



2016 Bull CAT 11

Directions of Test

Test Name	2016 Bull CAT 11	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

A couple of months ago, while vacationing in South Florida, I was lying on a beach when, all of a sudden, a single-engine Cessna came pattering across the sky, toting an aerial advertisement that read: THE REAL YOU IS SEXY. I sat there for a moment blinking in the sun. It was a message that seemed to fly in consummate symmetry with the insecurities of its audience: sunbathers with calf implants and spray tans, toupees and silicone breasts. Like all good advertisements, it managed to create an existential problem that its product would supposedly solve. In this case, the remedy could be found at Aerie, an offshoot of American Eagle that hawks preppy fashions to affluent young people. The ad was supposed to be an assurance, a variation of that old saw about true beauty being on the inside. But its insistence on the real you was an insinuation of doubt, a soft rebuke, as if, by simply lying near the ocean, I was committing a minor fraud.

Where to find this real you? And, upon its discovery, how best to communicate it to the world? This anxiety has a long pedigree, first arising amid the revelations of the Enlightenment, when individuals were no longer beholden to the stiff hierarchies of feudalism but could tear away the garments of their socially determined roles in order to reveal their authentic selves. Thinkers like Rousseau believed that such a quest for self-discovery would accelerate the promises of democratic equality. It is a great and beautiful spectacle, he wrote, to see man raising himself from nothingness by his own efforts; dissipating with the light of his reason, the shadows in which nature enveloped him.

And yet while the notion of liberal individualism was a midwife to Western democracy, its insistence on authenticity ultimately proved to be an impossible existential struggle, a paradox that lurks deep within the language itself. The English word person comes from the Latin persona, meaning actors mask or dramatic role, which suggests the very notion of an authentic self is illusory, a house of cards that topples under the slightest breath of scrutiny. Such was the contention of the midcentury sociologist Erving Goffman, who, in his 1956 book *The Presentation of Self in Everyday Life*, used the theater as a metaphor for the various performances we give throughout the day. One reads a script with the bank teller, dons a costume for ones employer, and follows stage cues with ones spouse. The self, Goffman suggests, is not an organic thing that has a specific location whose fundamental fate is to be born, to mature, and to die; it is a dramatic effect arising diffusely from a scene that is presented.

Never before in history, one could argue, have individuals been so acutely conscious of the extent to which personhood is performed, especially when one is constantly swiping through social media platforms in order to monitor, with fussy custodial care, the dazzle and sheen of an online persona. Our culture demands total transparency, at the same time that it demands near-constant performance, the philosopher Michel de Certeau writes in his book *The Practice of Everyday Life*. So how can you know a person?

This existential slipperiness of personhood is one reason why the art critic Dan Fox, in his new book-length essay *Pretentiousness: Why It Matters*, feels justified in debunking the rhetoric of pretension, a word that is typically leveled as a pejorative. After all, if inauthenticity is our shared fate and all social encounters are unavoidably performative, on what grounds can anyone call out

another's acts of cultural deception?

It can be inferred from the passage that:

- A) liberal individualism led to the development of Western democracy.
- B) liberal individualism assisted in the development of Western democracy
- C) liberal individualism hindered the development of Western democracy
- D) liberal individualism hijacked in the development of Western democracy.

Question No. : 2

The attitude adopted by the author of the passage can be labelled as:

- A) Didactical
- B) Sardonic
- C) Fanciful
- D) Elucidatory

Question No. : 3

According to Erving Goffman:

- A) Theater is what helps us cope with life
- B) Theater is what gives us metaphors for lives
- C) Theater is a figurative description of our everyday lives
- D) Theater explains the intricacies of human thinking

Question No. : 4

The example of the aerial advertisement in the first paragraph of the passage is used by the author:

- A) to highlight a scary reality.
- B) to expose a misgiving in everyday life.
- C) to showcase a certain ambiguity of life.
- D) to point out an inanity in life.

Question No. : 5

According to the information provided in the passage:

- A) Our online personas are part of the 24 x 7 performance we seem to give.
- B) It is hard to call out the acts of others as pretension when one oneself is involved in the same.
- C) Both (1) and (2)
- D) Neither (1) nor (2)

Question No. : 6

The central of the passage is:

- A) our life is a delusion
- B) Lives and hence identities are a human creation
- C) identities are a human deviation
- D) our lives are not an illusion

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

Question No. : 7

Intellectuals – a category that includes academics, opinion journalists, and think tank experts – are freaks. I do not mean that in a disrespectful way. I myself have spent most of my life in one of the three roles mentioned above. I have even been accused of being a public intellectual, which sounds too much like public nuisance or even public enemy for my taste.

My point is that people who specialize in the life of ideas tend to be extremely atypical of their societies. They – we – are freaks in a statistical sense. For generations, populists of various kinds have argued that intellectuals are unworldly individuals out of touch with the experiences and values of most of their fellow citizens. While anti-intellectual populists have often been wrong about the gold standard or the single tax or other issues, by and large they have been right about intellectuals.

The terms intellectual and intelligentsia arose around the same time in the 19th century. Before the industrial revolution, the few people in advanced civilizations paid to read, write, and debate were mostly either clerics like medieval Christian priests, monks, or secular scribes like Confucian mandarins who worked for kings or aristocrats, or, as in the city-states of ancient Greece, teachers whose students were mostly young men of the upper classes.

The replacement of agrarian civilization by industrial capitalism created two new homes for thinkers, both funded directly or

indirectly by the newly enriched capitalist elite. One was the nonprofit sector the university and the nonprofit think tank founded chiefly by gifts from the tycoons who lent these institutions their names: Stanford University, the Ford Foundation. Then there was bohemia, populated largely by the downwardly-mobile sons and daughters of the rich, spending down inherited bourgeois family fortunes while dabbling in the arts and philosophy and politics and denouncing the evils of the bourgeoisie.

Whether they are institutionalized professors and policy wonks or free-spirited bohemians, the intellectuals of the industrial era are as different from the mass of people in contemporary industrial societies as the clerics, scribes, mandarins, and itinerant philosophers of old were from the peasant or slave majorities in their societies.

To begin with, there is the matter of higher education. Only about 30 percent of American adults have a four-year undergraduate degree. The number of those with advanced graduate or professional degrees is around one in ten. As a BA is a minimal requirement for employment in most intellectual occupations, the pool from which scholars, writers, and policy experts is drawn is already a small one. It is even more exclusive in practice, because the children of the rich and affluent are over-represented among those who go to college.

Then there is location. There have only been a few world capitals of bohemia, generally in big, expensive cities that appeal to bohemian rich kids. In the U.S., the geographic options for think tank scholars also tend to be limited to a few expensive cities, like Washington, D.C. and New York. Of the different breeds of the American intellectual, professors have the most diverse habitat, given the number and geographic distribution of universities across the American continent. Like college education, geographic mobility in the service of personal career ambitions is common only within a highly atypical social and economic elite.

According to the author of the passage, the term public intellectual is:

- A) innocuous B) harmless C) frivolous D) distasteful

Question No. : 8

According to the author of the passage:

- A) anti-intellectuals have often gotten issues that require intellectual capabilities wrong.
 B) anti-intellectuals have missed the bus in terms of their assessment of intellectuals. C) both (1) and (2)
 D) neither (1) nor (2)

Question No. : 9

Identify the statements that are correct as per the information provided in the passage.

- I. Intellectuals, in the broad sense of the world, come into existence with the industrial revolution.
 II. Industrial revolution contributed to the creation of intellectuals.
 III. Intellectuals lead to the industrial revolution.

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

Question No. : 10

According to the author of the passage, the intellectuals of the industrial area are different from the mass of people in contemporary industrial societies by virtue of:

- A) their advanced degrees in education
 B) their preference for certain cities and locales rather than being limited to their original cities and localities.
 C) both (1) and (2) D) neither (1) nor (2)

Question No. : 11

A suitable title for the passage is:

- A) It is not easy to understand intellectuals B) We don't need intellectuals
 C) Anti-intellectuals do not understand intellectuals D) Intellectuals are freaks

Question No. : 12

According to the author of the passage, who, among the following, can be classified as intellectuals?

- I. chairs of academic departments
- II. journalists who write for editorial departments of newspapers and magazines
- III. members of policy institutes
- IV. members of advocacy groups

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

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

Question No. : 13

Hearing the news that children in care and special schools were subjected to drug trials in the 1960s without their parents being consulted sent shivers down my spine. As a 10-year-old I was shipped off from my childrens home to a school for maladjusted children a boarding school I knew had a lot of the bad boys from my area. I now know, 40 years later, that my problems were emotional and could have been solved with love and care. Instead, I was exposed to violence, bullying and abuse. My school was a very scary place where you had to be on guard all the time.

This week it emerged that Richmond Hill approved school, North Yorkshire, gave its most disruptive boys an anti-convulsant drug to see if it would control their behaviour. My immediate reaction to this story was: could this have happened to me? I still clearly remember my child psychiatrist giving me tablets after a nasty incident where I bit a teacher in primary school. As the state was my legal guardian I was an unwanted child in care no one ever checked with my parents. But the state was the sort of parent who exposed me to abuse, the kind of parent who never thought about a future for me beyond 18. Its no wonder I still think about what they could have done to us during that era, when kids were warehoused on an industrial scale. There were 120,000 kids in the care system then its now down to 70,000 after falling to 60,000 a decade ago thats a lot of kids to experiment on.

I remember tablets being given out on a daily basis to kids with epilepsy, temper tantrums and a host of other physical and emotional ailments. Most of the teenage girls, some as young as 13, were made to take contraceptive pills. Things have changed now, of course. Back then, most kids in care were in homes whereas now many are fostered. This has helped to counter the institutional abuse, including sex abuse, that many child residents suffered as seen in care homes from north Wales and Jersey to Northern Ireland and south London. In my view, though, these changes could make todays children feel more isolated. We kids in the home stood up for each other and often felt we only had each other.

Today, local authorities employ staff specifically to oversee the wellbeing of looked-after kids; but with the recent cuts I know many children and young people with emotional issues who are not being cared for or given the correct or any treatment. The knock-on effects of not being treated are that individuals can go into adult life with issues unresolved, thus dragging them into the penal system, with the risk of their own kids being taken away, repeating the whole negative cycle.

One girl I was in care with was abused by her father: later in life, having raised her own children, she wanted to foster. When being assessed she was told by social workers that she was unable to be a carer until she had resolved her childhood issues, which were then 40 years old. So it seems one part of social work knows how important it is to treat emotional issues, but the part that cares for damaged children does not.

I lived with kids who were on another planet due to their medication; I knew others who killed themselves in early adulthood having not found comfort in their lives. Can I ask that the public not judge those of us unfortunate enough to end up in prison or who are unable to get on in life, when our parent the state made such a hash of our damaged childhoods?

According to the author of the passage:

- A) the use of any sort of drugs for children should be prohibited.
- B) the profligate use of drugs in special schools should be carefully re-examined.
- C) the unwanted use of drugs to suppress bad behaviour is something which is not welcome. D) none of the above

Question No. : 14

The primary purpose of the passage can be stated to be:

- A) to preclude a certain line of thinking B) to showcase an urgent demand C) to highlight an unchecked malpractice
- D) to illustrate an inconsistent viewpoint

Question No. : 15

The second last paragraph of the passage:

- A) exposes the apathy of the current system B) highlights the irony of the current situation
 C) showcases the dichotomy of the system D) all of the above

Question No. : 16

According to the author of the passage:

- I. Unresolved issues in early life risk creating environments where individuals might have to go through again the issues they have previously encountered.
 II. The answer to issues in early life lie in love and not in chemicals.
 III. Things have dramatically changed now and this is reflected by the drop in the numbers of students in the care system.

