be at least the LCM of (5, 7, 11, 3) = 1155 or a multiple of 1155					

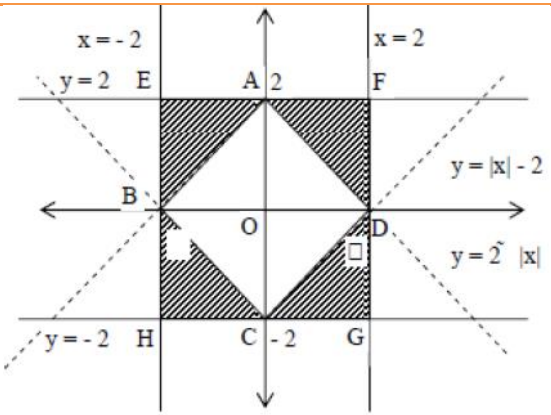
Frugivores – must be at least the LCM of (10, 3, 5, 11) = 330 or a multiple of 330
Sanguinivores – must be at least the LCM of (12, 6, 7, 5) = 420 or a multiple of 420
We also know that the total population cannot be more than 2290.
Let's add all the minimum populations of the different types to ascertain the minimum total population limit:
90+60+1155+330+420 = 2055.
Therefore, the populations of
Herbivores – can be 90 or 180 or 270
Carnivores – can be 60, 120, 180 or 240
Omnivores – must be 1155
Frugivores – must be 330
Sanguinivores – must be 420
Thus, the number of animals in the different Wings can be thus determined as –
East Wing – Herbivores (15, 30 or 45), Carnivores (20, 40, 60 or 80), Omnivores (231), Frugivores (33), Sanguinivores (35), Total (334, 349, 354, 364, 369, 374, 384, 389, 394, 404, 409, 424)
West Wing – Herbivores (10, 20 or 30), Carnivores (4, 8, 12 or 16), Omnivores (165), Frugivores (110), Sanguinivores (70), Total (359, 363, 367, 369, 371, 373, 377, 379, 381, 383, 387, 391)
South Wing – Herbivores (45, 90 or 135), Carnivores (5, 10, 15 or 20), Omnivores (105), Frugivores (66), Sanguinivores (60), Total (281, 286, 291, 296, 326, 331,

		336, 341, 371, 376, 381, 386) **North Wing** – Herbivores (18, 36 or 54), Carnivores (6, 12, 18 or 24), Omnivores (385), Frugivores (30), Sanguinivores (84), Total (523, 529, 535, 541, 547, 553, 559, 565, 571, 577) **Central Wing** – Herbivores (2, 4 or 6), Carnivores (25, 50, 75 or 100), Omnivores (269), Frugivores (91), Sanguinivores (171), Total (558, 560, 562, 583, 585, 587, 608, 610, 612, 633, 635, 637).
63.	D	as shown 350 cannot be the population of east wing
64.	D	So, 637 is the most populated wing's maximum possible polpulation.
65.	D	Either East or South Wing is the least populated
66.	C	Since out of the given options only 608 is possible as the population of Central Wing.
67.	D	If the avg is 1, the 3 digits are (1, 1, 1) and (0, 1, 2). With (1, 1, 1), we can form only one iteger. And with (0, 1, 2), we can form 2 × 2 × 1 = 4 integer. So there are 5 such integers. If the avg is 2, the 3 digits are (0, 2, 4), (1, 2, 3) and (2, 2, 2). With (0, 2, 4), we can form 2 × 2 × 1 = 4 integers, with (1, 2, 3) we can form 3 × 2 × 1 = 6 integers and with (2, 2, 2) we can form only 1 integer. So there are 11 such integers. If the avg is 3, the 3 digits are (0, 3, 6), (1, 3, 5), (2, 3, 4) and (3, 3, 3). With (0, 3, 6), we can form

