**Directions of Test**

| Test Name | 2016 Bull CAT 17 | Total Questions | 100 | Total Time | 180 Mins |
|---|---|---|---|---|---|

| Section Name | No. of Questions | Time limit | Marks per Question | Negative Marking |
|---|---|---|---|---|
| Verbal Ability | 34 | 1:0(h:m) | 3 | 1/3 |
| DI & Reasoning | 32 | 1:0(h:m) | 3 | 1/3 |
| Quantitative Ability | 34 | 1:0(h:m) | 3 | 1/3 |

## Section : Verbal Ability

**DIRECTIONS for the question :** *Read the passage and answer the question based on it.*

### Question No. : 1

The reconciliation of the bourgeoisie with the church finds expression, not merely in the abandonment by the bourgeoisie of its old anti-religious watchwords and of its campaign against religion, but in something more significant. To an increasing extent, the bourgeoisie is now becoming a 'believing class'. The forerunners of the contemporary European bourgeoisie were atheists, were freethinkers, were fiercely antagonistic to priests and priestdom. Their successors have taken a step back- wards. A generation ago, the bourgeois, though they were themselves still atheistically inclined, though they did not believe in religious fairy tales, and though they laughed covertly at religion, nevertheless considered that the fables must be treated with respect in public, since religion was a useful restraint for the common people. Today, the scions of the bourgeoisie are not content with looking upon religion as providing useful fetters for the people, but they have themselves begun to wear the chains.

Which of the following can you infer from the above paragraph?

A) The bourgeoisie did not compromise on their stand and beliefs in order to gain power and control
B) The union of the bourgeoisie and the church was a wedding of convenience for the church as it sought to expand its powers over the mighty bourgeoisie and the common man
C) The church has been successful in influencing the atheist bourgeoisie to toe the line with the beliefs of the church
D) The predecessors of today's bourgeoisie were hand in glove with the church – together exploiting the common man

**DIRECTIONS for the question:** *Identify the most appropriate summary for the paragraph and write the key for most appropriate option.*

### Question No. : 2

Immediately after the Civil War, in a period when black people felt particularly hopeful, America began to lock up thousands of black men and put them in prison on all kinds of charges. The plantation system was no longer existent and black men roamed the country in search of work. Having been turned out into the world with few or no marketable skills and unable to support their families, many of them stole to survive. In Louisiana, for example, right after the Civil War the prison population went from being almost completely white to being majority black in fewer than twenty years.

1. Ensuring lawful behavior amongst slaves was the responsibility of the slave owner, but became the responsibility of the government after the Civil War,
2. Agriculture skills do not count for too much in an industrial economy.
3. No one becomes a robber by choice, it is always the circumstances that force him to become one.
4. The transition from slavery to freedom for the blacks was not without its share of troubles,

A) 4    B)    C)    D)

---

**DIRECTIONS for the question :** *Read the passage and answer the question based on it.*

### Question No. : 3

*There is a principle of sufficiency: When you let go of trying to get more of what you don't really need, which is what we're all trying to get more of, it frees up immense energy to make a difference with what you have.*

This new set of assumptions can create a whole new culture around money and around life. It can teach us how to be known for what we allocate rather than what we accumulate. It can teach us to be measured and measure others by our inner riches rather than our accumulation of outer riches. Although we think there are people with money and people without it, the real truth is, money is a part of everyone's life from the poorest peasant to the wealthiest industrialist, _____

Which of the following best completes the paragraph given above?

A) it is the feng shui philosophy of concentrating on the essential which sustains the world
B) the way we direct the money that comes through our lives defines us
C) moderation and prudence should be guidelines in our living
D) yet both strive to get more than what they need because of the fear that there is not enough

**DIRECTIONS for the question:** *Identify the most appropriate summary for the paragraph and write the key for most appropriate option.*

### Question No. : 4

The option of arbitration involves the police officer giving each party an opportunity to explain his/her side and, based on the facts presented, rendering a decision. There are situations in which arbitration, maybe appropriate, for example, a case in which there is absolutely no doubt that a piece of property belongs to another. If I were to strike you over the head and take your Walkman, not only would I be guilty of battery but I also would have created a dispute. The dispute is suited for arbitration, since upon examination of the facts, it will become clear that I am not entitled to the property. The Walkman belongs to you. The officer has the legitimate right to order me to return your Walkman. Many interpersonal disputes in society are not so cut-and-dry. Often, both parties/disputants have a legitimate claim to the (identical) outcome sought by the other. Since identical outcomes for each Party are not always feasible, it is through collective and integrative problem-solving that parties often compromise. Most mediated agreements are compromises. For this reason, mediation is a preferred conflict-resolution method, since the parties get to have control over the contents of the agreement-they make the agreement, themselves. In this way, both parties walk away from the process, winners and with dignity intact, although they may walk away with less than what they originally sought.

1. Whenever the facts are clear, arbitration should be used for conflict resolution, else use mediation.
2. Mediation is a process that should be used only if arbitration has failed to resolve the conflict.
3. Mediation should be preferred over arbitration as a dispute resolving mechanism, as it allows both parties to maintain their self-respect.
4. Compromise is the essential thing in any dispute resolution - both parties involved should be ready to lose something to gain something.

A) 3    B)    C)    D)

### Question No. : 5

The writer would describe the young Narcissists as per the following option(s)?

1. Condescending
2. Self-involved
3. Obsequious
4. Greedy

A) 1 & 2    B) 2 & 4    C) 3 & 4    D) Only 4

### Question No. : 6

The narcissist's reaction to bad luck is indicative of –

A) Assertiveness    B) Nonchalance    C) Hubris    D) Equanimity

*Question No. : 7*

The writer's view about modern day parenting resulting in a surge of narcissism in their kids is on account of the following reason(s) -

A) Him being in favour of 'old-age' parenting wherein punishment was part of the deal
B) He admits to being a narcissist as his parents too subscribed to the popular child psychology trends
C) He is a psychologist who has studied the phenomenon
D) Believes in experiential learning that had been anaesthetized for the current generation

*Question No. : 8*

Based on the passage we get the following view(s) about the game 'Jeopardy' –

A) Is popular among narcissists    B) It takes skill, intuition and logic to win the game
C) Is recommended for grooming our children to face the modern world    D) Is too risky and should be banned

*Question No. : 9*

The writer view(s) regarding the Graduate Business Schools can be regarded to the following –

A) Superficial    B) Insightful    C) Rhetorical    D) Slanderous

**DIRECTIONS for the question:** *Read the passage and answer the question based on it.*

*Question No. : 10*

The modern economist is used to measuring the 'standard of living' by the amount of annual consumption, assuming all the time that a man who consumes more is 'better off' than a man who consumes less. A Buddhist economist would consider this approach excessively irrational: since consumption is merely a means to human well-being, the aim should be to obtain the maximum of well-being with the minimum of consumption. Thus, if the purpose of clothing is a certain amount of temperature comfort and an attractive appearance, the task is to attain this purpose with the smallest possible effort, that is, with the smallest annual destruction of cloth and with the help of designs that involve the smallest possible input of toil. The less toil there is, the more time and strength is left for artistic creativity. It would be highly uneconomic, for instance, to go in for complicated tailoring, like the modern west, when a much more beautiful effect can be achieved by the skilful draping of uncut material. It would be the height of folly to make material so that it should wear out quickly and the height of barbarity to make anything ugly, shabby or mean. What has just been said about clothing applies equally to all other human requirements. The ownership and the consumption of goods is a means to an end, and Buddhist economics is the systematic study of how to attain given ends with the minimum means.

Modern economics, on the other hand, considers consumption to be the sole end and purpose of all economic activity, taking the factors of production - land, labour, and capital - as the means. The former, in short, tries to maximise human satisfactions by the optimal pattern of consumption, while the latter tries to maximise consumption by the optimal pattern of productive effort. It is easy to see that the effort needed to sustain a way of life which seeks to attain the optimal pattern of consumption is likely to be much smaller than the effort needed to sustain a drive for maximum consumption.

We need not be surprised, therefore, that the pressure and strain of living is very much less in say, Burma than it is in the United States in spite of the fact that the amount of labour- saving machinery used in the former country is only a minute fraction of the amount used in the latter. Simplicity and non-violence are obviously closely related. The optimal pattern of consumption, producing a high degree of human satisfaction by means of a relatively low rate of consumption, allows people to live without great pressure and strain and to fulfil the primary injunction of Buddhist teaching: 'Cease to do evil; try to do good.' As physical resources are everywhere limited, people satisfying their needs by means of a modest use of resources are obviously less likely to be at each other's throats than people depending upon a high rate of use. Equally, people who live in highly self sufficient local communities are less likely to get involved in large-scale violence than people whose existence depends on world-wide systems of trade.