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

Question No. : 17

Identify the statements that are in cognizance with the views of the author.

- A) Foster homes have had a positive impact by leading to a reduction in the sexual abuse of children.
 B) The sense of solidarity among children in homes is something children miss in foster homes. C) Both (1) and (2)
 D) Neither (1) nor (2)

Question No. : 18

The tone adopted by the author of the passage is primarily:

- A) Critical B) Prejudiced C) Vitriolic D) Punitive

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

Question No. : 19

Suppose that your spouse wrongs you. Suppose that she shows up late for a dinner date. Or, more drastically, she cheats on you with your best friend. You will get angry and upset. She, in turn, will show remorse and make amends. You then will forgive her, and the two of you will move on. At least in theory.

But even in theory, Martha Nussbaum argues, this entire dynamic is morally dubious. Its transactional, Nussbaum says: Your anger, essentially, is the desire for your spouse to receive some kind of payback, a hurt in return for the wrong she did you. And the forgiveness that you ultimately extend is a reward for her remorse, and other efforts she might take to make things right. Each step is a quid pro quo. And quid pro quo, Nussbaum argues, is a profoundly misbegotten framework for dealing with the moral and emotional fallout of being wronged.

For one thing, no matter how angry you get, you in fact can never gain payback for the wrong done to you. You cant, Nussbaum notes, reverse your spouses tardiness or infidelity by venting your anger at her; you can never recover what you lost, however small or large. And while her behavior might have exhibited a lack of respect for you, and while your anger might seem like a vehicle for asserting a compensating self-respect, you are simply satisfying your own amour-propre by expressing it, which is hardly edifying. Nor, all too often, is the promise you hold out of granting forgiveness in return for your spouses remorse and amends -- anything other than manipulative, a way, however subtle or obvious, of extorting her repentance and apology. Your power to forgive simply allows you to enjoy an extended period of unattractive moral superiority before deigning to let her off the hook after sufficient groveling has occurred.

Better, Nussbaum argues, that we try at least to the degree that we can -- to avoid anger, the desire for payback in response to the wrongs we suffer, and abandon the very idea of forgiving, conditioned as it is on receiving remorse and contrition in exchange. Better, whenever we can, to follow the example of the father in the parable of the Prodigal Son. His love surges up at the sight of the long-lost offspring who caused him so much suffering, drowning any anger he might have felt toward and sidelining any demand for a show of remorse from his wayward child. For the prodigal sons father, generosity trumped any need for emotional quid pro quos. His conduct is a model, Nussbaum says, for all of us when we are wronged in our personal relationships.

In the given context, the noun 'amour-propre' means:

- A) Mixed feelings consisting of pain and joy. B) Feelings exhibiting substantial consternation C) Emotions related to grief
D) Feelings of excessive pride

Question No. : 20

A suitable title for the passage is:

- A) Pardon and pity B) Absolve and ameliorate C) Regret and repent D) Forgive and forget

Question No. : 21

According to views attributed to Nassbaum in the passage, which of the following statements are correct?

- I. Exacting payback for being emotionally hurt is justified to a certain extent only.
II. Actions once committed cannot be reversed.
III. It is nothing else but manipulation when force the person who has caused you grievance to make amends for his actions.

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

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

Question No. : 22

Nights spent staring at the ceiling as worries dance manically around the brain. Taking a deep breath before opening the gas bill. Sacrificing a hot meal so your children dont need to. Living with personal debt can be draining and emotionally exhausting, and it is the everyday experience of all too many Britons. According to a new TUC report, 3.2m British households face problem debt, meaning they spend more than a quarter of their overall income repaying unsecured borrowings (ie, excluding mortgages). For 1.6m households in extreme debt, the picture is even bleaker: more than 40% of their income goes to creditors.

This is the lived experience of Britains working poor, those who keep the country ticking with their hard graft and are rewarded with poverty and insecurity. British workers have suffered the longest fall in wages since Queen Victoria sat on the throne. Between 2007 and 2015, real wages fell by an astonishing 10.4% - the worst fall in any advanced nation other than Greece. Growing personal debt is the price many British workers have paid for the disastrous economic failure of George Osborne and his colleagues - one of whom is now the nations prime minister.

Whats the cure? The government will undoubtedly point to a rising minimum wage, but tax and benefit changes are projected to leave many workers worse off regardless in the coming years. The introduction of a genuine living wage - rather than a minimum wage rebranded as something it is not - would help, and it is welcome that both Labour leadership candidates are committed to it. But the case must be made for workers coming together to secure improved wages: trade unionism, in other words.

Even during the boom years, wages were stagnating or even falling for millions of British workers. What were the consequences? Billions more pounds of public money spent on in-work benefits to compensate, for a start. But in the years leading up to the crash, many workers took on more personal debt to maintain their slipping living standards. Thats not good for the workers, and its not good for the economy, either. But this was at a time when many companies were reporting healthy profits. They just werent sharing the wealth with the workforce who created it in the first place. And why should they? With trade unionism so defeated by punitive laws and industrial decline, they faced little pressure to do so.

In Nordic countries, it is the norm for workers to be unionised. Better living standards and more equality than we have in Britain are two of the byproducts. Jeremy Corbyn - near-certain to be re-elected Labour leader next month - has unveiled policies such as compulsory collective bargaining for companies with more than 250 workers. Such an approach would help lift the wages of workers, not only for their own good, but for the good of the British economy, too. But the positive case for trade unionism cannot just be left to politicians: it needs to be made by all of us. It needs to be put in a language that resonates with the millions of non-unionised workers, and particularly for younger people for whom the very notion of trade unionism seems culturally alien. Personal debt is a blight in modern Britain - and trade unionism is one of its cures.

The author of the passage clearly mentions that:

- I. the concept of trade unions is not something the current generations can be expected to up to speed with.
II. there is co-rlation between better living standards and trade unions.
III. the restrictive laws against trade unions in Britain do not allow them any breathing space for being relevant in society.

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

Question No. : 23

It can be inferred from the passage that:

- A) the problem of debt for the working class is born out of systemic ills of the system.
- B) in the years leading up to the crash, the greed of companies exacerbated the problems of the working class.
- C) both (1) and (2) D) neither (1) nor (2)

Question No. : 24

According to the author of the passage:

- A) the rate of interest for personal loans should be curbed to solve the problem of the working class being in debt.
- B) trade unions offer the best way out in delimiting the impact of debt for the working class.
- C) the current administration does not have the talent to make telling blows against the problem of debt for the working class.
- D) none of the above

DIRECTIONS for the question: The four sentences (labelled 1,2,3 and 4) 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 four numbers as your answer.

Question No. : 25

1. Eulogies are our gifts to the dead.
2. A lonely and melancholy man who loved to drink and owned guns of every possible kind, he felt most at home outdoors.
3. The late James Alan McPherson wrote one such eulogy for his student at the University of Virginia, Breece DJ Pancake.
4. Pancake was an eccentric West Virginian, a constitutional nonconformist.

- A) 1342 B) C) D)

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.

Question No. : 26

1. Then there are Voters in Britain, heeding Brexit campaigners calls to take back control of a country ostensibly threatened by uncontrolled immigration, unelected ©lites, and experts, have reversed fifty years of European integration.
2. Thus, the great eighteenth-century venture of a universal civilization harmonized by rational self-interest, commerce, luxury, arts, and sciencethe Enlightenment forged by Voltaire, Montesquieu, Adam Smith, and othersseems to have reached a turbulent anticlimax in a worldwide revolt against cosmopolitan modernity.
3. I love the poorly educated, Donald Trump said during a victory speech in February, and he has repeatedly taken aim at Americas ©lites and their false song of globalism.
4. In India, Hindu supremacists have adopted the conservative epithet libtard to channel righteous fury against liberal and secular ©lites.
5. Other countries across Western Europe, as well as Israel, Russia, Poland, and Hungary, seethe with demagogic assertions of ethnic, religious, and national identity.

- A) 31542 B) C) D)

Question No. : 27

1. She had been living in Paraguay with her husband, Bernhard Fflrster, a nationalist and anti-Semite who had founded an Aryan colony to begin the purification and rebirth of the human race.
2. The experiment failed in any case.
3. In 1893 Elisabeth Fflrster-Nietzsche returned to her mothers adopted home town of Naumburg in Germany.
4. Elisabeths brother, Friedrich Nietzsche, had condemned her husbands anti-Semitism and her decision to join him in South America.
5. Blighted by disease, poor harvests and intercommunal strife, the outpost collapsed in two years.

- A) 31425 B) C) D)

Question No. : 28

1. When the Ethiopian Olympic marathon medallist Feyisa Lilesa crossed his arms at the finish line, the world asked what the symbol stood for.
2. Perhaps the federations imperious attitude towards the athletes emanates from its paranoia and mistrust of the people, and fear that one day Oromo athletes might open Ethiopias Pandoras box and spill the beans at an international sports event.
3. Almost all Ethiopian runners come from the Oromia region; but the Ethiopian athletics federation is highly scornful of their Oromo identity.
4. Exactly what Lilesa did in Rio - and now he has not returned to Ethiopia. At risk to his life, and at the sacrifice of his career, Lilesa was determined to express at the Olympics the collective grievances and institutional discrimination his people suffer in the Oromia region.
5. Little is known about the historical marginalisation and collective persecution of Lilesas people, the Oromo of north-east Africa.

A) 15324 B) C) D)

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.

Question No. : 29

1. That particular burger coalesced in a substrate of foetal calf serum, but the goal is to develop an equally effective plant-based solution so that a relatively small amount of animal cells can serve as the initial foundation for glistening mounds of brainless flesh in vats meat without the slaughter.
2. Three years ago, a televised taste test of a lab-grown burger proved it was possible to grow a tiny amount of edible meat in a lab.
3. For many cultured-meat advocates, a major motive is the reduction of animal suffering.
4. A trickier question is whether the production of non-sentient flesh should replace what I will call low-suffering animal farming giving animals good lives while still raising them for food.
5. This flesh was never linked to any central nervous system, and so there was none of the pain, boredom and fear that usually plague animals unlucky enough to be born onto our farms.

A) 4 B) C) D)

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.

Question No. : 30

1. The second detection, made on 26 December 2015 and announced this June, firmly established gravitational waves as a new window to the Universe.
2. But even more exciting are the detections yet to come: the thousands of signals that should soon be observed by the Laser Interferometer Gravitational-Wave Observatory (LIGO) and Virgo experiments.
3. The first direct detection of gravitational waves on 14 September 2015 proved that massive objects can ripple the structure of space, verifying a key prediction of Albert Einsteins general theory of relativity.
4. We have shown that black holes collide more often than expected, which has lead some researchers to speculate that black holes might be abundant enough to qualify as a variety of dark matter.
5. They will transform our understanding of black holes, neutron stars, supernova explosions, and perhaps even the origin and fate of the cosmos itself.

A) 4 B) C) D)

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.

Question No. : 31

1. This requires freedom of thought and a variety of voices.
2. But academic departments today, especially in the social sciences, are far more liberal or progressive than the population at large.

3. One of the purposes of university is to challenge the opinions of students.
4. Openness to experience is a key personality dimension.
5. Conservative views are notably underrepresented.

A) 4 B) C) D)

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.

Question No. : 32

1. My own experience of ageing out is what drew me to study drug use in the first place.
2. And in recent years, health, social and behavioural researchers have started delving in.
3. Either way, at least two-thirds of people with substance-use disorders appeared to get clean on their own, representing a goldmine of insights into addiction and recovery.
4. It might be, he wrote, a function either of the addicts life cycle or of the number of years that he is addicted, or of some combination of the two processes.
5. In a 1962 paper for the United Nations Office on Drugs and Crime, Charles Winick proposed that most drug use is probably self-limiting.