		4 integers, with (1, 3, 5) and (2, 3, 4) we can form 6 integers each and with (3, 3, 3) we can form only 1 integer. So there are 17 such integers. If the avg is 4, the 3 digits are (0, 4, 8), (1, 4, 7), (2, 4, 6), (3, 4, 5) and (4, 4, 4). With (0, 4, 8), we can form 4 integers, with (1, 4, 7), (2, 4, 6) and (3, 4, 5) we can form 6 integers each and with (4, 4, 4) we can form only 1 integer. So there are 23 such integers. If the avg is 5, the 3 digits are (1, 5, 9), (2, 5, 8), (3, 5, 7), (4, 5, 6) and (5, 5, 5). With (1, 5, 9), (2, 5, 8), (3, 5, 7), (4, 5, 6) we can form 6 integers each and with (5, 5, 5) we can form only 1 integer. So there are 25 such integers. If the avg is 6, the 3 digits are (3, 6, 9), (4, 6, 8), (5, 6, 7) and (6, 6, 6). With (3, 6, 9), (4, 6, 8), (5, 6, 7) we can form 6 integers each and with (6, 6, 6) we can form only 1 integer. So there are 19 such integers. If the avg is 7, the 3 digits are (5, 7, 9), (6, 7, 8) and (7, 7, 7). With (5, 7, 9), (6, 7, 8) we can form 6 integers each and with (7, 7, 7) we can form only 1 integer. So there are 13 such integers. If the avg is 8, the 3 digits are (7, 8, 9) and (8, 8, 8). With (7, 8, 9) we can form 6 integers and with (8, 8, 8) we can form only 1 integer. So there are 7 such integers.

		If the avg is 9, the digits are (9, 9, 9) and only 1 integer can be formed. Thus there are 121 such integers.
68.	180	$(x + y)^2 = x^2 + y^2 + 2xy$. Since Δ ABC is right-angled, $x^2 + y^2 = 10^2 = 100$. Area Δ ABC = ½ × xy = 20 ⇒ xy = 40 ⇒ 2xy = 80. Thus, $(x + y)^2$ = 100 + 80 = 180.
69.	120	Initial ratio of milk to total volume $\frac{M}{T} = \frac{3}{5}$ The ratio of milk to total volume when the volume of liquid in the beaker is increased by 60% = $\frac{3}{5(1.6)} = \frac{3}{8}$ Next 38.4 litres of solution was replaced with water resulting in ratio of milk to water as 3 : 7. ∴ Ratio of milk to total volume in the beaker = $\frac{3}{10}$ When 38.4 litres of solution was removed, volume of milk removed = $\frac{3}{8}$ = 14.4 litres. ∴ If the volume of milk before replacement was 3x and total volume was 8x, then $\frac{3x - 14.4}{8x} = \frac{3}{10}$ ⇒ x = 24. Hence, before addition of 60% of water, total volume = 5x = 5 x 24 =120 litres

70.	D	 Let 'a' be the side of the square ABCD. Then, area of the square ABCD = a^2 AE = EB = EH = HG = GD = $\frac{a}{2}$ Area of AEFDHA = Area of ΔEFG + Area of ΔGDH + Area of ΔHAE $=\frac{1}{2}\times a\times\frac{a}{2}+\frac{1}{2}\times\frac{a}{2}\times\frac{a}{2}+\frac{1}{2}\times\frac{a}{2}\times\frac{a}{2}=\frac{a^2}{2}$ The remaining area of the square ABCD $=a^2-\frac{a^2}{2}=\frac{a^2}{2}$ ∴ Required ratio $=\frac{a^2}{2}:\frac{a^2}{2}$ i.e. 1 : 1
71.	D	The maximum value of $x^a \times y^b$ occurs when a/x = b/y. So, the maximum value of $(13 - x)^7 \times (7 + x)^3$ occurs when 7 / (13 - x) = 3 / (7 + x). Solving this equation yields x = - 1. So the maximum value of $(13 - x)^7 \times (7 + x)^3$ is $14^7 \times 6^3 = 2^{10} \times 3^3 \times 7^7$
72.	B	Volume available on melting = $\frac{4}{3}\pi(R)^3$ (0.9)