From the point of view of Buddhist economics, therefore, production from local resources for local needs is the most rational way

of economic life, while dependence on imports from afar and the consequent need to produce for export to unknown and distant peoples is highly uneconomic and justifiable only in exceptional cases and on a small scale. Just as the modern economist would admit that a high rate of consumption of transport services between a man's home and his place of work signifies a misfortune and not a high standard of life, so the Buddhist economist would hold that to satisfy human wants from faraway sources rather than from sources nearby signifies failure rather than success. The former tends to take statistics showing an increase in the number of ton/miles per head of the population carried by a country's transport system as proof of economic progress, while to the latter - the Buddhist economist - the same statistics would indicate a highly undesirable deterioration in the *pattern* of consumption.

*Excerpted from pages 149-156 of 'Small is Beautiful' by EF Schumacher*

Which of the following best represents the central theme of the passage?

A) A debate about what is more important: means or ends
B) The roles played by consumers and producers in modern societies
C) A contrast between two economic views: one which optimizes production, and the other which optimizes consumption
D) The role that economics has played in the spread of violence in the world

---

**Question No. : 11**

Which of the conflicts below represent a situation where consumption patterns lead to violence?

A) The internal strife of LTTE in Sri Lanka     B) The First Gulf War of the Nineties     C) The Indo-Pak wars of 1965 and 1971
D) The French Revolution

---

**Question No. : 12**

The reference in the last paragraph to the 'high rate of consumption of transport services between a man's home and his place of work' is an example of  -

A) A rare case where both Western and Buddhist economics are in agreement     B) Local demands being met by local supplies
C) A dichotomy of views – economic progress Vs deterioration of standard of living
D) Success as seen by Western economics, as it implies a production of more automobiles

---

**Question No. : 13**

Which of the following phrases from the passage epitomize the Buddhist economic philosophy?

1. A man who consumes more is 'better off' than a man who consumes less.
2. To attain given ends with the minimum means.
3. To maximise consumption by the optimal pattern of productive effort.
4. The maximum of well-being with the minimum of consumption.

A) 2 & 4     B) 1 & 3     C) 2 & 3     D) 1 & 4

**DIRECTIONS for the question:** *Read the passage and answer the question based on it.*

**Question No. : 14**

THE same way acoustical engineers speak of "background noise" biologists talk about "background extinction." In ordinary times —times here understood to mean whole geologic epochs—extinction takes place only very rarely, more rarely even than speciation, and it occurs at what's known as the background extinction rate. This rate varies from one group of organisms to another; often it's expressed in terms of extinctions per million species-years. Calculating the background extinction rate is a laborious task that entails combing through whole databases' worth of fossils. For what's probably the best-studied group, which is mammals, it's been reckoned to be roughly 0.25 per million species-years. This means that, since there are about fifty-five hundred mammal species wandering around today, at the background extinction rate you'd expect—once again, very roughly— one species to disappear every seven hundred years.

Mass extinctions are different. Instead of a background hum there's a crash, and disappearance rates spike. Anthony Hallam and Paul Wignall, British paleontologists who have written extensively on the subject, define mass extinctions as events that eliminate a "significant proportion of the world's biota in a geologically insignificant amount of time." Another expert, David Jablonski,

characterizes mass extinctions as "substantial biodiversity losses" that occur rapidly and are "global in extent." Michael Benton, a paleontologist who has studied the end-Permian extinction, uses the metaphor of the tree of life: "During a mass extinction, vast swathes of the tree are cut short, as if attacked by crazed, axe-wielding madmen." A fifth paleontologist, David Raup, has tried looking at matters from the perspective of the victims: "Species are at a low risk of extinction most of the time." But this "condition of relative safety is punctuated at rare intervals by a vastly higher risk." The history of life thus consists of "long periods of boredom interrupted occasionally by panic."
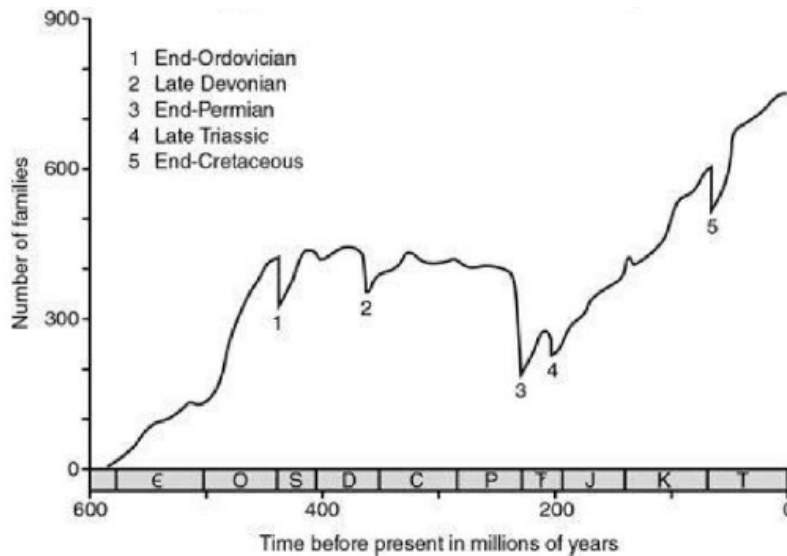


The Big Five extinctions, as seen in the marine fossil record, resulted in a sharp decline in diversity at the family level. If even one species from a family made it through, the family counts as a survivor, so on the species level the losses were far greater.

In times of panic, whole groups of once-dominant organisms can disappear or be relegated to secondary roles, almost as if the globe has undergone a cast change. Such wholesale losses have led paleontologists to surmise that during mass extinction events —in addition to the so-called Big Five, there have been many lesser such events—the usual rules of survival are suspended. Conditions change so drastically or so suddenly (or so drastically *and* so suddenly) that evolutionary history counts for little. Indeed, the very traits that have been most useful for dealing with ordinary threats may turn out, under such extraordinary circumstances, to be fatal.

*Excerpted from Pages 15-16 of 'The Sixth Extinction' by Elizabeth Kobert*

Referring to the graph in the paragraph, what is the average duration between two mass extinctions?

A) 40 – 50 million years    B) 70 – 80 million years    C) 90 – 100 million years    D) 110 – 120 million years

---

**Question No. : 15**

Which of the following can be inferred based on the last paragraph?

A) The current extinction rate is about 100 times higher than the background extinction rate in the fossil record
B) The introduction of exotic species by man leads to reduced diversity as the new species is not part of any food chain
C) Tectonically induced climate change interfered with food chains leading to mass extinctions
D) The human threat to species extinction is very low compared to threats from volcanic or meteoric events

---

**Question No. : 16**

Which of the following would be the best definition of 'speciation' as used in the first paragraph?

A) Events that eliminate a significant proportion of the world's biota in a geologically insignificant amount of time
B) The formation of new and distinct species in the course of evolution
C) The process of a plant or animal, that existed in an earlier age, being turned to stone
D) The process by which living organisms are believed to have developed from earlier forms

### Question No. : 17

1. The cost of correcting ergonomic design at the initial part of a design project is about 10 percent of the cost that will occur later.
2. Alexander (1998) has found that "lower design and construction costs can be obtained when equipment and facilities are designed right the first time".
3. Additionally, companies must remember that you can provide workers with the most "ergonomically correct" furniture, but if users are not trained in why and how they should use it, the furniture adjustments will most likely remain unused by a large percentage of the employees.
4. All in all, companies should make the effort to ensure that ergonomics are taken into consideration from the very first when designing a work environment.
5. Companies must make an effort to be proactive and develop a total ergonomics program that includes training for the employees.

A) 42135   B)   C)   D)

### Question No. : 18

1. In the Jind district in northern India, where there are only 871 women per 1,000 men, bachelors have formed a union to pressure political leaders to supply them with brides.
2. A simplistic view of supply and demand may suggest that a shortage of girls will increase their social and economic value.
3. A study in India showed that a low female-to-male ratio leads to lowering the age of brides, decreasing their educational attainment and participation in the workforce, and increasing the age gap between them and their husbands—all factors correlated with higher domestic violence.
4. But rather than granting more power to the fewer marriageable women, societies slanted in males' favour respond by acquiring more brides, to expand the marriage market.
5. Communities are starting to show the strain caused by such gender imbalance.