A) 1 B) C) D)

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

Question No. : 33

Computer art doesn't really exist in any more provocative sense than paint art or piano art does. The algorithmic software was written by a human, after all, using theories thought up by a human, using a computer built by a human, using specs written by a human, using materials gathered by a human, at a company staffed by humans, using tools built by a human, and so on. Computer art is human art a subset rather than a distinction. Its safe to release the tension. A different human commentator, after witnessing the program beat the human champ at Go, felt physically fine and struck a different note: An amazing result for technology. And a compliment to the incredible capabilities of the human brain. So it is with computer art. Its a compliment to the human brain and a complement to oil paints and saxophone brass.

1. Computer art doesn't really exist.
2. Computer art just isn't a subset of human art.
3. There is no difference between computer art and human art.
4. Human art is nothing else but a subset of computer art.

A) 3 B) C) D)

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

Question No. : 34

Failure is like the original sin in the biblical narrative: everyone has it. Regardless of class, caste, race, or gender, we are all born to fail, we practise failure for as long as we live, and pass it on to others. Just like sin, failure can be disgraceful, shameful and embarrassing to admit. And did I mention ugly? Failure is also ugly ugly as sin, as they say. For all its universality, however, failure is under-studied, when not simply neglected. Its as if even the idea of looking at failure more closely makes us uneasy; we dont want to touch it for fear of contagion.

1. Failure, though to be avoided at all costs, is something that is essentially ugly and disruptive for ones life.
2. Failure, because of its inherest trappings, is something that we avoid.
3. Failure, hard to digest and even harder to accept, is simply not understood very well.
4. Failure, with all its negative implications and outcomes, is a subject avoided because of the fear it generates.

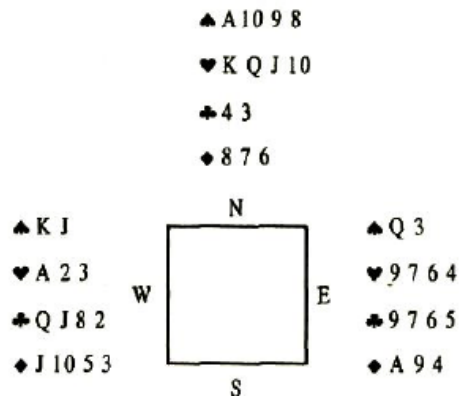
A) 4 B) C) D)

Section : DI & Reasoning

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

Question No. : 35

A deck of cards has 52 cards, 13 each belonging to four different sets (called suits) viz.; Spades (♠), Hearts (♥), Clubs (♣) and Diamonds (♦). Each card in a set has face value of either one of the numbers 2 to 9 or A or J or Q or K written on it. A is equivalent to number 1, J to 11, Q to 12 and K to 13. The following shows the distribution of the 52 cards among 4 players seated at a table. We name the players North (N), East (E), West (W) and South (S).



A trio is defined as a set of three cards with a single person having the same face value written on each of them. How many trios do West, East and South have? (in numerical value)

- A) 2 B) C) D)

Question No. : 36

How many pure sequences do the players have? (A pure sequence is a set of four cards of the same suit, that a single person has, the face values in the sequence being consecutive). (in numerical value)

- A) 2 B) C) D)

Question No. : 37

How many sequences exist with North, West and East? (A sequence is a set of three cards of the same suit that a single person has, the face values in the sequence being consecutive). Note: Three of the four cards of a pure sequence should not be counted as a sequence. (in numerical value)

- A) 4 B) C) D)

Question No. : 38

If by 'length of a suit' we mean the number of cards that a player has of that suit, who has the longest suit?

- A) N B) S C) E D) W

DIRECTIONS for the question: Study the table/s given below and answer the question that follows.

Question No. : 39

Table (1) shows credits given by different B-schools for specializations in fields A, B, C, D, E, F, G and H with some data missing:

	A	B	C	D	E	F	G	H	Total
Vard		8	4	4	4	0	0		28
Ford	3	3	6	3		3	0		

Cago	3	3	3	3	0	0	0			
Ubia	2		6	4	4		0	0	20	
Hester	0	3	7				0	3	3	22
IA			6	6	6	4.5	3		0	33.75
IB	2		4	3	4			2	2	24

Table (1)

Table (2) gives the number of credits that are common for two B-schools with some data missing.

B-schools	Vard	Ford	Cago	Ubia	Hester	IA	IB
Vard			13	16			17
Ford	14	22	18		16	20.25	
Cago			18	17		17.25	15
Ubia		17			15		
Hester	16		15			18	
IA	18			20		33.75	
IB		19		17	17	22	

Table (2)

For any field, the number of credits that are common for two B - schools, is the minimum of the credits given by the two B-schools for the field.

e.g., Let 'a' be the number of credits given to A by Vard and 'b' be the number of credits given to A by Ford. Then, $\min(a, b)$ = number of credits for A that are common for Vard and Ford.

Number of credits that are common to two B-schools = Sum of common credits for different fields for the two B-schools.

Credits given for D and E by Hester B-school are respectively:

- A) 2, 4 B) 3, 3 C) 5, 1 D) Data insufficient

Question No. : 40

Which B-school gives the maximum credit for B?

- A) Vard B) Ford C) IC D) Data insufficient

Question No. : 41

IA gives the minimum credit for specialization in which field other than H?

- A) F B) A C) E D) Cannot be determined

Question No. : 42

How many B-schools do not give any credit for F (i.e., credit = 0)?

- A) 3 B) 4 C) 5 D) None of these

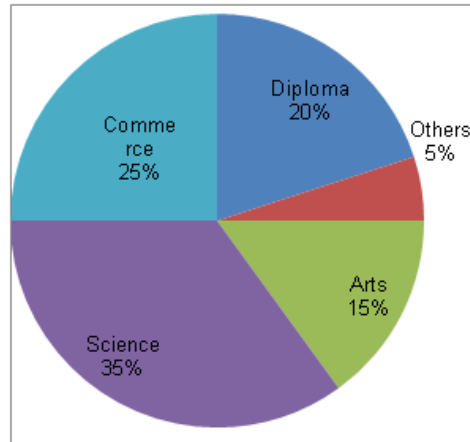
DIRECTIONS for the question: Analyse the graph/s given below and answer the question that follows.

Question No. : 43

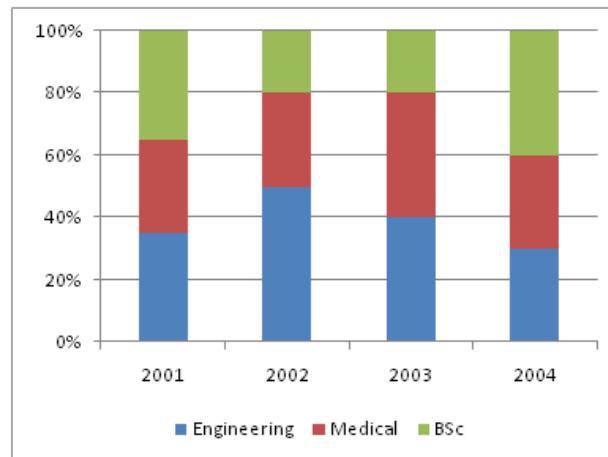
Students passing their Higher Secondary Certificate Examination (HSC) in the country of Uba, deviate to different fields of their

choice.

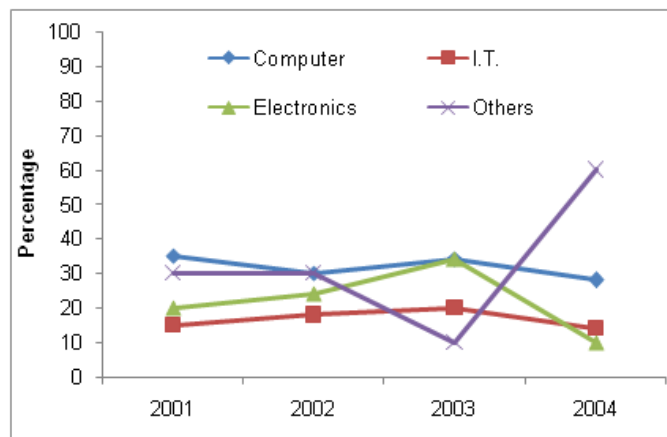
The following pie chart shows the percentage-wise breakup of students opting for different fields in the year 2004.



Students opting for Science choose a B.Sc. course, Engineering course or a Medical course. The following bar graph gives the break - up of students opting for Science for the years 2001, 2002, 2003 and 2004.



The line graph shows the percentage distribution of Engineering students in different branches of Engineering in the given period.



The table shows percentage distribution of B.Sc. students in different specializations available for B.Sc. in the given period.

B.Sc.	Year			
	2001	2002	2003	2004
Physics	22	32	28	25

Chemistry	34	24	32	15
Mathematics	26	25	25	32
Statistics	18	19	15	28

How many students opted for Computer Engineering in the year 2004, if 255000 students passed the HSC in that batch?

- A) 5900 B) 6694 C) 9200 D) Cannot be determined

Question No. : 44

If 61500 students opted for Medical in the year 2003, how many students were studying B.Sc. in Physics in the same year?

- A) 8610 B) 5810 C) 8010 D) Cannot be determined

Question No. : 45

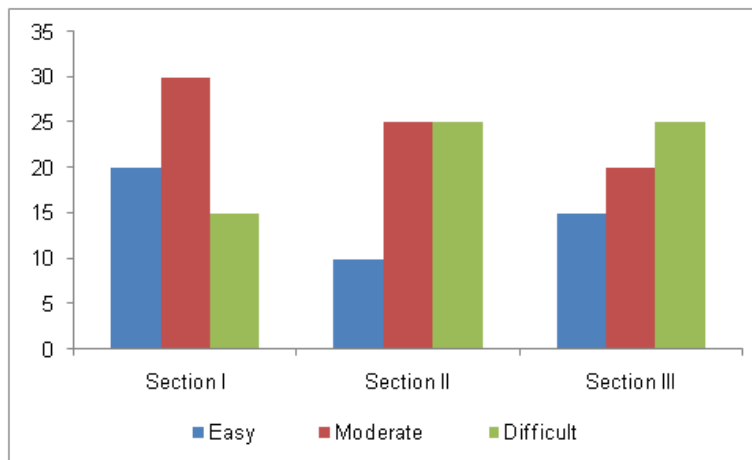
Find the ratio of the number of students doing Engineering in Electronics or I.T., to the number of students doing B.Sc. in Physics or Mathematics in the year 2004.

- A) $\frac{25}{57}$ B) $\frac{3}{4}$ C) $\frac{25}{76}$ D) Cannot be determined

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

Question No. : 46

A management entrance test has to be solved in total 150 **minutes**. There are no negative marks for wrong answers. There are 3 sections and questions- asked in each section can be classified as: easy, moderate and difficult.



An easy question can be answered in 40 seconds, while a moderate and a difficult question can be answered in 1 and 1.5 minutes respectively. Two candidates A and B take the test to maximize their scores. Probabilities of getting an answer correct for two candidates A and B are given below.

	Easy	Moderate	Difficult
Person A	0.9	0.8	0.6
Person B	1	0.7	0.7

If A wants to attempt as many questions as possible, then what percentage of difficult questions will he solve?

- A) 32% B) 46.1% C) 61.2% D) 73.4%

Question No. : 47

What is person B's most probable score in the test, if every correct answer carries 1 mark?