		[10% loss] Number of smaller spheres $= \frac{\frac{4}{3}\pi(R)^3(0.9)}{\frac{4}{3}\pi\left(\frac{R}{9}\right)^3} = 0(0.9)9^3$ Paint required is proportional to total surface area i.e., $4\pi r^2$. Total surface area of the bigger sphere = $4\pi R^2$. Total surface area of all small sphere $= 9^3\ (0.9)\ 4\pi \left(\frac{R}{9}\right)^2 = (8.1)\ 4\pi R^2$ $\therefore$ Pain required = $\frac{(8.1)4\pi R^2}{4\pi R^2} \times 10 = 81$ litres.
73.	C	 Required Area = Square EFGH – Square ABCD = $4^2 - (2\sqrt{2})^2$ = 8 sq. units.
74.	1	$\text{Log}_4(x-1) = \text{Log}_2(x-3)$ $(x-1) = (x-3)^2$

		On solving x= 2, 5 But x = 2 is not possible as $Log_2(x - 3)$ will give Log_2 (-1) which is not possible. So only one solution
75.	D	Let us take the example of a few equations whose roots are real and positive: Case 1: x2 – 2x + 1 = 0 Here c = 1 and either of k = 2, b = 2 or k = 3, b = 1 Case 2: x2 – x + 1/4 = 0 Here c = 1/4 and either of k = 0, b = -1 or k = 2, b = 1 Hence, none of these. **Alternative Solution:** Since the roots are real and positive, thus D≥0 $(k - 1)^2 b^2 - 4c \geq 0$ Or, $(k - 1)^2 b^2 \geq 4c$ Also since the roots are positive, thus their sum as well as product is also positive. Hence, (k – 1)b > 0 and c > 0. Now, assuming c = 1, k = 2, we have $b^2 \geq 4$. Let us assume b = 2, thus b > c and now checking the answer options, none of the option satisfies. Hence, the correct option is 4.
76.	C	Let S = 100 R = 60 M = 48 Q = 36

		New income of : Q = 96 M = 88 So 88/96 = 11/12
77.	B	Suppose $x^2 + y > x + y^2$. Let the difference between them be a prime number z so that $z = (x^2 + y) - (x + y^2) = (x - y)(x + y - 1)$. Since $(x - y) < (x + y - 1)$, we get $(x - y) = 1$ and $(x + y - 1) = z$. Adding these two expressions, we get $z + 1 = 2x - 1 \Rightarrow x = (z/2) +$ 1. Since we know that x is an integer, we can conclude that (z/2) is an integer. In other words, z = 2, the only even prime number. This works when (x, y) could be (1, 2) or (2, 1). Thus, (x, y) can take 2 values. **Alternate solution:** If both x and y are odd, then both expressions are even and their difference will be even. If both x and y are even, then both expressions are even and their difference is even. If one of x and y is odd and the other is even, then both expressions are odd and their difference is even. In all cases, the difference between the two expressions is even. Since this difference is a prime number, the only possibility is 2 (the only even prime number). With a little bit of trial and error, we can easily determine, that (x, y) could be (1, 2) or (2, 1). Thus, there are 2