A) 32451   B)   C)   D)

### Question No. : 19

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.

A) 32415   B)   C)   D)

### Question No. : 20

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.

A) 25143    B)    C)    D)

---

**DIRECTIONS for the question:** *Given below are five sentences. Identify the sentence(s) that is/are **incorrect** in terms of grammar and usage (including spelling, punctuation and logical consistency). Then, choose the **most appropriate** option.*

### Question No. : 21

A. In parts of the world in which free speech norms are not robust, the umbrella term "hate speech" increasingly criminalizes expression.

B. South Africa, for example, is now debating a bill that would make all hate speech a statutory criminal offense–in part a reaction to a January Facebook post describing black people as monkeys.

C. Japan's Diet has just passed its first-ever legal curb on hate speech with a definition to encompass not just insults and incendiary language directed toward foreigners, but also "gregarious insults."

D. A debate in Quebec over an expansive proposed hate speech law prompted an insurance company to cancel a performance by two comedians for fear of triggering an investigation.

E. In Russia, a regional lawmaker faces up to two years in prison on a "hate speech" charge for alleging that President Vladimir Putin had committed crimes against his people. "

A) C and D only    B) A, C and E    C) B and D only    D) A and C only

---

**DIRECTIONS for the question:** *Given below are five sentences. Identify the sentence(s) that is/are **incorrect** in terms of grammar and usage (including spelling, punctuation and logical consistency). Then, choose the **most appropriate** option.*

### Question No. : 22

A. For over 200 years, there is an interest in the way children learn to speak and understand their first language.

B. Scholars carried on several small-scale studies, especially towards the end of the 19th century, using data they recorded in parental diaries.

C. But detailed, systematic investigation did not begin until the middle decades of the 20th century, when the tape recorder came into routine use.

D. This made it possible to keep a permanent record of samples of child speech, so that analysts could listen repeatedly to obscure extracts, and thus produce a detailed and accurate description.

E. Since then, the subject has attracted enormous multi-disciplinary interest, notably from linguists and psychologists, that have used a variety of observational and experimental techniques to study the process of language acquisition in depth.

A) C, D and E only    B) A , B and E only    C) D and E only    D) A and C only

---

**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.*

### Question No. : 23

1. Pricing the exact value of a particular amenity is something of a black art, and to top it, urban amenities have grown over the last 30 years but the wage premium offered for urban living has remained static or fallen.

2. The canonical maxim that warns against paying more than 30 percent of one's income in rent doesn't capture the full picture in a city like San Francisco.

3. Desirability begets more desirability, a fact of economic life that means housing and other costs will always rise alongside the standard of living.
4. In economist lingo, cities are loaded with "amenities" that make sky-high rents worthwhile—walkability, diversity, a high number of bars and restaurants per capita, widespread public transportation, proximity to culture, a good job market.

A) 3    B)    C)    D)

**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.*

*Question No. : 24*

1. Our law and order machinery must rise to the challenge and address security concerns in university campuses.
2. Confidence-building does not stop at creating the right economic institutions; it entails addressing negative perceptions at home and abroad.
3. Entrenched prejudices with respect to gender, race, religion and ethnicity must be acknowledged and addressed — a process that governments and businesses must pursue with a sense of urgency and enlightened self-interest.
4. Indian companies should keep this in mind, especially if they are investing in areas related to India's food, raw materials or energy security interests.

A) 4    B)    C)    D)

**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.*

*Question No. : 25*

1. The explanation is undoubtedly the better nutrition enjoyed by recent generations of Japanese, which is why Beijing has made it compulsory for every schoolchild from nursery school upwards to drink a quarter-pint of milk every day.
2. Officials believe that the reason for China's physical shortfall is the fact that Japanese children drink 18 times as much milk a year as Chinese infants.
3. The young adults in China are going to desperate lengths to add extra inches to their height in pursuit of celebrity and wealth.
4. For centuries, the Chinese have derisively referred to the Japanese as "dwarfs", which is why the news that the average Chinese person is now smaller than his Japanese counterpart caused such official consternation.

A) 3    B)    C)    D)

**DIRECTIONS for the question:** *Read the passage and answer the question based on it.*

*Question No. : 26*

Among the chemicals on the National Toxicology Program list carcinogens, is a simple looking molecule called cisplatin. It is formed when a platinum atom bonds with two chlorine atoms and two ammonia groups. First synthesized in 1844 by an Italian chemist who was experimenting with platinum salts, cisplatin received little attention for more than a century. Then in the early 1960s it was found to have powerful biological effects. Like so many scientific discoveries this one was serendipitious – a foray into one hypothesis veering unexpectedly in another direction, answering questions no one had known to ask.

In his laboratory at Michigan State University, Barnett Rosenberg was exploring how cells behaved in the presence of electricity. He had been struck by how much the stringy, stretched-out shape of a cell undergoing mitosis resembled the field lines that appear when a magnet is held beneath a sheet of paper sprinkled with iron filings. The means by which a cell divides were poorly understood, and he wondered whether some electromagnetic effect might be involved. Reducing the problem to simpler terms, he placed two metal electrodes in a dish of single-celled organisms, Escherichia coli, and applied an electrical current. Before long the bacteria stopped dividing. Each one, however, continued to elongate, producing new protoplasm – that extended spaghetti-like until the cell was some three hundred times longer than it was wide. He turned off the current and the cells began dividing normally again. It was like having his finger on a mitotic on-off switch.

Decades later he still remembered the moment: "God, you don't often find things like that," he said. He immediately began thinking about cancer. If we could control the growth of a cell with an electric field, we could control some cells with a frequency of one sort, other cells with a frequency of another, and then we could attack a tumor by choosing a unique frequency and affecting

only the tumor cells and abnormal cells." But then came a bigger surprise. It wasn't electricity that was interfering with mitosis; the electrodes that had been used in his experiment were made of platinum, an element he had chosen, specifically because it was chemically inert. But through the process of electrolysis some platinum ions were getting into the solution, where they combined with other atoms to form cisplatin.

Rosenberg went on to test the molecule's effects on metazoans, creatures like us that consist of many cells. Just a pinch of pure cisplatin was enough to kill a mouse. But in very dilute doses it would cause sarcoma tumors to shrink. Cisplatin also had the power to arrest other cancers, and over the years scientists discovered how that works. Before a cell can reproduce, the double helix must relax its windings so that the molecular information can be copied and passed on to the next generation. Cisplatin caused bridges to form between the two helical strands. This chemical straitjacket blocks mitosis and sends the cell into turmoil. It tries to recover by dispatching DNA repairing enzymes. When that fails, apoptosis is initiated and the cell destroys itself. Cisplatin can affect any cell in the body, but since cancer cells divide at a faster rate they bear the brunt of the attack. Once the cancer is destroyed, the rest of the body stumbles, as best it can, back to health. After clinical trials in the 1970s to determine how much cisplatin you could give people without killing them, it was approved by the Food and Drug Administration. It became known as the penicillin of cancer. Because of its effect on other rapidly dividing cells – hair follicles and cells in the gastrointestinal lining and bone marrow there were sickening side effects. Patients would suffer a bone chilling nausea and their hair would fall out. Kidney and nerve damage might occur, and since cisplatin monkeyed with a cell's DNA, it raised the risk of causing a secondary cancer alongside the one the oncologists had been enlisted to treat. The trade-off was usually worth it. For testicular cancer the cure rate approached 100 percent. Other tumors were less responsive, but the chemical, often combined with radiotherapy could slow cancers of other organs and extend lives. Sometimes it could save them.

*Excerpted from pages 109-111 of 'The Cancer Chronicles' by George Johnson*

Which of the following is definitely true of Rosenberg's first experiment in the nineteen sixties?

A) There was a threshold voltage, below which mitosis would continue to happen
B) Permanent magnets were used in the experiment to create powerful magnetic fields
C) The volume of protoplasm in each bacterial cell was constant, even when it elongated
D) The solution in the petridish contained ammonia in some form

## Question No. : 27

Which of these fallacies did Rosenberg subscribe to, before he did his petridish experiment?

A) Cancer is untreatable     B) Platinum is chemically inert     C) Plans are important     D) A disease can be a cure

## Question No. : 28

Why is cisplatin referred to as a chemical straitjacket?