A) 97 B) 109 C) 127 D) None of these

Question No. : 48

If weightage to questions in section I, II and III is 3: 2 : 1 respectively, then how many moderate questions will a person (with 100% accuracy) attempt?

A) 50 B) 55 C) 60 D) 65

Question No. : 49

If total time was 90 minutes instead of 150 minutes and all questions are of equal weightage of 1 mark, then what is the difference between marks of A and B?

A) 0 B) 1.5 C) 2.5 D) None of these

Question No. : 50

If weightage given to easy, moderate and difficult questions is 1: 2: 4 respectively, then what percentage of total questions are attempted by person A to maximise the marks?

A) 73% B) 63% C) 76% D) Cannot be determined

DIRECTIONS for the question: Study the table/s given below and answer the question that follows.

Question No. : 51

The table below gives the details of the interest rates offered (in % per annum) on fixed deposits held in different banks, for seven different terms - A through G - as specified below. For example, term A is for duration 61-90 days, and Citi Bank pays an interest of 3.00% p.a. on the fixed deposits for term A.

S. No.	Bank	(A) 61-90 days	(B) 91- 179 days	(C) 180- 364 days	(D) 1-2 years	(E) 2-3 years	(F) 3-5 years	(G) >5 years
1.	ABN-AMRO Bank	4.00	4.40	4.40	4.75	5.00	5.60	6.00
2.	Allahabad Bank	4.75	4.75	5.00	5.50	5.75	5.80	6.00
3.	American Express Bank	3.50	3.50	4.00	4.00	4.25	4.50	5.00
4.	Andhra Bank	4.75	5.25	5.60	6.00	6.25	6.50	6.55
5.	Bank of Baroda	4.50	4.75	5.00	5.25	5.50	5.75	5.80
6.	Bank of India	4.50	4.75	5.00	5.00	5.25	5.50	5.80
7.	Canara Bank	4.50	4.75	5.25	5.25	5.25	5.50	5.80
8.	Centurion Bank	4.75	5.50	5.55	6.00	6.00	6.25	6.50
9.	Citi Bank	3.00	3.25	3.50	3.50	3.80	4.00	4.25
10.	Corporation Bank	4.50	4.75	5.00	5.25	5.50	5.75	5.80
11.	Dena Bank	5.25	5.50	5.50	6.00	6.25	6.25	6.50

12.	Federal Bank	5.50	5.60	6.25	6.50	6.50	6.50	6.75
13.	HDFC Bank	4.50	4.75	5.55	5.60	6.00	6.25	6.50
14.	HSBC Bank	4.60	5.00	5.00	5.25	5.50	5.75	6.00
15.	ICICI Bank	4.50	5.25	5.60	5.75	6.00	6.00	6.25
16.	IDBI Bank	4.50	5.00	5.25	5.25	5.75	6.00	6.25
17.	Indian Overseas Bank	4.75	5.25	6.25	6.25	6.50	6.75	6.75
18.	ING Vysva Bank	5.00	5.25	5.25	5.50	6.00	6.25	6.50
19.	Lord Krishna Bank	5.25	5.50	5.50	5.75	6.00	6.00	6.25
20.	Punjab National Bank	4.50	4.75	4.75	5.00	5.25	5.25	5.50
21.	Standard Chartered Bank	4.75	5.00	5.00	5.25	5.50	5.75	6.00
22.	State Bank of India	4.50	4.75	5.50	5.75	6.00	6.25	6.25
23.	Syndicate Bank	4.75	5.00	5.25	5.75	6.00	6.25	6.25
24.	UCO Bank	4.00	4.75	5.00	5.00	5.75	5.80	6.00
25.	Union Bank of India	4.50	5.00	6.00	6.25	6.50	6.75	6.70
26.	United Bank of India	5.00	5.00	5.80	6.00	6.25	6.25	6.50
27.	UTI Bank	4.80	5.25	5.75	6.00	6.25	6.50	6.50

Mr. Chola Mandalam, The Financial Analyst, lays out the guidelines under which any two banks could be compared. He introduced an index, called Zeta index. Zeta index of a bank X with respect to bank Y is represented by Z_{xy} . It is defined as the number of terms (out of the seven mentioned in the table) for which the interest rate offered by bank X is more than that offered for the corresponding term by bank Y.

For example, the Zeta index of ABN-AMRO Bank with respect to Allahabad Bank is 0, while the Zeta index of Allahabad Bank with respect to ABN-AMRO Bank is 6. Mr. Chola Mandalam compares two banks, X and Y, depending on the difference in the value of the Zeta indices of the two banks with respect to one another.

Criteria of Rating any two banks- X and Y with respect to each other.

Difference of Zeta Indices ($Z_{xy} - Z_{yx}$)	Rating of	
	X with respect to Y	Y with respect to X
7	A1 +	A1-
6	A2 +	A2-
5	A3 +	A3-
4	A4 +	A4-
3	A5 +	A5-
2	A6 +	A6-

1	A7 +	A7-
0	par	par

For example, according to the above table ABN-AMRO Bank is rated A2 with respect to Allahabad Bank.

How many banks are rated A1 with respect to Citi Bank? (in numerical value)

- A) B) C) D)

Question No. : 52

How many banks are rated A4+ with respect to Federal Bank? (in numerical value)

- A) 1 B) C) D)

Question No. : 53

Which of the following banks is rated A3 with respect to Indian Overseas Bank?

- A) Centurion Bank B) Andhra Bank C) ING Vysya Bank D) State Bank of India

Question No. : 54

What is the rating of UCO Bank with respect to State Bank of India?

- A) A1+ B) A2+ C) A3+ D) A2 -

Question No. : 55

How many banks are there, such that for each of them, the interest rates offered successively increase for terms from A through G? (in numerical value)

- A) 4 B) C) D)

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

Question No. : 56

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.

Ravi enjoys hockey. Which of the following must be true?

- A) He may or may not enjoy carrom B) Ravi enjoys Basketball C) Ravi doesn't enjoy Football D) Ravi enjoys cricket

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

Question No. : 57

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.

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

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

Question No. : 58

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.

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

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

Question No. : 59

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.

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 carrom D) None of those who like hockey dislike football

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

Question No. : 60

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.

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

Question No. : 61

Six friends, who are from six different cities, were asked about the cities to which each of them and their friends belong. Their replies were as follows.

	Bangalore	Chennai	Delhi	Hyderabad	Kolkata	Mumbai
Aman	Emma	Biswa	Dev	Aman	Charan	Fazal
Biswa	Aman	Fazal	Biswa	Emma	Charan	Dev
Charan	Emma	Fazal	Dev	Biswa	Aman	Charan
Dev	Charan	Biswa	Fazal	Dev	Aman	Emma
Emma	Emma	Biswa	Dev	Charan	Aman	Fazal
Fazal	Biswa	Dev	Fazal	Charan	Emma	Aman

It is known that no two persons gave an equal number of true replies, and that they all belong to a city from among, Bangalore, Chennai, Delhi, Hyderabad, Kolkata and Mumbai and no two persons belong to the same city.

Which of the following persons gave the highest number of true replies?

- A) Emma B) Biswa C) Charan D) Dev

Question No. : 62

The person who belong to Hyderabad is

- A) Aman B) Biswa C) Charan D) Dev

Question No. : 63

How many persons gave more true replies than Biswa? (in numerical value)

- A) 5 B) C) D)

Question No. : 64

How many persons gave his/her city name correctly? (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. : 65

A class of 1000 students, comprising boys and girls, is divided into three sections, named as A, B and C. The ratio of boys to girls in the class is 9 :11. The following table shows the percentage of boys and girls in each of the sections.

Section	Boys (%)	Girls (%)
---------	----------	-----------

A	60	
B		40
C	p	Q

Based on the above information, which of the following is true?

- A) $p = q$ B) $p < q$ C) $p > q$ D) Data insufficient

Question No. : 66

A class of 1000 students, comprising boys and girls, is divided into three sections, named as A, B and C. The ratio of boys to girls in the class is 9 :11. The following table shows the percentage of boys and girls in each of the sections.

Section	Boys (%)	Girls (%)
A	60	
B		40
C	p	Q

If the ratio of the number of students in Section A : Section B : Section C is 1 : 3 : 6, then what is the ratio of the number of girls in Section C : Section B : Section A?

- A) 7 : 6 : 2 B) 4 :12 : 39 C) 78: 24 : 8 D) None of these

Section : Quantitative Ability

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

Question No. : 67

Two ants A and B are on either side of a pole. Ant A can see the top of the pole at 30° angle of elevation and the distance between top of the pole and ant A is 25 m. Ant B makes an angle of elevation of 15° with the top of the pole. Find the distance between ant A and ant B. (Given: $\sqrt{3} = 1.73$ and $\tan 15^\circ = 0.27$)

- A) 68 m B) 30.48 m C) 21.25 m D) Cannot be determined

Question No. : 68

A survey conducted in a library shows that 3746 persons like to read thriller novels, 2829 persons like classical novels and 4225 like romantic novels. The number of persons who like both thriller and classical novels but not romantic novels is 30% of the number of persons who like only thriller novels. Number of persons who like both classical and romantic novels but not thriller novels is 50% of the number of persons who like only classical novels. The number of persons who like both thriller and romantic novels but not classical novels is 60% of the number of persons who like only romantic novels. If 108 persons like to read all the three types of novels, then find the total number of persons on whom the survey was done in the library. (All the persons surveyed like at least one of the three types of the novels) (in numerical value)

- A) 8041 B) C) D)

Question No. : 69

Ramakant, Rajnikant and Ravikant started a firm investing 45%, 35% and 20% of the capital respectively. After some time they added 25%, 65% and 20% more of their respective initial capital investments. If the amount added by Ramakant was Rs. 10000, then find their approximate total investment now.

- A) Rs.122700 B) Rs.123500 C) Rs.124500 D) Rs.122200

Question No. : 70

In a shop, the marked price of an article is Rs.3990. The shopkeeper gives some discount on that article and earns, profit of Rs.540. Find approximately, discount on that article, if its cost price is Rs.2250. (in approx. percentage)

- A) 30 B) C) D)

Question No. : 71

There are 3 friends who got their results from the school. If the digits of the percentage of the boy who got maximum percentage are interchanged, we get the percentage of the boy who got the minimum percentage of the 3 friends. If the average of the percentages of the 3 friends gives the percentage of the friend who scored neither maximum nor minimum percentage, then which of the following can be his percentage?

- A) 60 B) 63 C) 66 D) 72

Question No. : 72

Under given condition, the pressure of a definite mass of a gas varies inversely with volume and directly with the temperature of a gas. If volume of gas reduced by 20% and temperature falls by 25% then the pressure will:

- A) Reduce by 25/4% B) Increase by 15/4% C) Reduce by 25% D) Reduce by 8%

Question No. : 73

The sum of the first 20 terms and the first 50 terms of an A.P. is 670 and 3925 respectively. Find the sum of first five terms of a G.P. whose first term is same as that of the A.P. and whose common ratio is equal to the common difference of the A.P. (in numerical value)

- A) 605 B) C) D)

Question No. : 74

If $[x]_n = x(x-1)(x-2) \dots (x-n)$, $n \in \mathbb{N}$ and $x = n+1$, find $\sum_{n=1}^5 [x]_n$ (in numerical value)

- A) 872 B) C) D)

Question No. : 75

Two athletes run on two concentric circular tracks separated by 4 m. Their speeds are in the ratio 4 : 7. If they start running on their respective tracks they take the same time to complete one round. If they interchange the tracks, the slower athlete takes 1 minute 30 seconds to complete one round. Find the speed of the faster athlete.