		values.
78.	D	Probability of throwing a 6 is 1/6 and the probability of throwing any other number is 5/6. There are three possibilities here: 1. He gets a six on the first throw and he will receive Rs. 1. The required probability is 1/6. 2. He gets some other number on the first throw and gets a six on the second throw. Since he loses a Rupee for not getting a six on the first throw, but wins back the Rupee on the second throw, his net gain/loss = 0. Probability of this occurring is 5/6×1/6=5/36 3. Does not get a six on the first two throws, but on the third throw. The required probability is 5/6 × 5/6 × 1/6 = 25/216 The amount he will receive/lose is Rs. (–1 –1 + 1) = Rs. 1 loss. 4. Does not get a six on any of the three throws. The required probability is 5/6 × 5/6 × 5/6 = 125/216 The amount he will receive/lose is Rs. (–1 –1 - 1) = Rs. 3 loss. Expected value of the amount = E(X) = (1 × 1/6) + (0 × 5/36) + (–1) × 25/216 + (-3) ×125/216 = (36 -25 - 375)/216 = -364/216 = - 91/54

79.	200	If $\|y\| > 50$, $2\|y\| > 100$, and $\|x\|$ would need to be negative, so $-50 \le y \le 50$. If $y = \pm 50$, then $2\|y\| = 100 \Rightarrow x = 0$; that is, one solution for $y = -50$ and one solution for $y = 50$. But for $-49 \le y \le 49$ there will be two values of x for each value of y; for example, if $y = -20$, $2\|y\| = 40$, $\|x\| = 60 \Rightarrow x = \pm 60$. Therefore from -49 to 49 there are 49 (negative) + 1 (zero) + 49 (positive) = 99 values of y, each of which has two solutions. Hence there are $2 \times 99 + 2 = 200$ distinct solutions to the equation.
80.	C	First letter is fixed. Remaining 4 letters out of R, A, T, I, O can be chosen and arranged in ${}^5P_4 = 5! = 120$ ways
81.	3	From 5! onwards, each value will end in 0. So, the last digit of the sum is the same as the last digit of $1! + 2! + 3! + 4! = 1 + 2 + 6 + 24 = 33$. Thus the last digit of $1! + 2! + 3! + \ldots + 100!$ is 3.
82.	D	Ratio of profit = 350000 : 140000 = 5 : 2 If the total profit be Rs. x, then A's share = $\frac{5}{7} \times \frac{4x}{5} + \frac{x}{5} = \frac{4x}{7} + \frac{x}{5} = \frac{20x + 7x}{35} = \text{Rs.}\frac{27x}{35}$ B's share = $\frac{2}{7} \times \frac{4x}{5} = \text{Rs.}\frac{8x}{35}$ $\therefore$ Difference

		$\frac{27x}{35}-\frac{8x}{35}=\frac{19x}{35}$ $\therefore \frac{19x}{35}=38000 \Rightarrow x=\frac{38000\times 35}{19}=\text{Rs.}70000$ Hence the answer is option D
83.	B	The N/29! = 1 + 1/ 2 +1/3 +1/4 + 1/5 +1/6 +1/7 + 1/8 +1/9……..1/29 N = (29! + 29!/2 +29!/ 3 ……..29!/29) When N / 19 All the values 29! + 29!/2 +29!/ 3 ……..29!/29 will have multiple 19 in it except 29!/ 19 . Remainder will depend upon on (29!/19) divided by 19 = = Remainder of [1 × 2 × 3 × 4 × 5 × 6 × 7 × 8 × 9 …….15 × 16 ×17 ×18 × 20 ×21 ……..28×29] / 19 =Remainder of [1 × 2 × 3 × 4 × 5 × 6 × 7 × 8 × 9 × (- 9) × (- 8) × (-7) × (- 6) ……(- 1) × 1 × 2 × 3 × 4 × …….× 9 × 10] /19 As we know 9! = 362880 Required Remainder = 362880 ×(- 362880) × 362880 × 10 /19 = 18 × -18 × 18 × 10 /19 = -1 × 1 ×(-1) × 10 /19 = 10
84.	B	The sum of the present ages of the 4 members in the family is 18.5 × 4 = 74. Since the sum of the present ages of the