A) It does not allow the two DNA strands to unwind
B) A straitjacket is used to keep violent prisoners from hurting themselves or others
C) Cancer is the deadliest of all diseases, and cisplatin arrests the spread of that disease
D) Cisplatin has unintended side effects, like secondary cancers

## Question No. : 29

Here are two statements from the passage, which contradict each other.

Second Para: It was like having his finger on a mitotic on-off switch.
Third Para: It wasn't electricity that was interfering with mitosis.

What can be the best explanation to resolve this contradiction?

A) Electric current served as a catalyst in the chemical reaction
B) The experimenter did not take into account the source of the chlorine ions
C) The production of platinum ions stopped once the electricity was switched off
D) Electrolysis causes the separation of a compound into its oppositely charged atomic ions

## Question No. : 30

Order the following cell groups from slowest to fastest cell division.

A. Gastro-intestinal lining
B. Sarcoma
C. Bone cells.

A) CAB    B) BCA    C) ABC    D) CBA

---

**DIRECTIONS for the question:** *Read the passage and answer the question based on it.*

**Question No. : 31**

Western medicine is in crisis. Continually increasing resources are being expended to combat the age-related diseases that include diabetes and metabolic syndrome, Alzheimer's disease, Parkinson's disease, cardiovascular disease, and cancer. Yet the causes of these diseases remain a mystery, while their incidence and morbidity either remain constant or are increasing

Huge investments in biomedical research in the recent past have resulted in some striking accomplishments, including the sequencing of the human chromosomal DNA, the identification of hundreds of thousands of human chromosomal single nucleotide polymorphisms (SNPs), and the identification of regional clusters of chromosomal SNPs (the HapMap). However, these accomplishments have failed to reveal the anticipated genetic causes for the common age-related diseases. For example, a series of ''whole-genome scans'' encompassing hundreds of thousands of chromosomal SNPs and 32,000 subjects has revealed nine polymorphic loci associated with type II diabetes, yet the aggregate risk for all nine loci accounts for only a small proportion of the overall diabetes risk.

Thomas Kuhn, in his book *The Structure of Scientific Revolutions*, argued that when the scientific effort expended on a problem increases—yet productivity declines—then the difficulty may lie with the assumptions (paradigms) on which the research is based. For the past 100 years, Western biomedical science has stood on two philosophical pillars: the anatomical paradigm of medicine and the Mendelian paradigm of genetics. The anatomical paradigm of medicine has at its foundation the work of Vesalius, who first described the organs of the human body 450 years ago. Since then, physicians and medical scientists have specialized in individual organs and their associated disease manifestations. The organ-specific compartmentalization of medicine has also led to several generally accepted corollaries: organ-associated symptoms are the result of organ specific problems, organ-specific problems are the result of tissue-specific protein and gene defects, and tissue specific protein defects should be treated with chemicals that specifically interact with the defective tissue-specific protein.

The Mendelian paradigm of genetics argues that genetic traits are transmitted across generations according to the laws of Gregor Mendel. The associated medical corollary is that if a clinical trait is transmitted in a Mendelian fashion, it is genetic, but if it is not, then the trait must be the consequence of environmental factors. This corollary is formalized through the estimation of heritability by dividing the frequency that a phenotypic trait is shared by identical twins with the frequency that it is shared by fraternal twins. However, since Mendelian genetics is the result of chromosomal dynamics, the Mendelian paradigm is specific for nuclear DNA (nDNA) genes.

While the anatomical paradigm of medicine and the Mendelian paradigm of genetics have been powerful predictors of medical relationships for the past century, they are failing to direct us toward solutions for the common age-related diseases. According to Kuhn, when a prevailing paradigm fails to make productive predictions, then hypothesis-based research begins to fail. To resolve the crisis and return to productive ''normal science,'' a new paradigm must be generated that encompasses the strengths of the previous paradigm but adds new elements that address the current problems being confronted. Assuming that this Kuhnian analysis is applicable to the biomedical sciences today, what could be the missing components of the anatomical and Mendelian paradigms necessary for understanding the age-related diseases?

*Excerpted from 'Mitochondria as Chi' by Douglas Wallace*

What is the central argument made by the passage?

A) If we understand our genetic structure, then we can find cures for almost all diseases
B) We need a new approach for the cure of age-related diseases
C) Death is inevitable, hence research on age-related disease is showing diminishing marginal utility on the investments made
D) Defective tissue-specific protein is a symptom of disease, not the root cause

**Question No. : 32**

What is the meaning of the word *phenotype*, as used in the second last paragraph?

A) An organism's expressed physical traits     B) The genetic constitution of an individual organism
C) Made of Carbon Hydrogen compounds – for example benzene     D) A genetic mutation that is passed on to offspring

## Question No. : 33

We can infer that the problem with compartmentalized organ based medicine is –

A) That it is a very ancient science     B) Does not gel well with the Mendelian paradigm of genetics
C) It takes into account the interplay between organs
D) It ignores the formulation of precise problem lists and progressively refined diagnoses

## Question No. : 34

Which of the below could be the most likely paradigm that the author addresses in the paragraph that follows?

A) Calorie restrictions can extend the lifespan of lab rats two-fold
B) Non-nuclear mitochondrial DNA could be responsible for age related diseases
C) Examples of species with negligible senescence like Hydra
D) Death is programmed into us because of DNA telomere shortening

## Section : DI & Reasoning

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

## Question No. : 35

There are three coins – one Red, one Green and one Blue. Each coin is to be placed in a Bag among Bag1, Bag2 and Bag3 such that there is exactly one coin in each of the three Bags. It is also known that:

(i) If the Red coin is placed in Bag1 then the Blue coin cannot be placed in Bag3.
(ii) If the Green coin is placed in Bag3 then the Blue coin cannot be placed in Bag2.
(iii) If the Red coin is placed in Bag3 then the Green coin cannot be placed in Bag2.
(iv) If the Blue coin is placed in Bag1 then the Green coin cannot be placed in Bag3.
(v) If the Green coin is placed in Bag1 then the Blue coin cannot be placed in Bag3.

The Blue coin is placed in which Bag Number? (in numerical value)

A) 2     B)     C)     D)

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

## Question No. : 36

Each of the four friends – Prakash, Prainsh, Prateek and Pranay – owns a distinct car among Figo, Fortuner, Ferrari and Fiat. It is known that there is exactly one among the four friends who never speaks the truth. The rest three always speak the truth. Each of the four friends made two statements as given below.

**Prakash:** Prainsh owns Figo. Prateek doesn't own Ferrari .
**Prainsh:** Pranay owns Fiat. Prateek doesn't own Fortuner.
**Prateek:** Pranay owns Ferrari Prakash doesn't own Fortuner.
**Pranay:** Prakash owns Fiat. Prateek owns Fortuner.

Who among the four friends owns Fiat?

A) Prakash     B) Prainsh     C) Prateek     D) Pranay

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

*In a book of Inductive Reasoning, there are 6 chapters: Explanatory Hypothesis, Numerical Probability, Hypothesis about Causes, Inductive Analogy, Induction & Probability and Inductive Generalization. Number of pages allotted to each of the chapters by the author is 29, 25, 24, 27, 26 and 24, not necessary in the same order. The chapter "Inductive Generalization" is immediately before the chapter comprising 24 pages. In two instances, the sum of the number of pages of two adjacent chapters is 50. The chapter "Hypothesis about Causes" is immediately after the chapter "Inductive Analogy" which has 24 pages, and immediately before the chapter of "Numerical Probability" which has 29 pages. The chapter "Explanatory Hypothesis" has 27 pages and it is not next to the chapter "Induction and Probability".*

**Question No. : 37**

Which of the following statements must be true?

I. "Induction & Probability" has 24 pages.
II. "Hypothesis about Causes" has 24 pages.
III. The chapter comprising 25 pages is immediately before the chapter "Numerical Probability"

A) Only I    B) Only II    C) I and II    D) I and III

---

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

*In a book of Inductive Reasoning, there are 6 chapters: Explanatory Hypothesis, Numerical Probability, Hypothesis about Causes, Inductive Analogy, Induction & Probability and Inductive Generalization. Number of pages allotted to each of the chapters by the author is 29, 25, 24, 27, 26 and 24, not necessary in the same order. The chapter "Inductive Generalization" is immediately before the chapter comprising 24 pages. In two instances, the sum of the number of pages of two adjacent chapters is 50. The chapter "Hypothesis about Causes" is immediately after the chapter "Inductive Analogy" which has 24 pages, and immediately before the chapter of "Numerical Probability" which has 29 pages. The chapter "Explanatory Hypothesis" has 27 pages and it is not next to the chapter "Induction and Probability".*

**Question No. : 38**

Which of the following has 26 pages?