- A) 9.7 m/s B) 1.71 m/s C) 1.14 m/s D) Cannot be determined

Question No. : 76

B, C and D take part in a 1 km race. B and C start from one end and D from the other end in the opposite direction. B and D give C a start of 15 m. B and C finish the race at the same time. D covers 80 m in 1 minute. B's speed is twice that of D's speed. Find the distance between C and D at the end of 2 minutes. (in metre)

- A) 509.8 B) C) D)

Question No. : 77

In a group of 13 persons, 6 are vegetarians and remaining are non-vegetarians. There are 6 Biharis and the remaining 7 are Gujaratis, of whom 4 are vegetarians. Find the number of ways in which they can be seated in a row so that no two non-vegetarians occupy the adjoining seats though all the Gujaratis are always sitting together.

- A) $7!4!3!2!4!$ B) $3(4!3!2!4!)$ C) $\frac{7!6!}{4!3!2!4!}$ D) None of these

Question No. : 78

The geometric mean (G.M.) and arithmetic mean (A.M.) of two numbers are in the ratio 3 : 5. The sum of A.M., G.M. and 5 times the harmonic mean (H.M.) of these numbers is 34. Find the bigger numbers. (in numerical value)

- A) 18 B) C) D)

Question No. : 79

Anand and Kasparov are the only two players in a Chess tournament in which the chance of Anand winning a game is $\frac{1}{3}$ while that of Kasparov winning a game is $\frac{1}{6}$. Find the probability of one of them winning exactly two of the first three games.

- A) $\frac{1}{3}$ B) $\frac{7}{24}$ C) $\frac{99}{126}$ D) $\frac{5}{36}$

Question No. : 80

Two kids, Rohan and Mohan, were playing on the beach. Each filled a bucket with sand using a cup and a cone. Rohan filled his bucket with seventeen cups and nine cones of sand, while Mohan filled his bucket with nine cups and seventeen cones of sand. The volumes of the buckets of Rohan and Mohan are 704 and 752 cubic units respectively. Find the sum of the volumes of a cup and a cone, assuming both the cones have equal volume and both the cups have equal volume. (in numerical value)

- A) 56 B) C) D)

Question No. : 81

In class X, the number of girls are five more than half the numbers of boys. The boys decide to go on a picnic and they collect as much money from each boy as the number of boys. If the total collection amounts to Rs. 1764, the strength of class X is: (in numerical value)

- A) 68 B) C) D)

Question No. : 82

There are six couples sitting around a circular table. Find the number of ways in which they can be seated if no two men sit together and a particular couple sits together. (in numerical value)

- A) 28800 B) C) D)

Question No. : 83

A necklace has to be made using 32 beads and a gold pendant which looks different from both the sides. There are 7 beads of red colour, 6 of green, 8 of yellow and 11 of blue. In how many ways can the necklace be made, so that the two beads, one on either side of the pendant are red?

- A) $\frac{{}^{32}C_3}{6!8!11!7!}$ B) $\frac{2 \times 30!}{6!8!11!5!}$ C) $\frac{31}{6!8!11!7!}$ D) None of these

Question No. : 84

In a family of three generations, Satish is married to Savita. They have one son Shyam who is married to Swati. Shyam has two children named Siddhi and Sonu. In this family, the ages of wives are $\frac{5}{6}$ th of their husbands' ages respectively. Satish's age is $\frac{5}{3}$ rd of Shyam's age. One year ago, Siddhi's age was $\frac{1}{3}$ rd of her father's present age. Two years later, Sonu's age will be $\frac{1}{3}$ rd of his mother's present age. If the sum of the ages of all the family members is 197, then find Savita's present age.

- A) 36 years B) 60 years C) 50 years D) Cannot be determined

Question No. : 85

Anil takes a loan of Rs. 15000 from a merchant. The merchant offers him two options for repayment of the loan: either he has to repay the loan with 11% interest compounded annually within two years or with 8% simple interest within three years. Anil selects the second option. Compared to the first option, find the gain or loss of the merchant because of Anil's choice? (write the ans key)

1. Gain, Rs.450 2. Loss, Rs.118.5 3. Gain, Rs.118.5 4. Loss, Rs.450

A) 3 B) C) D)

Question No. : 86

$$\frac{a^3 + b^3}{(a+b)(a^3 + b^3) - (a-b)^2(a^2 - ab + b^2)} = ? \quad (\text{write the ans key})$$

1. $\frac{a^2 + b^2}{a^2 - b^2}$

2. $\frac{a+b}{4ab}$

3. $\frac{a^2 + b^2}{a^3 - b^3}$

4. $\frac{a+b}{a^2 + b^2}$

A) 2 B) C) D)

Question No. : 87

$$\begin{aligned} \text{If } f(x) &= x^3 - (4-2)x^2 + (3-42)x + 32; \text{ for } x < 1 \\ &= x^2 - 7x - 2; \text{ otherwise} \end{aligned}$$

Which of the following can be the values of x, if $f(x) = 0$?

I. 1 II. 3 III. -8

A) I and II B) I and III C) II and III D) None of these

Question No. : 88

$$\begin{aligned} f(x) &= x^3 - 8x^2 + 19x - 12; \text{ for } x > 2 \\ &= x^2 - 6; \text{ otherwise} \end{aligned}$$

$$\begin{aligned} g(x) &= 13x^3 - 2x^2 + 7x - 3; \text{ for } x < \frac{x^2}{3} \\ &= 17x^2 - 2x + 1; \text{ for } \frac{x^2}{3} \leq x < \frac{x^2}{2} \\ &= 0; \text{ otherwise} \end{aligned}$$

If $f(y) = 0$, for some y, then $g(y)$ can take values:

I. 148 II. 825 III. 1024

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

Question No. : 89

A tank has two taps which can fill the tank in 20 min and 25 min. There is waste pipe which can empty the tank in 30 min. If two taps and waste pipe be opened one by one, for 5 min. interval, in order, then how much time will it take to fill the tank?

A) 31 min B) 48 min C) 52 min D) 43 min

Question No. : 90

$$\frac{(7^a)(7^2)^2 - 7 \cdot 7^{(a+1)}}{7^a \cdot 7^4} + 7^{-2} \text{ is equal to: } \quad (\text{in numerical value})$$

A) 1 B) C) D)

Question No. : 91

In $\square ABC$, AD is the angle bisector of A and D cuts BC such that BD is less than DC. Also, BE is the angle bisector of B and E is a point on segment AC. Find AE, if BC is 9 cm and $BC = AC$. (write the ans key)

1. 253 cm^2

2. 48 cm^2

3. 503 cm^2

4. 64 cm^2

second gets atleast 4 balls, third gets atleast 6 balls and so on. In how many ways can it be done?

- A) $36C9$ B) $44C8$ C) $45C8$ D) None of these

Question No. : 100

The HCF and LCM of two integers a and b are x and y such that $xy = 54$. Also the HCF and LCM of ka and lb , where k and l are integers, is 18. Therefore b/a can be:

- A) $2/3$ B) $1/6$ C) $1/3$ D) Both 1 and 2

QNo:- 1 ,Correct Answer:- B

Explanation:- Refer to the lines: *And yet while the notion of liberal individualism was a midwife to Western democracy, its insistence on authenticity ultimately proved to be an impossible existential struggle, a paradox that lurks deep within the language itself.*

Midwife means 'a person, typically a woman, who is trained to assist women in childbirth.'

The sentiment of assistance is important here. This helps us identify option 2 as the correct answer.

QNo:- 2 ,Correct Answer:- D

Explanation:- Let us explore the meanings of the words:

1. Didactical: Instructive (especially excessively)
2. Sardonic: Disdainfully or ironically humorous; scornful and mocking
3. Fanciful: Not based on fact; unreal
4. Elucidatory: Make clear and (more) comprehensible

We can see that option 4 is the correct answer in the given case

QNo:- 3 ,Correct Answer:- C

Explanation:- Refer to the lines: *Such was the contention of the midcentury sociologist Erving Goffman, who, in his 1956 book The Presentation of Self in Everyday Life, used the theater as a metaphor for the various performances we give throughout the day. One reads a script with the bank teller, dons a costume for ones employer, and follows stage cues with ones spouse.*

This helps us identify option 3 as the correct answer.

QNo:- 4 ,Correct Answer:- B

Explanation:- Refer to the lines: *The ad was supposed to be an assurance, a variation of that old saw about true beauty being on the inside. But its insistence on the real you was an insinuation of doubt, a soft rebuke, as if, by simply lying near the ocean, I was committing a minor fraud.*

The given ad is highlighting a doubt, which in other words, can be labelled a misgiving.

QNo:- 5 ,Correct Answer:- C

Explanation:- Option 1 can be derived from the lines: *Never before in history, one could argue, have individuals been so acutely conscious of the extent to which personhood is performed, especially when one is constantly swiping through social media platforms in order to monitor, with fussy custodial care, the dazzle and sheen of an online persona. Our culture demands total transparency, at the same time that it demands near-constant performance, the philosopher Michel de Certeau writes in his book The Practice of Everyday Life. So how can you know a person?*

Option 2 can be derived from the lines: *After all, if inauthenticity is our shared fate and all social encounters are unavoidably performative, on what grounds can anyone call out anothers acts of cultural deception?*

QNo:- 6 ,Correct Answer:- B

Explanation:- This is an indirect question wherein you need to identify the central idea of the passage to identify the correct answer. In the given case, the author of the passage is clear that our everyday lives are filled with pretentious behaviour and in fact, our supposedly "true self" is a creation in itself. Therefore the answer option is 2.

QNo:- 7 ,Correct Answer:- D

Explanation:- Refer to the lines: I have even been accused of being a public intellectual, which sounds too much like public nuisance or even public enemy for my taste.
The author of the passage makes it clear that he does not like the given term. This makes option 4 the correct answer in the given case.

QNo:- 8 ,Correct Answer:- A

Explanation:- Refer to the lines: While anti-intellectual populists have often been wrong about the gold standard or the single tax or other issues, by and large they have been right about intellectuals.
Option 2 clearly goes against the given lines.
Option 1 is derived from the first half of the above sentence.

QNo:- 9 ,Correct Answer:- A

Explanation:- Statement I can be derived from the lines: The terms intellectual and intelligentsia arose around the same time in the 19th century. Before the industrial revolution, the few people in advanced civilizations paid to read, write, and debate were mostly either clerics like medieval Christian priests, monks, or secular scribes like Confucian mandarins who worked for kings or aristocrats, or, as in the city-states of ancient Greece, teachers whose students were mostly young men of the upper classes.
Statement II can be derived from the lines: The replacement of agrarian civilization by industrial capitalism created two new homes for thinkers, both funded directly or indirectly by the newly enriched capitalist elite.
Statement III cannot be derived from the above context.

QNo:- 10 ,Correct Answer:- C

Explanation:- This is the easiest question in the passage. In fact, this is a fact-based question and you should have easily gotten this right. Refer to the lines: To begin with, there is the matter of higher education..Then there is location.

QNo:- 11 ,Correct Answer:- D

Explanation:- The first line of the passage helps us identify the answer in this case: Intellectuals a category that includes academics, opinion journalists, and think tank experts are freaks.

QNo:- 12 ,Correct Answer:- D

Explanation:- Refer to the lines: Intellectuals a category that includes academics, opinion journalists, and think tank experts are freaks. I do not mean that in a disrespectful way. I myself have spent most of my life in one of the three roles mentioned above.
I and II can be directly derived from the lines above.
A think tank or policy institute, research institute, etc. is an organization that performs research and advocacy concerning topics such as social policy, political strategy, economics, military, technology, and culture.
We can see from the above definition that III and IV also fit the given definition of intellectuals.