		husband and wife is 6.4 times the sum of the present ages of their children, the sum of the ages of the husband and wife must be 64 while the sum of the ages of the children must be 10. Since one child is 2 years older than the other one, the present ages of the children are 4 and 6. Since the 2nd child was born 4 years ago, the sum of the ages of the husband and wife then was 64 – 8 = 56. Since the 2nd child was born 6 years after marriage, the sum of the ages of the husband and wife when they got married was 56 – 12 = 44 and their ages were in the ratio 6 : 5 ⇒ their ages were 24 and 20. When the 2nd child was born, their ages had increased by 6 years each, i.e., their ages were 30 and 26. Thus the required ratio is 15 : 13.
85.	B	We have N = 0.abccbaabccba…… We can write N = 0 $\overline{abccba}$ Clearly N is divisible by 11 as (a + b + c) - (a + b + c) = 0 Now $N = \frac{abccba}{999999}$, Cancelling common factor 11 from numerator & denominator we get 90909 in denominator hence we should multiply N by 90909 so that product is an integer
86.	D	Since we do not know the time taken to fill the

<table>
<tr><td></td><td></td><td>tank or the capacities of the taps or the required distribution of hot and cold water, it is not possible to determine the volume of the tank.</td></tr>
<tr><td>87.</td><td>B</td><td>Note that 127 is prime. Now $(x^3 + y)(x^3 - y) = 127$. As x, y are positive integers $x^3 + y = 127$, $x^3 - y = 1$ so we get only one pair (4, 63).</td></tr>
<tr><td>88.</td><td>C</td><td>Let the weight of gold and silver in the first biscuit be x and (50 – x) gm respectively. Let ‘y’ be the cost of 10 gm silver.
<table>
<tr><th></th><th>Gold</th><th>Silver</th></tr>
<tr><td>Weight in gm</td><td>x</td><td>50 - x</td></tr>
<tr><td>Cost per 10 gm</td><td>31500</td><td>Y</td></tr>
<tr><td>Total cost of the biscuit</td><td colspan="2">(x/10) × 31500 + [(50-x)/10] × y = 73962 …….(1)</td></tr>
<tr><td>Total cost when weights are interchanged</td><td colspan="2">(50-x) / 10 × 31500 + xy / 10 = 86338 …..(2)</td></tr>
</table>
Adding eqns (1) and (2) we get 50y + 1575000 = 1603000
So y = 560, which is the price of 10 gm silver, hence price of 1 kg silver is Rs 56000.
Substituting the value of y in eqn (1), we get, x = 23 gm, thus 50 – x = 27 gm which is the weight of gold in the second biscuit.</td></tr>
<tr><td>89.</td><td>500</td><td>Suppose the distance between office and college is 12 km and the speed is 2 kmph. It</td></tr>
</table>

		would take 6 hrs to reach college. When he reaches half way, he has already spent 3 hours. He turns back at a speed of 3 kmph and takes 6/3 = 2 hours to reach office. Now, he has only 1 hour to reach college. So the speed must be 12 kmph. Thus the increase in speed is (12-2)/2 ×100 = 500%.
90.	30	Make sure that the numbers present are the smallest integers. Minimum number of students of type A who were present = 6 (i.e. 24% of A) Minimum number of students of type B who were present = 3(i.e. 75% of B) Minimum number of students of type C who were present = 21(i.e. 42% of C) Hence minimum number of students is 30.
91.	36	Lets say Tarun completes 100m in t time. Varun completes 80 m in time t. Therefore he takes t + t/4 time to complete his 100 m. Arun completes 80 m in time t + t/4. Therefore he takes t + t/4 + ¼ (t + t/4) = 25/16 t time to complete his 100 m. Therefore, in t time he must have covered 100 × 16/25 = 64 m. Thus Arun lagged 36m behind Tarun when Tarun finished his 100m.
92.	A	Let the moneylender has Rs 100 initially. 1st year ---> 100 + 40 (interest) ---> 140 – 25%