A) Induction & Probability    B) Hypothesis about Causes    C) Inductive Generalization    D) Numerical Probability

---

**Question No. : 39**

**DIRECTIONS *for the question:*** *Read the following information and answer the question that follow.*

Twelve cricket teams participated in a national level cricket tournament. These teams were distributed equally into two pools A and B. In the first round, each team played a match against all the other teams in its pool. Then three teams with highest average points from each pool qualified for the second round where all the teams played against each other once. Again, three teams with highest average points qualified for the final. In the final round, all the teams played a match against each other and the one with the highest average points was declared to be the winner of the tournament. A winner of any match gets two points, the loser loses one point and in case of a draw both the teams get one point each. Average points of a team are defined as the total points earned by the team so far divided by the number of matches played by the team so far.

The following table gives the total points earned and the average points for each team at the end of the tournament.

| Teams | A1 | A2 | A3 | A4 | A5 | A6 | B1 | B2 | B3 | B4 | B5 | B6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 14 | 0 | 5 | 0 | 8 | 3 | -3 | 13 | 3 | 6 | 2 | 7 |
| Average points | 1.17 | 0 | 0.5 | 0 | 0.8 | 0.6 | -0.6 | 1.08 | 0.6 | 0.6 | 0.4 | 0.58 |

Also,

I.      The winner of the tournament won both its matches in the finals.
II.     In second round, the total points earned by all the teams are 50.

Which two teams do not play against each other in the finals?

A) A1, B2    B) A1, B6    C) A5, B2    D) B2, B6

*Question No. : 40*

Find the total number of matches won by A2 and A4 together in the first round. (in numerical value)

A) 2    B)    C)    D)

*Question No. : 41*

How many points did the second runner up earn in the finals? (write the correct option)

1. -1                    2. -2
3. 0                     4. 2

A) 2    B)    C)    D)

***DIRECTIONS for the question:*** *Analyse the graph/s given below and answer the question that follows.*

*Question No. : 42*

The graph shows the percent shares of different regions in crude oil production. The total crude oil production in 1973 and 2001 was 2861 million tons and 3574 million tons respectively.
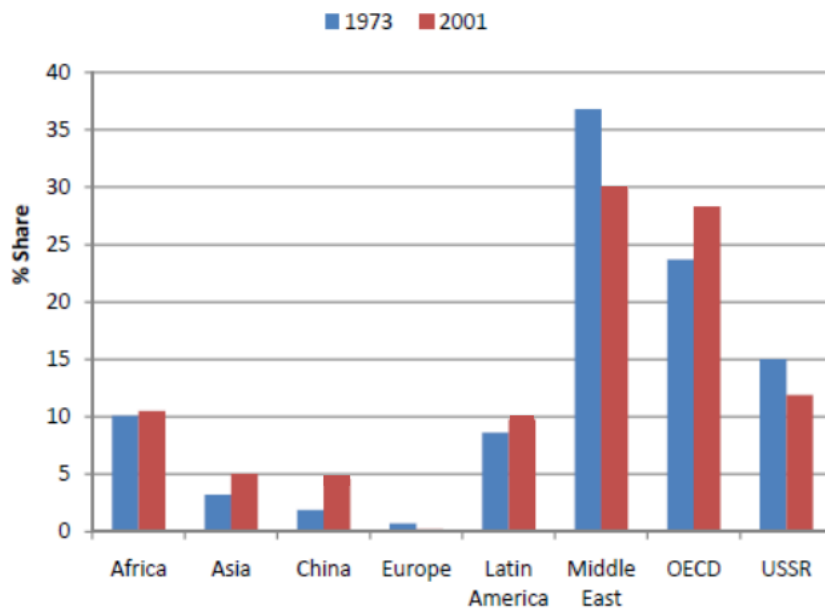


How many regions produced less crude oil in 2001 than in 1973? (in numerical value)

A) 2    B)    C)    D)

**Question No. : 43**

The production of crude oil in Latin America in 2001 was more than its production of crude oil in 1973 by approximately (million tons). (in numerical value)

A) 114    B)    C)    D)

**Question No. : 44**

As compared to 1973, how many regions have increased their share of crude oil production in 2001 by more than 75%? (in numerical value)

A) 1    B)    C)    D)

---

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

**Question No. : 45**

Consider the addition problem "THREE + THREE + FIVE = ELEVEN", where each letter of the alphabet represents a unique digit from 0 to 9. Each letter of the alphabet will have the same value throughout the problem. The number ELEVEN is divisible by eleven.

What is the value of ELEVEN? (in numerical value)

A) 121913    B)    C)    D)

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

**Question No. : 46**

Consider the addition problem "THREE + THREE + FIVE = ELEVEN", where each letter of the alphabet represents a unique digit from 0 to 9. Each letter of the alphabet will have the same value throughout the problem. The number ELEVEN is divisible by eleven.

What is the value of THREE – EVEN?

A) FRVE    B) VENF    C) TIRVF    D) HRELJ

---

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

**Question No. : 47**

Consider the addition problem "THREE + THREE + FIVE = ELEVEN", where each letter of the alphabet represents a unique digit from 0 to 9. Each letter of the alphabet will have the same value throughout the problem. The number ELEVEN is divisible by eleven.

Which of the following cannot be the value of ELEVEN – FIVE?

A) EENILL    B) L × THREE    C) N × IFLL    D) NNHFT + RVRNR

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

**Question No. : 48**

Consider the addition problem "THREE + THREE + FIVE = ELEVEN", where each letter of the alphabet represents a unique digit from 0 to 9. Each letter of the alphabet will have the same value throughout the problem. The number ELEVEN is divisible by eleven.

Which of the following is not a factor of ERHI?

A) EF    B) IV    C) FI    D) EVL

---

## Question No. : 49

*The following table provides information about irrigated land under different crops. The irrigated area under Oilseeds denotes the area under groundnut, rapeseed & mustard, linseed, sesame and others. The figures in parentheses represent percentages of irrigated area to total area under the crop.*

### IRRIGATED AREA UNDER DIFFERENT CROPS

| | 1970-71 | 1980-81 | 1990-91 | 1997-98 | 1998-99 | 1999-2000 | 2000-01 | 2001-02 | 2002-03 |
|---|---|---|---|---|---|---|---|---|---|
| Rice | 14.3 (38.4) | 16.4 (40.8) | 19.4 (45.5) | 22.1 (50.7) | 23.4 (52.1) | 24.5 (54.0) | 23.9 (53.3) | 24.5 (54.4) | 21.6 (51.7) |
| Jowar | 0.6 (3.6) | 0.8 (4.7) | 0.8 (5.6) | 0.8 (7.3) | 0.8 (8.1) | 0.8 (7.8) | 0.8 (8.0) | 0.8 (8.0) | 0.8 (8.6) |
| Bajra | 0.5 (4.0) | 0.6 (5.5) | 0.5 (5.1) | 0.6 (6.1) | 0.7 (7.4) | 0.7 (7.7) | 0.8 (8.0) | 0.6 (6.2) | 0.7 (9.1) |
| Maize | 0.9 (15.9) | 1.2 (20.1) | 1.2 (19.7) | 1.3 (20.3) | 1.4 (22.2) | 1.5 (21.2) | 1.5 (22.1) | 1.3 (19.4) | 1.3 (19.4) |
| Wheat | 9.9 (54.3) | 15.6 (70.0) | 19.5 (81.1) | 22.9 (85.8) | 23.7 (86.2) | 24.2 (87.7) | 22.6 (87.6) | 23.1 (87.8) | 22.2 (88.1) |
| Barley | 1.3 (52.0) | 0.9 (50.6) | 0.5 (54.5) | 0.5 (55.6) | 0.5 (62.5) | 0.4 (57.1) | 0.5 (62.5) | 0.5 (71.4) | 0.4 (57.1) |
| Total cereals | 28.1 (27.6) | 35.8 (34.1) | 42.3 (41.0) | 48.5 (47.7) | 51.6 (50.4) | 52.4 (50.8) | 50.3 (49.6) | 50.9 (50.1) | 47.1 (49.9) |
| Total pulses | 2.0 (8.8) | 2.0 (9.0) | 2.6 (10.5) | 2.7 (11.3) | 3.0 (12.3) | 2.9 (13.1) | 2.6 (12.3) | 3.1 (13.4) | 3.0 (14.1) |
| Total food grains | 30.1 (24.1) | 37.8 (29.7) | 44.9 (35.1) | 51.2 (40.8) | 53.6 (42.3) | 55.3 (44.2) | 52.9 (43.1) | 54.1 (43.4) | 50.1 (43.3) |
| Oil Seeds | 1.1 (7.4) | 2.3 (14.5) | 5.8 (22.9) | 6.8 (24.4) | 6.6 (23.2) | 6.7 (25.0) | 5.7 (22.5) | 6.1 (24.2) | 5.4 (22.6) |
| Cotton | 1.4 (17.3) | 2.1 (27.3) | 2.5 (32.9) | 3.3 (37.1) | 3.3 (34.7) | 3.1 (34.4) | 2.8 (32.6) | 3.1 (34.1) | 2.5 (32.5) |
| Sugarcane | 1.9 (72.4) | 2.4 (81.3) | 3.4 (86.9) | 3.8 (90.5) | 4.1 (93.2) | 4.1 (91.1) | 4.2 (91.3) | 4.3 (91.5) | 4.3 (91.5) |