QNo:- 13 ,Correct Answer:- B

Explanation:- In the given case, options 2 and 3 are close. But remember, the context is important too. Option 2 provides us the context of the passage and tells us where the excessive use of drugs needs to be checked (in special schools). This context is missing from option 3.

QNo:- 14 ,Correct Answer:- C

Explanation:- In the given passage, the author of the passage clearly wishes to expose the malpractice of students being given drugs in special schools. According to the author of the passage, this is clearly something which is not right and should be rectified. Considering this, option 3 is the best answer in the given case.

QNo:- 15 ,Correct Answer:- D

Explanation:- In the case, you need to know the meanings of the three words used in the given answer options:

1. Apathy: Lack of concern.
 2. Irony: Incongruity between what might be expected and what actually occurs
 3. Dichotomy: A division or contrast between two things that are or are represented as being opposed or entirely different.
- We can see that each of these sentiments fits the given context and therefore, the correct answer is option 4.

QNo:- 16 ,Correct Answer:- A

Explanation:- Statement I can be derived from the lines: The knock-on effects of not being treated are that individuals can go into adult life with issues unresolved, thus dragging them into the penal system, with the risk of their own kids being taken away, repeating the whole negative cycle.

Statement II can be derived from the lines: I now know, 40 years later, that my problems were emotional and could have been solved with love and care. Instead, I was exposed to violence, bullying and abuse.

Statement III is clever alteration of the information given in the passage: There were 120,000 kids in the care system then its now down to 70,000 after falling to 60,000 a decade ago thats a lot of kids to experiment on...Things have changed now, of course.

Back then, most kids in care were in homes whereas now many are fostered.

The use of the word 'dramatically' in this case is extreme and cannot be justified in the given case.

QNo:- 17 ,Correct Answer:- C

Explanation:- Both options 1 and 2 are correct. These can be derived from the lines: This has helped to counter the institutional abuse, including sex abuse, that many child residents suffered as seen in care homes from north Wales and Jersey to Northern Ireland and south London. In my view, though, these changes could make todays children feel more isolated. We kids in the home stood up for each other and often felt we only had each other.

QNo:- 18 ,Correct Answer:- A

Explanation:- In order to identify the answer, lets look at the meanings of the individual words:

1. Critical: Marked by a tendency to find and call attention to errors and flaws
2. Prejudiced: Being biased or having a belief or attitude formed beforehand
3. Vitriolic: Harsh or corrosive in tone
4. Punitive: Inflicting punishment

We can clearly see that option 1 is the best answer in the given case.

QNo:- 19 ,Correct Answer:- D

Explanation:- Refer to the given context: And while her behavior might have exhibited a lack of respect for you, and while your anger might seem like a vehicle for asserting a compensating self-respect, you are simply satisfying your own amour-propre by expressing it, which is hardly edifying.

We can clearly see that we need to select an answer option which is opposite in meaning to lack of self-respect. We find that in option 4.

QNo:- 20 ,Correct Answer:- D

Explanation:- For the given question, the last paragraph of the passage is critical. The last paragraph of the passage is where the author drives home the point that there is no point in holding on to anger and that should forgive the person who has erred. This is the only way to get out of the cycle of exacting some sort of payback. Keeping this in mind, we can see that option 4 is the best answer in the given case.

QNo:- 21 ,Correct Answer:- B

Explanation:- Nassbaum is actually against statement I: And quid pro quo, Nussbaum argues, is a profoundly misbegotten framework for dealing with the moral and emotional fallout of being wronged.

Statement II is correct: You cant, Nussbaum notes, reverse your spouses tardiness or infidelity by venting your anger at her; you can never recover what you lost, however small or large.

Statement III is correct: Nor, all too often, is the promise you hold out of granting forgiveness in return for your spouses remorse and amends -- anything other than manipulative, a way, however subtle or obvious, of extorting her repentance and apology

QNo:- 22 ,Correct Answer:- D

Explanation:- Statement I can be derived from the lines: It needs to be put in a language that resonates with the millions of non-unionised workers, and particularly for younger people for whom the very notion of trade unionism seems culturally alien.

Personal debt is a blight in modern Britain and trade unionism is one of its cures.

Statement II can be derived from the lines: In Nordic countries, it is the norm for workers to be unionised. Better living standards and more equality than we have in Britain are two of the byproducts.

Option III can be derived from the lines: With trade unionism so defeated by punitive laws and industrial decline, they faced little pressure to do so.

QNo:- 23 ,Correct Answer:- C

Explanation:- Option 1 can be derived from the lines: Growing personal debt is the price many British workers have paid for the disastrous economic failure of George Osborne and his colleagues one of whom is now the nations prime minister.

Option 2 can be derived from the lines: Thats not good for the workers, and its not good for the economy, either. But this was at a time when many companies were reporting healthy profits. They just werent sharing the wealth with the workforce who created it in the first place. And why should they?

QNo:- 24 ,Correct Answer:- D

Explanation:- This is a curious question, wherein option 2 comes closest to being correct. But it is actually not correct. In the given case, the correct answer is option 4.

Option 1 is ruled out as it is not mentioned in the passage.

Option 2 is ruled out as we cannot say forming trade unions is the best way out. It is one of ways but the usage of the word 'best' is extreme in nature here.

Option 3 is a judgment that cannot be made in the given context. The author does not espouse confidence in the current political leadership but that not mean they current administration does not have the talent to solve the given problem.

QNo:- 25 ,Correct Answer:- 1342

Explanation:- Statement 1 is the generic opening sentence in this case. Statement 1 is followed by statement 3, which provides an example for eulogies. Statement 4 that further describes Pancake and statement 2 provides the final piece of information about him. Thus, the connected set is 1342.

QNo:- 26 ,Correct Answer:- 31542

Explanation:- Statement 3 is the introductory statement in this case. This is followed by Statement 1. Statement 5 follows statement 1. Remember, statements 1 and 5 are joined by reference to European nations. Statement 4 then provides the example of India and statement 2 provides the conclusion.

QNo:- 27 ,Correct Answer:- 31425

Explanation:- In this case, statements 31425 form the connected set in this case. This is an easy question as the statements in this case simply explain a given sequence of events.

QNo:- 28 ,Correct Answer:- 15324

Explanation:- Statement 1 is the generic opening sentence in this case. Statement 5 then introduces the topic of the Oromo region. Statements 3 and 2 provide further information about the same. Then, the two statements marked 4 complete the given context.

QNo:- 29 ,Correct Answer:- 4

Explanation:- Statements 2-5-1-3 form the connected set in this case. They talk about a common subject in the given case. Statement 4 is the odd one out as it introduces a new subject in the given case.

QNo:- 30 ,Correct Answer:- 4

Explanation:- In this case, statements 3-1-2-5 form the connected set. These are based on the common subject of detection of gravitational waves. Statement 4 is the odd one out here as it is based on the subject of black holes.

QNo:- 31 ,Correct Answer:- 4

Explanation:- In this case, statements 3-1-2-5 form the connected set. Though statement 4 is linked to the overall topic in the given case, the subject of openness does not find any direct mention in the other statements.

QNo:- 32 ,Correct Answer:- 1

Explanation:- Statements 5-4-3-2 form the connected set in the given case. Statement 1 is the odd one out as there is no mention of ageing out or the authors own experiences in the other sentences.

QNo:- 33 ,Correct Answer:- 3

Explanation:- This is a simple question. The author of the paragraph is clear in the passage that there is no difference between computer art and human art. Though option 4 uses the terminology of the passage, it states the sentiment opposite to what is provided in the passage.

QNo:- 34 ,Correct Answer:- 4

Explanation:- The only option that provides the complete picture and takes care of the two important aspects of the paragraph is option 4. Yes, failure is ugly but it is also something which is not looked at closely (last line of the paragraph). This sentiment finds a mention only in option 4.

QNo:- 35 ,Correct Answer:- 2

Explanation:- Remaining cards are with South. So, South has 2 4 5 6 7, ♠ 5 8, ♠ K A 10, ♠ K Q 2

West has J ♠ J ♠ J, East has ♠ 9 ♠ 9 ♠ 9 and South has no trio.

QNo:- 36 ,Correct Answer:- 2

Explanation:- Remaining cards are with South. So, South has 2 4 5 6 7, ♠ 5 8, ♠ K A 10, ♠ K Q 2

North has ♠ K Q J 10 and South has 7 6 5 4.

QNo:- 37 ,Correct Answer:- 4

Explanation:- Remaining cards are with South. So, South has 2 4 5 6 7, ♠ 5 8, ♠ K A 10, ♠ K Q 2

West has ♠ A 2 3, North has 10 9 8, ♠ 8 7 6 and East has ♠ 7 6 5.

QNo:- 38 ,Correct Answer:- B

Explanation:- Remaining cards are with South. So, South has 2 4 5 6 7, ♠ 5 8, ♠ K A 10, ♠ K Q 2

South has 5 cards of spades, more cards of a single suit than any other player.

QNo:- 39 ,Correct Answer:- B

Explanation:- Consider table (2), total number of credits given by some of the B-schools are given in the diagonal cells. Thus total number of credits for Ford = 22, Cago 18, and so on.

We can write table (2) as:

B-schools	Vard	Ford	Cago	Ubia	Hester	IA	IB
Vard	28	14	13	16	16	18	17
Ford	14	22	18	17	16	20.25	19
Cago	13	18	18	17	15	17.25	15
Ubia	16	17	17	20	15	20	17
Hester	16	16	15	15	22	18	17
IA	18	20.25	17.25	20	18	33.75	22
IB	17	19	15	17	17	22	24

Table (2)

‘Total credits given by Cago = 18, credits given by Cago for C = 6. Now, as given in the data, $x + y = 4$. $y = \min(6, 4) = 4$ ‘ $x = 0$. Credits given by Vard for A = 0. ‘ Credits given by Vard for H = 8

	A	B	C	D	E	F	G	H	Total
Vard	0	8	4	4	4	0	0	8	28
Ford	3	3	6	3	e_1	3	0	h_1	22
Cago	3	3	6	3	3	0	0	0	18

Vard and Ford have 14 common credits.

$$3(B) + 4(C) + 3(D) + 0(F) + 0(G) = 10$$

$$\text{So, 4 is to be adjusted with E and H. i.e., } \min(4, e_1) + \min(8, h_1) = 4$$

$$\text{Ford} = 3(A) + 3(B) + 6(C) + 3(D) + 3(F) = 18.$$

$$\text{So, 4 is to be distributed among E and H. } e_1 + h_1 = 4$$

$$(e_1, h_1) = (0, 4) \text{ or } (4, 0) \text{ or } (1, 3) \text{ or } (3, 1) \text{ or } (2, 2) \quad \dots (i)$$

Number of credits that are common to Ford and Cago = 18

$$18 = 3 + 3 + 6 + 3 + \min(3, e) + 0 + 0 + 0$$

$$\min(3, e_1) = 3 \quad \dots (ii)$$

$$e_1 \neq 3$$

$$\text{From (i) and (ii), } (e_1, h_1) = (4, 0) \text{ or } (3, 1) \quad \dots (iii)$$

Number of credits that are common for Cago and Ubia = 17.