		bribe ---> 105 2nd year ---> 105 + 42 (interest) ---> 147 – 25% bribe ---> 110.25 3rd year ---> 110.25 + 44.1 (interest) --->154.35 – 25% bribe ---> 115.7 (This is the capital he will have at the beginning of 4^{th} year) So, if 115.7 --> 50,000 ⇒ 36.75 (bribe given in 2nd year) = (50000/115.7) ∗ 36.75= 15881.59.
93.	2	Suppose n = 8. Then $^{8}C_{7}$ – [8/7] = 8 – [1.14] = 8 – 1 = 7. Suppose n = 9. Then $^{9}C_{7}$ – [9/7] = 36 – [1.28] = 36 – 1 = 35. Suppose n = 10. Then $^{10}C_{7}$ – [10/7] = 120 – [1.42] = 120 – 1 = 119. Suppose n = 11. Then $^{11}C_{7}$ – [11/7] = 330 - 1 = 329 Suppose n = 12. Then $^{12}C_{7}$ – [12/7] = 792 – [1.71] = 792 – 1 = 791. Since 7 is a common factor of each of the answers, we can conclude that the expression is always divisible by 7.
94.	D	Let P = 256 A= 625 Rate will become (R/4) and time will become 4 times 625 =256 (1 +R/400)4 On solving R =100

95.	A	Let $\frac{a^2-a+1}{a^2+a+1}=k$ $a^2 - a + 1 = k (a^2 + a + 1)$ $(1 - k) a^2 - (1 + k)a + (1 - k) = 0$ If a is real. Then discriminant ≥ 0 $(1 + k)^2 - 4(1 - k)^2 \geq 0$ $(k - 3) (3k - 1) \leq 0$ So $1/3 \leq k \leq 3$. So minimum value of k = 1/3
96.	A	We get a GP starting with Rs.7000 and a common ratio 6/7. The fifth term of this GP (i.e. the final depreciated price of the bicycle) will be 3778.42. The SP is 120% of this = 120 × 3778.42/100 = 4534.11 ≈ Rs 4500
97.	A	We have $\|x + 4\|^2 - 10\|x + 4\| = 24$ 1. $x < -4$ $(x + 4)^2 + 10x + 40 = 24$ [$(x + 4)^2$ as it's square will be the same in both ranges] $x^2 + 8x + 16 + 10x + 16 = 0 \Rightarrow x^2 + 18x + 32 = 0$. Solving for x: x = −16 or x = −2. Now, x = −2 won't work as $x < -4$ (see the defined range), hence we have only one solution for this range x = −16. 2. $x > -4$ $(x + 4)^2 - 10x - 40 = 24 \Rightarrow x^2 - 2x - 48 = 0$. Solving for x: x = − 6 or x = 8. Again, x = −6 won't work as $x > -4$, hence we have only one

		root for this range x = 8. Thus, –16 + 8 = –8.
98.	30	The cost price of the article is Rs. 2250 and the profit earned by the shopkeeper is Rs. 550 Hence Selling price of the article = 2250 + 550 = Rs. 2800 Hence discount = Rs. 4000 - Rs. 2800 = Rs. 1200. So required percentage = 1200/4000 x 100 = 30%.
99.	A	Let the initial height be x After the first bounce, height becomes ¾ x After the second bounce, height becomes $(¾)^2$ x After the third bounce, height becomes $(¾)^3$ x After the fourth bounce, height becomes $(¾)^4$ x But we know that $(¾)^4$ x = 25 So x = 25 × $(4/3)^4$ = 25 × 256/81 = 79 cm
100.	D	$t_9^2 - t_8^2 = 840$ ⇒ $(t_9 - t_8)(t_9 + t_8) = (28)(30)$ or $(12)(70)$ $t_9 = 29$ and $t_8 = 1$ satisfy the equation, $t_9 = 41$ and $t_8 = 29$ also satisfy the equation As there are more than 1 cases, the answer is 4th option.