All the above information is in million hectares.

What is the average annual percentage growth in the irrigated area under Jowar from 1970-71 to 1980-81?

A) 0.616%    B) 0.333%    C) 3.33%    D) 14.61%

---

## Question No. : 50

Which of the following has shown the maximum percentage growth in the percentage of irrigated area to total area under the crop as compared to the previous decade?

A) Wheat 1990-91    B) Wheat 1980-81    C) Bajra 1980-81    D) Oilseeds 1980-81

---

## Question No. : 51

In an effort to get more land under irrigation, the government, in 1998-99, sanctioned subsidised loans to farmers for irrigation projects in the Rice, Jowar and Wheat growing areas. These irrigation projects were aimed at increasing the irrigated area under Rice, Jowar and Wheat by 10%, 8% and 12% respectively. Had these projects been implemented successfully, how much more irrigated land should have been under these three crops in 1999-2000 (in million hectares)?

A) 2.26    B) 3.64    C) 5.24    D) 13.09

---

## Question No. : 52

Which of the following statements is / are true?

I.  The difference between the percentage change in the irrigated area under Barley from 2000-01 to 2001-02 and the percentage change in the area under Wheat during the same period is approximately 2.2.
II. The ratio of irrigated area under Cereals, Pulses and Sugarcane in 2002-03 is 47 : 30 : 43.
III. The percentage growth in the area under Foodgrains from 1997-98 to 1998-99 is approximately 140% of the growth in the area under Cereals over the same period.

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

---

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

### Question No. : 53

BE Tech, a leading testing services provider, has designed a new software for a 1-hour aptitude test. For the pilot, BETech will have seven students, Arjun, Hershal, Maya, Pranav, Rutika, Soumil and Tanvi, take the test in 1-hour slots with the first slot scheduled for 12 noon, the second slot scheduled for 1 p.m., and so on till the last slot scheduled for 6 p.m. The seven students can take the test in any convenient slot subject to the following restrictions:

- Rutika must take the test in the slot immediately before Tanvi.
- Maya must take the test in any slot after Rutika.
- Exactly two students must take the test between the slots taken by Arjun and Pranav.

In which of the following time slots can Maya not take the test?

A) 1 p.m.    B) 3 p.m.    C) 5 p.m.    D) 6 p.m.

### Question No. : 54

If Hershal and Soumil take the test in time solts which are as far from each other as possible, who of the following will take the test at 12 noon, 1 p.m. and 2 p.m. respectively? (write the correct option)

1. Soumil, Arjun, Maya
2. Hershal, Arjun, Rutika
3. Hershal, Rutika, Tanvi
4. Rutika, Tanvi, Soumil

A) 2    B)    C)    D)

---

### Question No. : 55

After which of the following time slots can Rutika not take the test?

A) 2 p.m.    B) 3 p.m.    C) 4 p.m.    D) None of these

### Question No. : 56

In which time slot can Arjun take the test so that Tanvi has only one time slot to take the test?

A) 12 noon    B) 2 p.m.    C) 3 p.m.    D) 4 p.m.

---

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

### Question No. : 57

Acting upon complaints received from citizens, the PMC is planning on removing encroachment from six major roads in Pune – FC Road, JM Road, Karve Road, Laxmi Road, MG Road and SB Road. The PMC has planned an Anti-Encroachment drive on these six roads spread over six consecutive days, Monday through Saturday. To ensure that hawkers and owners of illegal stalls are not forewarned about the drive, the PMC will conduct the drive subject to the following conditions:

- The drive on FC Road will be conducted either on Monday or Saturday.
- The drive on Laxmi Road will be conducted on a day immediately earlier than the drive on MG Road is conducted.

- The drive on SB Road is conducted on the day immediately after the drive on MG Road is conducted.
- If the drive on JM Road is conducted on Wednesday, then the drive on MG Road is conducted on Friday.

On which of the following roads can the Anti-Encroachment drive not be conducted on Friday?

A) Laxmi Road     B) MG Road     C) JM Road     D) Karve Road

### Question No. : 58

Which of the following could be the order of roads on which the Anti-Encroachment drive is conducted from Monday to Saturday?

A) FC Road, MG Road, SB Road, Karve Road, Laxmi Road, JM Road
B) JM Road, Laxmi Road, MG Road, Karve Road, SB Road, FC Road
C) JM Road, Karve Road, Laxmi Road, MG Road, SB Road, FC Road
D) Laxmi Road, Karve Road, JM Road, MG Road, SB Road, FC Road

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

### Question No. : 59

A 400 m race track has lanes numbered 1 through 7, with lane 1 being the innermost lane and lane 7 being the outermost lane. Seven sprinters, A, B, C, D, E, F and G, are lined up for the race such that:

- E is running in lane 3.
- A is not running in lane 7.
- B and C are running in consecutively numbered lanes.
- C is running in a lane closer to the inside of the track than the lane in which D is running.
- A is running in a lane that is closer to the outside of the track than the lane in which D is running

What is the lowest possible number of the lane in which A can run (numerical value only)?

A) 5     B)     C)     D)

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

### Question No. : 60

A 400 m race track has lanes numbered 1 through 7, with lane 1 being the innermost lane and lane 7 being the outermost lane. Seven sprinters, A, B, C, D, E, F and G, are lined up for the race such that:

- E is running in lane 3.
- A is not running in lane 7.
- B and C are running in consecutively numbered lanes.
- C is running in a lane closer to the inside of the track than the lane in which D is running.
- A is running in a lane that is closer to the outside of the track than the lane in which D is running

Which of the following could be the correct order of the sprinters from lane 1 through lane 7?

A) GFEBCAD     B) CBGEDAF     C) GBECDAF     D) BCEFDAG

### Question No. : 61

**DIRECTIONS *for the question:*** *Read the following information and answer the question that follow.*

A factory produces products A, B, C, D and E which are made from spare parts manufactured by machines M1, M2, M3, M4, M5 and M6. A week is considered from Monday to Saturday. Each machine works for a certain number of hours on four days of the week as shown in the following table.

| Machine | Days | Hours/Day |
|---|---|---|
| M1 | Mon, Wed, Fri, Sat | 8 |
| M2 | Tue, Wed, Thur, Fri | 7 |
| M3 | Mon, Thur, Fri, Sat | 10 |
| M4 | Mon, Tue, Wed, Thur | 8 |
| M5 | Tue, Wed, Fri, Sat | 8 |
| M6 | Mon, Tue, Thur, Sat | 6 |

All products do not need spare parts made by all the machines. The production of spare parts of A, B, C, D and E is done by all the machines independently in that order only.

(Working days for a product means the number of days on which the actual work is done for that product.)

The following table gives the number of hours required by each machine to produce a spare part of each product.

| Machine / Product | M1 | M2 | M3 | M4 | M5 | M6 |
|---|---|---|---|---|---|---|
| A | 12 | - | 12 | 13 | - | 8 |
| B | 7 | 15 | 10 | - | 12 | - |
| C | - | 5 | 13 | - | 10 | 9 |
| D | 5 | 8 | - | 11 | - | 5 |
| E | 8 | - | 5 | 8 | 10 | 2 |

*Note:* One unit each of all parts of a specific product after assembling form a set of that product.