Let credits given by Ubia for B and F be 'b' and 'f' respectively.

$$17 = 2 + \min(3, b) + 6 + 3 + 3 + \min(0, f) + 0 + 0$$

$$17 = 2 + \min(3, b) + 6 + 3 + 3 + 0 + 0 + 0 = 14 + \min(3, b)$$

$$\min(3, b) = 3 \quad b \neq 3 \quad \dots (iv)$$

$$\text{Also, } 2 + b + 6 + 4 + 4 + f = 20. \quad b + f + 16 = 20 \quad b + f = 4$$

Number of credits that are common for Hester and Ubia = 15

Let credits given by Hester for D and E be 'd' and 'e' respectively.

$$15 = 0 + \min(b, 3) + 6 + \min(4, d) + \min(4, e) + 0 + 0 + 0 + \min(4, d) + \min(4, e) = 6$$

$$0 + 37 + d + e + 0 + 3 + 3 = 22 \Rightarrow d + e = 6$$

$$\text{If } (d, e) = (1, 5) \text{ or } (5, 1), \min(4, d) + \min(4, e) = 1 + 4 = 5$$

$$\text{If } (d, e) = (0, 6) \text{ or } (6, 0), \min(4, d) + \min(4, e) = 4$$

$$\text{If } (d, e) = (2, 4) \text{ or } (4, 2), \min(4, d) + \min(4, e) = 6$$

$$\text{If } d = e = 3, \min(4, d) + \min(4, e) = 6$$

$$d = e = 3 \text{ or } (d, e) = (2, 4) \text{ or } (4, 2) \quad \dots (v)$$

Credits common to Ford and Ubia = 17

$$17 = 2 + \min(3, b) + 6 + 3 + \min(e, 4) + \min(3, f) + 0 + 0$$

$$3 = \min(e_1, 4) + \min(3, f) \quad \dots (vi)$$

$$\text{(iii) and (vi)} \quad e_1 = 3. \quad \min(3, f) = 0 \quad f = 0$$

$$b = 4 \text{ and } h_1 = 1 \quad \dots (I)$$

Credits common to Ford and Hester = 16

$$16 = 0 + 3 + 6 + \min(3, d) + \min(3, e) + 0 + 0 + 1$$

$$6 = \min(3, d) + \min(3, e) \quad \dots (vii)$$

$$\text{From (v) and (vii), } d = e = 3 \quad \dots (II)$$

Let b_1 and f_1 are credits for B and F given by IB.

$$2 + b_1 + 4 + 3 + 4 + f_1 + 2 + 2 = 24. \quad b_1 + f_1 = 7 \quad \dots (viii)$$

$$\text{i.e., } b_1 < 8 \text{ (Vard)} \quad \dots (III)$$

Let a_1 and g_1 , be the credits for A and G given by IA.

$$a_1 + g_1 = 8.25$$

Credits common to Ford and IA = 20.25

$$\min(3, a_1) + 3 + 6 + 3 + 3 + 3 + 0 + 0 = 20.25. \quad \min(3, a_1) = 2.25$$

$$a_1 = 2.25 \text{ and } g_1 = 6 \quad \dots (IV)$$

Credits common to Vard and IB = 17. $\min(8, b_1) = 4$

$$b_1 = 4 \quad \dots (V)$$

$$\text{Then by (viii) } f_1 = 3 \quad \dots (VI)$$

	A	B	C	D	E	F	G	H	Total
Vard	0	8	4	4	4	0	0	8	28

Ford	3	3	6	3	3	3	0	1	22
Cago	3	3	6	3	3	0	0	0	18
Ubia	2	4	6	4	4	0	0	0	20
Hester	0	3	7	3	3	0	3	3	22
IA	2.25	6	6	6	5	3	6	0	33.75
IB	2	4	4	3	4	3	2	2	24

From (II), $d = e = 3$

QNo:- 40 ,Correct Answer:- A

Explanation:- Consider table (2), total number of credits given by some of the B-schools are given in the diagonal cells. Thus total number of credits for Ford = 22, Cago 18, and so on.

We can write table (2) as:

B-schools	Vard	Ford	Cago	Ubia	Hester	IA	IB
Vard	28	14	13	16	16	18	17
Ford	14	22	18	17	16	20.25	19
Cago	13	18	18	17	15	17.25	15
Ubia	16	17	17	20	15	20	17
Hester	16	16	15	15	22	18	17
IA	18	20.25	17.25	20	18	33.75	22
IB	17	19	15	17	17	22	24

Table (2)

Total credits given by Cago = 18, credits given by Cago for C = 6. Now, as given in the data, $x + y = 4$. $y = \min(6, 4) = 4$ $x = 0$. Credits given by Vard for A = 0. Credits given by Vard for H = 8

	A	B	C	D	E	F	G	H	Total
Vard	0	8	4	4	4	0	0	8	28
Ford	3	3	6	3	e_1	3	0	h_1	22
Cago	3	3	6	3	3	0	0	0	18

Vard and Ford have 14 common credits.

$$3(B) + 4(C) + 3(D) + 0(F) + 0(G) = 10$$

So, 4 is to be adjusted with E and H. i.e., $\min(4, e_1) + \min(8, h_1) = 4$

$$\text{Ford} = 3(A) + 3(B) + 6(C) + 3(D) + 3(F) = 18.$$

So, 4 is to be distributed among E and H. $e_1 + h_1 = 4$

$$(e_1, h_1) = (0, 4) \text{ or } (4, 0) \text{ or } (1, 3) \text{ or } (3, 1) \text{ or } (2, 2) \quad \dots (i)$$

Number of credits that are common to Ford and Cago = 18

$$18 = 3 + 3 + 6 + 3 + \min(3, e_1) + 0 + 0 + 0$$

$$\min(3, e_1) = 3 \quad \dots (ii)$$

$$e_1 \neq 3$$

From (i) and (ii), $(e_1, h_1) = (4, 0) \text{ or } (3, 1) \quad \dots (iii)$

Number of credits that are common for Cago and Ubia = 17.

Let credits given by Ubia for B and F be 'b' and 'f' respectively.

$$17 = 2 + \min(3, b) + 6 + 3 + 3 + \min(0, f) + 0 + 0$$

$$17 = 2 + \min(3, b) + 6 + 3 + 3 + 0 + 0 + 0 = 14 + \min(3, b)$$

$$\hat{\min}(3, b) = 3 \quad b \neq 3 \quad \dots (iv)$$

$$\text{Also, } 2 + b + 6 + 4 + 4 + f = 20. \quad b + f + 16 = 20 \quad b + f = 4$$

Number of credits that are common for Hester and Ubia = 15

Let credits given by Hester for D and E be 'd' and 'e' respectively.

$$15 = 0 + \min(b, 3) + 6 + \min(4, d) + \min(4, e) + 0 + 0 + 0 + \min(4, d) + \min(4, e) = 6$$

$$0 + 37 + d + e + 0 + 3 + 3 = 22 \Rightarrow d + e = 6$$

$$\text{If } (d, e) = (1, 5) \text{ or } (5, 1), \min(4, d) + \min(4, e) = 1 + 4 = 5$$

$$\text{If } (d, e) = (0, 6) \text{ or } (6, 0), \min(4, d) + \min(4, e) = 4$$

$$\text{If } (d, e) = (2, 4) \text{ or } (4, 2), \min(4, d) + \min(4, e) = 6$$

$$\text{If } d = e = 3, \min(4, d) + \min(4, e) = 6$$

$$\hat{d} = e = 3 \text{ or } (d, e) = (2, 4) \text{ or } (4, 2) \quad \dots (v)$$

Credits common to Ford and Ubia = 17

$$17 = 2 + \min(3, b) + 6 + 3 + \min(e, 4) + \min(3, f) + 0 + 0$$

$$3 = \min(e, 4) + \min(3, f) \quad \dots (vi)$$

$$(iii) \text{ and } (vi) \quad e_1 = 3. \quad \hat{\min}(3, f) = 0 \quad f = 0$$

$$\hat{b} = 4 \text{ and } h_1 = 1 \quad \dots (I)$$

Credits common to Ford and Hester = 16

$$\hat{16} = 0 + 3 + 6 + \min(3, d) + \min(3, e) + 0 + 0 + 1$$

$$\hat{6} = \min(3, d) + \min(3, e) \quad \dots (vii)$$

$$\text{From } (v) \text{ and } (vii), d = e = 3 \quad \dots (II)$$

Let b_1 and f_1 are credits for B and F given by IB.

$$2 + b_1 + 4 + 3 + 4 + f_1 + 2 + 2 = 24. \quad \hat{b}_1 + \hat{f}_1 = 7 \quad \dots (viii)$$

$$\text{i.e., } b_1 < 8 \text{ (Vard)} \quad \dots (III)$$

Let a_1 and g_1 , be the credits for A and G given by IA.

$$\hat{a}_1 + \hat{g}_1 = 8.25$$

Credits common to Ford and IA = 20.25

$$\hat{\min}(3, a_1) + 3 + 6 + 3 + 3 + 3 + 0 + 0 = 20.25. \quad \hat{\min}(3, a_1) = 2.25$$

$$a_1 = 2.25 \text{ and } g_1 = 6 \quad \dots (IV)$$

Credits common to Vard and IB = 17. $\hat{\min}(8, b_1) = 4$

$$\hat{b}_1 = 4 \quad \dots (V)$$

$$\text{Then by } (viii) \quad \hat{f}_1 = 3 \quad \dots (VI)$$

	A	B	C	D	E	F	G	H	Total
Vard	0	8	4	4	4	0	0	8	28
Ford	3	3	6	3	3	3	0	1	22
Cago	3	3	6	3	3	0	0	0	18
Ubia	2	4	6	4	4	0	0	0	20
Hester	0	3	7	3	3	0	3	3	22
IA	2.25	6	6	6	5	3	6	0	33.75
IB	2	4	4	3	4	3	2	2	24

In the data given, we do not know credits given to B by Ubia and IB.

(I) and (II) Ubia gives 4 credits and IB gives 4 credits. Vard gives maximum credits.

QNo:- 41 ,Correct Answer:- B

Explanation:- Consider table (2), total number of credits given by some of the B-schools are given in the diagonal cells. Thus total number of credits for Ford = 22, Cago 18, and so on.

We can write table (2) as:

B-schools	Vard	Ford	Cago	Ubia	Hester	IA	IB
Vard	28	14	13	16	16	18	17

Ford	14	22	18	17	16	20.25	19
Cago	13	18	18	17	15	17.25	15
Ubia	16	17	17	20	15	20	17
Hester	16	16	15	15	22	18	17
IA	18	20.25	17.25	20	18	33.75	22
IB	17	19	15	17	17	22	24

Table (2)

'Total credits given by Cago = 18, credits given by Cago for C = 6. Now, as given in the data, $x + y = 4$. $y = \min(6, 4) = 4$ ' $x = 0$. Credits given by Vard for A = 0. ' Credits given by Vard for H = 8

	A	B	C	D	E	F	G	H	Total
Vard	0	8	4	4	4	0	0	8	28
Ford	3	3	6	3	e_1	3	0	h_1	22
Cago	3	3	6	3	3	0	0	0	18

Vard and Ford have 14 common credits.

$$3(B) + 4(C) + 3(D) + 0(F) + 0(G) = 10$$

So, 4 is to be adjusted with E and H. i.e., $\min(4, e_1) + \min(8, h_1) = 4$

$$\text{Ford} = 3(A) + 3(B) + 6(C) + 3(D) + 3(F) = 18.$$

So, 4 is to be distributed among E and H. $e_1 + h_1 = 4$

$$(e_1, h_1) = (0, 4) \text{ or } (4, 0) \text{ or } (1, 3) \text{ or } (3, 1) \text{ or } (2, 2) \quad \dots (i)$$

Number of credits that are common to Ford and Cago = 18

$$18 = 3 + 3 + 6 + 3 + \min(3, e_1) + 0 + 0 + 0$$

$$\min(3, e_1) = 3 \quad \dots (ii)$$

$$e_1 \neq 3$$

From (i) and (ii), $(e_1, h_1) = (4, 0) \text{ or } (3, 1) \quad \dots (iii)$

Number of credits that are common for Cago and Ubia = 17.