How many working days in a week are required to manufacture a set of product B?

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

*Question No. : 62*

What is the minimum number of working days required to manufacture three sets of product A?

A) 15 days    B) 12 days    C) 16 days    D) 18 days

*Question No. : 63*

A set of which product takes the minimum number of working days to manufacture?

A) B    B) C    C) D    D) E

*Question No. : 64*

**DIRECTIONS *for the question:*** Analyse the graph/s given below and answer the question that follows.

The first chart below shows the market shares of four different makes of cars – Zen, Santro, Indica and Spark – over a five-year period from 2003 to 2007. The second chart shows the number of Santro cars sold in these five years (in thousands) and the *percentage* increase in the prices of the four cars over their respective prices the previous year. In 2003, the prices of the Zen, the Spark, the Indica and the Santro were Rs. 2.8 lakh, Rs. 3 lakh, Rs. 3.2 lakh and Rs. 3.25 lakh respectively. The car companies follow a unique pricing policy. Though the prices increase by a certain percentage, the value after the increase is rounded off to the nearest multiple of Rs. 5000.
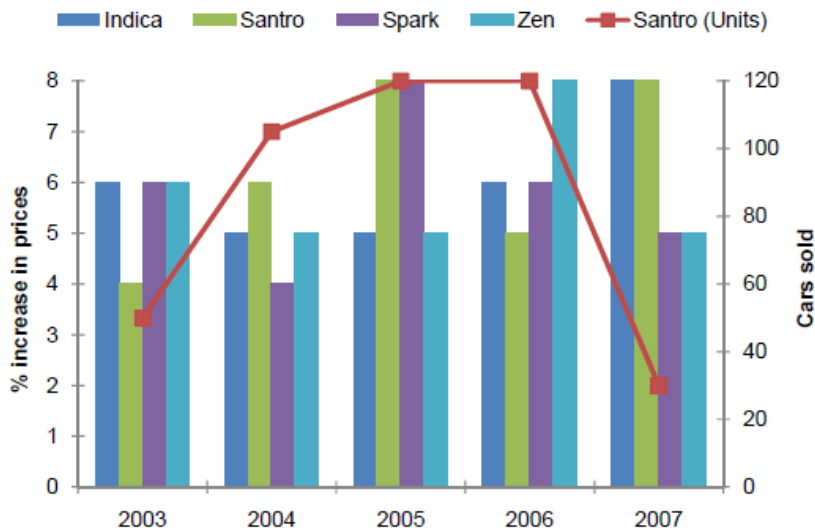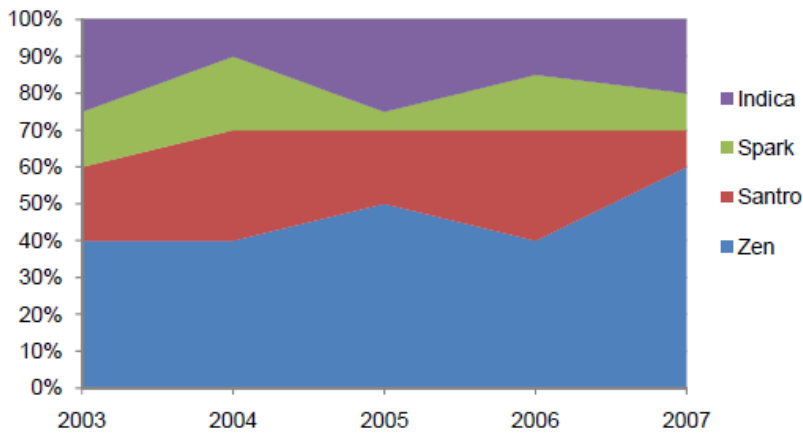
What is the difference between the number of Santro and Indica cars sold in 2005?

A) 30,000    B) 12,500    C) 25,000    D) 10,000

---

**Question No. : 65**

The total number of Zen cars forms what percent of the total number of cars sold over the five year period?

A) 26%    B) 55%    C) 30%    D) 46%

---

**Question No. : 66**

How much more would an Indica cost in 2007 as compared to its price in 2003?

A) Rs. 80,000    B) Rs. 96,800    C) Rs. 83,800    D) Rs. 50,000

---

## Section : Quantitative Ability

**DIRECTIONS for the question:** *Solve the following question and mark the best possible option.*

**Question No. : 67**

Suppose that $x, y, z$ are three positive numbers that satisfy the equations $xyz = 1$, $x + 1/z = 5$, $y + 1/x = 29$. If $z + 1/y = m/n$, where m and n are relatively prime positive integers, then find $m + n$.

A) 5    B)     C)     D)

**DIRECTIONS for the question:** *Solve the following question and mark the best possible option.*

## Question No. : 68

Birju wanted to paint the four walls, of equal areas, of his room. He bought 130 litres of blue paint, 164 litres of red paint and 188 litres of white paint. He painted one wall blue, one wall red, one wall white and one wall pink. He obtained the pink colour by mixing the red and white paints, not necessarily in equal quantities. If, after painting the four walls, Birju had equal quantities of the blue, red and white paints left over, what was the total quantity of paint left over?

A) 38 litres    B) 88 litres    C) 114 litres    D) 192 litres

## Question No. : 69

The workers in a factory produce widgets and wedges. For each product, production time is constant and identical for all workers, but not necessarily equal for the two products. In one hour, 100 workers can produce 300 widgets and 200 wedges. In two hours, 60 workers can produce 240 widgets and 300 wedges. In three hours, 50 workers can produce 150 widgets and $m$ wedges. What is $m$? (in numerical value)

A) 450    B)    C)    D)

## Question No. : 70

In the figure below, ▢ ABCD is a square of side $a$. E and F are mid-points of AC and AB respectively. What is the area of the shaded region?
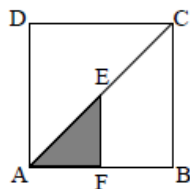


A) $\frac{1}{8}a^2$    B) $6a^2$    C) $8a^2$    D) $\frac{1}{4}a^2$

## Question No. : 71

A tennis player computes her win ratio by dividing the number of matches she has won by the total number of matches she has played. At the start of a weekend, her win ratio is exactly 0.500. During the weekend, she plays four matches, winning three and losing one. At the end of the weekend, her win ratio is greater that 0.503. What is the largest number of matches she could have won before the weekend began?

A) 24    B) 68    C) 148    D) 164

## Question No. : 72

A mathematical organization is producing a set of commemorative license plates. Each plate contains a sequence of five characters chosen from the four letters in AIME and the four digits 2007. No character may appear in a sequence more times than it appears among the four letters in AIME or the four digits in 2007. A set of plates in which each possible sequence appears exactly once contains $N$ license plates. If M = (N/10), what is the units digit of $M^{2007}$?

A) 8   B)   C)   D)

*DIRECTIONS for the question: Solve the following question and mark the best possible option.*

**Question No. : 73**

What is the value of $f(2)$, if $f(x) = |5 - 3x|$?

A) $f(-1)$   B) $f(1)$   C) $f(4/3)$   D) $f(7/3)$

*DIRECTIONS for the question: Solve the following question and mark the best possible option.*

**Question No. : 74**

In $\triangle ABC$, $\angle ABC = \dfrac{\angle BAC}{2}$. If $AB = c$, $BC = a$ and $AC = b$, which of the following is true?

A) $a$ is the geometric mean between $b$ and $(a + c)$   B) $a$ is the geometric mean between $c$ and $(a + b)$
C) $a$ is the geometric mean between $b$ and $(b + c)$   D) $a$ is the geometric mean between $c$ and $(b + c)$

*DIRECTIONS for the question: Solve the following question and mark the best possible option.*

**Question No. : 75**

The sum of the first three terms of a geometric sequence is equal to 42. The sum of the squares of the same terms is equal to 1092. What is the square of the sum of the first three terms of the sequence?

A) 961   B) 1026   C) 1156   D) 1764

*DIRECTIONS for the question: Solve the following question and mark the best possible option.*

**Question No. : 76**

The shortest distance of point P from the circumference of a circle of radius 15 units is 98 units. What is the length of the tangent to the circle from point P? (in numerical value)

A) 112   B)   C)   D)

*DIRECTIONS for the question: Solve the following question and mark the best possible option.*

**Question No. : 77**

Arnab and Biplab both took part in a two-day problem-solving competition. At the end of the second day, each had attempted questions worth a total of 500 points. Arnab scored 160 points out of 300 points attempted on the first day, and scored 140 out of 200 points attempted on the second day. Biplab, who did not attempt 300 points on the first day, had a positive integer score on each of the two days, and Biplab's daily success ratio (points scored divided by points attempted) on each day was less than Arnab's on that day. Arnab's two-day success ratio was 300/500 = 3/5. The largest possible two-day success ratio that Biplab could have achieved is $m/n$, where $m$ and $n$ are relatively prime positive integers. What is $m + n$?

A) 349   B) 529   C) 729   D) 849

*DIRECTIONS for the question: Solve the following question and mark the best possible option.*

**Question No. : 78**

Let $P$ be the product of the first 100 positive odd integers. Find the largest integer $k$ such that $P$ is divisible by $3^k$. (in numerical value)

A) 49   B)   C)   D)

### Question No. : 79

Two tour guides are leading six tourists. The guides decide to split up. Each tourist must choose one of the guides, but with the stipulation that each guide must take at least one tourist. How many different groupings of guides and tourists are possible? (in numerical value)

A) 62   B)   C)   D)

### Question No. : 80

If the roots of the equation $px^3 + qx^2 + rx + s = 0$ are in Geometric Progression, then which of the following relations is true?

A) $pr^3 = q^3s$   B) $p^2r = qs^2$   C) $p^3r = qs^3$   D) $pr^2 = q^2s$

### Question No. : 81

Glen Distilliries is famous for their Whiskeys which contain 50% alcohol. The blending department has received three casks of distilled liquor, the first cask containing four gallons of 45% alcohol, the second cask containing five gallons of 48% alcohol and the third cask containing one gallon of $x$% alcohol. The master blender takes y/z gallons of liquor from the third cask and adds it to the first cask. The remaining liquor from the third cask is added to the second cask. The first and second casks now contain Whiskey with 50% alcohol each. If $y$ and $z$ are relatively prime natural numbers, what is the value of $x + y + z$?

A) 5   B) 23   C) 85   D) 115

### Question No. : 82

The S.P. of two articles is Rs. 120 each. One article is sold for 20% profit and the other for 20% loss. What's the overall result?

A) Rs. 4 loss   B) Rs. 4 profit   C) Rs. 10 loss   D) Rs. 10 profit

### Question No. : 83

If $p$ is a prime number and $a, b, c$ and $d$ are consecutive natural numbers, then $(a + b + c + d)^p - a^p + b^p + c^p + d^p$ is always divisible by

A) 6   B) $(a + b + c + d)$   C) $p$   D) *None of these*

### Question No. : 84

What is the sum of the series 1/4 + 1/8 + 2/16 + 3/32 + 5/64 + 8/128 + 13/256 + 21/512 + ...

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

### Question No. : 85

Anshi has to attend a marriage so she starts moving towards the marriage palace directly from her office. After covering one-fourth of the total distance to the palace, she realized that she will be late with this speed. So, she started walking further with twice her original speed. When she has walked half the total distance, she further increases her speed to three times her initial speed and walks for another one-fourth of the total distance. For the remaining distance, she increases her speed to four times her initial speed. While coming back to her office, she covers the entire distance at her original speed. If Anshi walks for 2 hours and 26 minutes in all, then for how much time does she walk at twice her original speed?

A) 8 min   B) 24 min   C) 12 min   D) Cannot be determined

### Question No. : 86

The average of A and B is 22, of A and C is 25 and that of B and C is 27. What's C – A? (in numerical value)

A) 10    B)    C)    D)

### Question No. : 87

Al walks down to the bottom of an escalator that is moving up and he counts 150 steps. His friend, Bob, walks up to the top of the escalator and counts 75 steps. If Al's speed of walking (in steps per unit time) is three times Bob's speed, how many steps are visible on the escalator at any given time? (Assume that this number is constant.)

A) 120    B)    C)    D)

### Question No. : 88

What is the coefficient of $x^7$ in the expansion of $\left( \dfrac{x^2}{2} - \dfrac{2}{x} \right)^8$.

A) 56    B) -56    C) 14    D) -14

### Question No. : 89

Find the no. of Lattice points on the boundary and inside the region bounded by x axis, x = 4 and y = $x^2$. (Lattice points are points with coordinates as integers) [x = 0 included] (in numerical value)

A) 35    B)    C)    D)

### Question No. : 90

A man set of fuse for a blast to occur in 30 seconds. He ran away at a rate of 8 yards/sec and sound travels at 1080 feet per second. When the man heard the blast, he ran approximately...

A) 300 yd    B) 352 yd    C) 245 yd    D) 512 yd

**Question No. : 91**

What is the ratio of the perimeter of an equilateral triangle having an altitude equal to radius of circle, to perimeter of an equilateral triangle inscribed in that circle?

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

*DIRECTIONS for the question: Solve the following question and mark the best possible option.*

**Question No. : 92**

If $a : b = b : c = c : d = 8$, then what is the value of $(ab + bc + cd) / (b^2 + c^2 + d^2)$? (in numerical value)

A) 8    B)    C)    D)

*DIRECTIONS for the question: Solve the following question and mark the best possible option.*

**Question No. : 93**

If the sum of the first thirteen terms of an AP and the sum of the next twelve terms of the progression are in the ratio 26 : 49, then what is the ratio of the thirteenth term to the seventh term of the progression?

A) 3 : 2    B) 1 : 4    C) 1 : 5    D) 4 : 5

*DIRECTIONS for the question: Solve the following question and mark the best possible option.*

**Question No. : 94**

What is the remainder when $75^{75}$ is divided by 37? (in numerical value)

A) 1    B)    C)    D)

*DIRECTIONS for the question: Mark the best option:*
**Question No. : 95**

A bank uses an encryption key generating program that uses two numbers of the current date as its source - the number denoting the month (e.g., it is August, then the number is 8) and the date ( e.g., today is the $15^{th}$ day of the month). The encryption key is the hardest to crack if the two numbers are relatively prime. Password hackers run Trojan programs to try to get the data on credit cards which are stored using this encryption program. Which month is the most vulnerable to Trojan attacks out of the given options?

A) January    B) April    C) December    D) July

*DIRECTIONS: Solve the following question and mark the best possible option*
**Question No. : 96**

An article costing Rs. 84 was sold at a profit of 50%. The second purchaser sold it once again at a loss of 25%. At what price did he sell it?

A) Rs. 63.00    B) Rs. 78.75    C) Rs. 94.50    D) Rs. 100.00

*DIRECTIONS for the question: Solve the following question and mark the best possible option.*
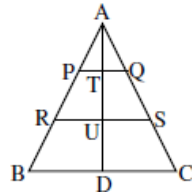
**Question No. : 97**

The simple interest on a sum of money $\frac{1}{16}$ is of the sum. If the number of years is numerically equal to the rate percent per annum, then the rate percent per annum is

A) $3\frac{1}{3}$   B) $6\frac{2}{3}$   C) $2\frac{1}{2}$   D) $7\frac{1}{2}$

*DIRECTIONS for the question:* Solve the following question and mark the best possible option.

**Question No. : 98**

Consider isosceles ∆ABC as shown. PQ and RS are parallel to base BC such that the ratio of areas of ∆APQ to ∆ABC is 1 : 6 while the ratio of areas of ∆ARS to ∆ABC is 1 : 2. ∆ABC is rotated about the height AD to form a cone. What is the ratio of the volumes of the cone with height AT, frustum with height TU and the frustum with height UD? (write the correct option)



1. 1 : 3 √3 : 6 √6          2. 1 : 2 √2 : 3 √3          3. 1 : 3 √3 − 1 : 2 √2 − 1          4. 1 : 3 √3 − 1 : 3 √3(2 √2 − 1)

A) 4   B)   C)   D)

*DIRECTIONS for the question:* Solve the following question and mark the best possible option.

**Question No. : 99**

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

*DIRECTIONS for the question:* Solve the following question and mark the best possible option.

**Question No. : 100**

A milk merchant buys certain number of cans full of milk. If he sells milk at Rs. 13 per litre, he gains Rs. 333. But if he sells milk at Rs. 10 per litre, he loses Rs. 150. How many such cans did be buy, if the capacity of each can is 23 litres? (in numerical value)

A) 7   B)   C)   D)