Let credits given by Ubia for B and F be 'b' and 'f' respectively.

$$' 17 = 2 + \min(3, b) + 6 + 3 + 3 + \min(0, f) + 0 + 0$$

$$17 = 2 + \min(3, b) + 6 + 3 + 3 + 0 + 0 + 0 = 14 + \min(3, b)$$

$$' \min(3, b) = 3 \quad b \neq 3 \quad \dots (iv)$$

$$\text{Also, } 2 + b + 6 + 4 + 4 + f = 20. \quad b + f + 16 = 20 \quad b + f = 4$$

Number of credits that are common for Hester and Ubia = 15

Let credits given by Hester for D and E be 'd' and 'e' respectively.

$$15 = 0 + \min(b, 3) + 6 + \min(4, d) + \min(4, e) + 0 + 0 + 0 + \min(4, d) + \min(4, e) = 6$$

$$0 + 37 + d + e + 0 + 3 + 3 = 22 \Rightarrow d + e = 6$$

$$\text{If } (d, e) = (1, 5) \text{ or } (5, 1), \min(4, d) + \min(4, e) = 1 + 4 = 5$$

$$\text{If } (d, e) = (0, 6) \text{ or } (6, 0), \min(4, d) + \min(4, e) = 4$$

$$\text{If } (d, e) = (2, 4) \text{ or } (4, 2), \min(4, d) + \min(4, e) = 6$$

$$\text{If } d = e = 3, \min(4, d) + \min(4, e) = 6$$

$$' d = e = 3 \text{ or } (d, e) = (2, 4) \text{ or } (4, 2) \quad \dots (v)$$

Credits common to Ford and Ubia = 17

$$17 = 2 + \min(3, b) + 6 + 3 + \min(e_1, 4) + \min(3, f) + 0 + 0$$

$$3 = \min(e_1, 4) + \min(3, f) \quad \dots (vi)$$

$$(iii) \text{ and } (vi) \quad e_1 = 3. \quad \min(3, f) = 0 \quad f = 0$$

$$' b = 4 \text{ and } h_1 = 1 \quad \dots (I)$$

Credits common to Ford and Hester = 16

$$' 16 = 0 + 3 + 6 + \min(3, d) + \min(3, e) + 0 + 0 + 1$$

$$' 6 = \min(3, d) + \min(3, e) \quad \dots (vii)$$

$$\text{From } (v) \text{ and } (vii), d = e = 3 \quad \dots (II)$$

Let b_1 and f_1 are credits for B and F given by IB.

$$2 + b_1 + 4 + 3 + 4 + f_1 + 2 + 2 = 24. \quad \therefore b_1 + f_1 = 7 \quad \dots \text{(viii)}$$

$$\text{i.e., } b_1 < 8 \text{ (Vard)} \quad \dots \text{(III)}$$

Let a_1 and g_1 , be the credits for A and G given by IA.

$$\therefore a_1 + g_1 = 8.25$$

Credits common to Ford and IA = 20.25

$$\therefore \min(3, a_1) + 3 + 6 + 3 + 3 + 3 + 0 + 0 = 20.25. \quad \therefore \min(3, a_1) = 2.25$$

$$a_1 = 2.25 \text{ and } g_1 = 6 \quad \dots \text{(IV)}$$

Credits common to Vard and IB = 17. $\therefore \min(8, b_1) = 4$

$$\therefore b_1 = 4 \quad \dots \text{(V)}$$

$$\text{Then by (viii) } f_1 = 3 \quad \dots \text{(VI)}$$

	A	B	C	D	E	F	G	H	Total
Vard	0	8	4	4	4	0	0	8	28
Ford	3	3	6	3	3	3	0	1	22
Cago	3	3	6	3	3	0	0	0	18
Ubia	2	4	6	4	4	0	0	0	20
Hester	0	3	7	3	3	0	3	3	22
IA	2.25	6	6	6	5	3	6	0	33.75
IB	2	4	4	3	4	3	2	2	24

From (IV) and the given data, IA gives minimum credits to A other than H.

QNo:- 42 ,Correct Answer:- B

Explanation:- Consider table (2), total number of credits given by some of the B-schools are given in the diagonal cells. Thus total number of credits for Ford = 22, Cago 18, and so on.

We can write table (2) as:

B-schools	Vard	Ford	Cago	Ubia	Hester	IA	IB
Vard	28	14	13	16	16	18	17
Ford	14	22	18	17	16	20.25	19
Cago	13	18	18	17	15	17.25	15
Ubia	16	17	17	20	15	20	17
Hester	16	16	15	15	22	18	17
IA	18	20.25	17.25	20	18	33.75	22
IB	17	19	15	17	17	22	24

Table (2)

\therefore Total credits given by Cago = 18, credits given by Cago for C = 6. Now, as given in the data, $x + y = 4$. $y = \min(6, 4) = 4$ $\therefore x = 0$.
Credits given by Vard for A = 0. \therefore Credits given by Vard for H = 8

	A	B	C	D	E	F	G	H	Total
Vard	0	8	4	4	4	0	0	8	28
Ford	3	3	6	3	e_1	3	0	h_1	22
Cago	3	3	6	3	3	0	0	0	18

Vard and Ford have 14 common credits.

$$3(B) + 4(C) + 3(D) + 0(F) + 0(G) = 10$$

So, 4 is to be adjusted with E and H. i.e., $\min(4, e_1) + \min(8, h_1) = 4$

$$\text{Ford} = 3(A) + 3(B) + 6(C) + 3(D) + 3(F) = 18.$$

So, 4 is to be distributed among E and H. $e_1 + h_1 = 4$

$$(e_1, h_1) = (0, 4) \text{ or } (4, 0) \text{ or } (1, 3) \text{ or } (3, 1) \text{ or } (2, 2) \quad \dots (i)$$

Number of credits that are common to Ford and Cago = 18

$$18 = 3 + 3 + 6 + 3 + \min(3, e_1) + 0 + 0 + 0$$

$$\min(3, e_1) = 3 \quad \dots (ii)$$

$$e_1 \neq 3$$

From (i) and (ii), $(e_1, h_1) = (4, 0) \text{ or } (3, 1) \quad \dots (iii)$

Number of credits that are common for Cago and Ubia = 17.

Let credits given by Ubia for B and F be 'b' and 'f' respectively.

$$17 = 2 + \min(3, b) + 6 + 3 + 3 + \min(0, f) + 0 + 0$$

$$17 = 2 + \min(3, b) + 6 + 3 + 3 + 0 + 0 + 0 = 14 + \min(3, b)$$

$$\min(3, b) = 3 \quad b \neq 3 \quad \dots (iv)$$

$$\text{Also, } 2 + b + 6 + 4 + 4 + f = 20. \quad b + f + 16 = 20 \quad b + f = 4$$

Number of credits that are common for Hester and Ubia = 15

Let credits given by Hester for D and E be 'd' and 'e' respectively.

$$15 = 0 + \min(b, 3) + 6 + \min(4, d) + \min(4, e) + 0 + 0 + 0 + \min(4, d) + \min(4, e) = 6$$

$$0 + 3 + d + e + 0 + 3 + 3 = 22 \Rightarrow d + e = 6$$

$$\text{If } (d, e) = (1, 5) \text{ or } (5, 1), \min(4, d) + \min(4, e) = 1 + 4 = 5$$

$$\text{If } (d, e) = (0, 6) \text{ or } (6, 0), \min(4, d) + \min(4, e) = 4$$

$$\text{If } (d, e) = (2, 4) \text{ or } (4, 2), \min(4, d) + \min(4, e) = 6$$

$$\text{If } d = e = 3, \min(4, d) + \min(4, e) = 6$$

$$d = e = 3 \text{ or } (d, e) = (2, 4) \text{ or } (4, 2) \quad \dots (v)$$

Credits common to Ford and Ubia = 17

$$17 = 2 + \min(3, b) + 6 + 3 + \min(e, 4) + \min(3, f) + 0 + 0$$

$$3 = \min(e, 4) + \min(3, f) \quad \dots (vi)$$

(iii) and (vi) $e_1 = 3. \min(3, f) = 0 \quad f = 0$

$$b = 4 \text{ and } h_1 = 1 \quad \dots (i)$$

Credits common to Ford and Hester = 16

$$16 = 0 + 3 + 6 + \min(3, d) + \min(3, e) + 0 + 0 + 1$$

$$6 = \min(3, d) + \min(3, e) \quad \dots (vii)$$

From (v) and (vii), $d = e = 3 \quad \dots (ii)$

Let b_1 and f_1 are credits for B and F given by IB.

$$2 + b_1 + 4 + 3 + 4 + f_1 + 2 + 2 = 24. \quad b_1 + f_1 = 7 \quad \dots (viii)$$

i.e., $b_1 < 8$ (Vard) $\dots (iii)$

Let a_1 and g_1 , be the credits for A and G given by IA.

$$a_1 + g_1 = 8.25$$

Credits common to Ford and IA = 20.25

$$\min(3, a_1) + 3 + 6 + 3 + 3 + 3 + 0 + 0 = 20.25. \quad \min(3, a_1) = 2.25$$

$$a_1 = 2.25 \text{ and } g_1 = 6 \quad \dots (iv)$$

Credits common to Vard and IB = 17. $\min(8, b_1) = 4$

$$b_1 = 4 \quad \dots (v)$$

Then by (viii) $f_1 = 3 \quad \dots (vi)$

	A	B	C	D	E	F	G	H	Total
Vard	0	8	4	4	4	0	0	8	28
Ford	3	3	6	3	3	3	0	1	22
Cago	3	3	6	3	3	0	0	0	18
Ubia	2	4	6	4	4	0	0	0	20
Hester	0	3	7	3	3	0	3	3	22
IA	2.25	6	6	6	5	3	6	0	33.75

IB	2	4	4	3	4	3	2	2	24
----	---	---	---	---	---	---	---	---	----

$f = 0$ and $f_1 = 3$. 'Vard Cago, Ubia and Hester do not give any credit for F.

QNo:- 43 ,Correct Answer:- B

Explanation:- 255000 students passed the HSC. 35% students were from the Science stream. Out of 35%, 30% opted for Engineering and out of these 25% opted for the Computer branch.

'Number of students for Computer Engineering = 35% of 30% of 25% of 255000 = 6693.75 = 6694.

QNo:- 44 ,Correct Answer:- A

Explanation:- 61500 students were doing Medical in 2003.

$\therefore 61500 \times \frac{20}{40}$ students were doing B.Sc. 28% of these were doing B.Sc. in Physics i.e., $0.28 \times 61500 \times \frac{20}{40} = 8610$.

QNo:- 45 ,Correct Answer:- C

Explanation:- Let x number of students opt for Science in the year 2004.

' [30% of (10% + 15%) of x] are doing Engineering in Electronics or IT and [40% of (25% + 32%) of x] are doing B.Sc. in Physics or Mathematics

\therefore Required ratio = $\frac{0.3 \times (0.1 + 0.15)}{0.4 \times (0.25 + 0.32)} = \frac{0.3 \times 0.25}{0.4 \times 0.57} = \frac{25}{76}$.

QNo:- 46 ,Correct Answer:- B

Explanation:- To maximize the number of questions attempted, A will solve easy questions first, then moderate questions and difficult questions in the end.

Total number of easy questions = 20 + 10 + 15 = 45

Time taken to solve them = $45 \times \frac{2}{3} = 30$ minutes

Total number of moderate questions = 30 + 25 + 20 = 75

Time taken to solve them = $75 \times 1 = 75$ minutes

' Time left to attempt difficult questions = 150 - (30 + 75) = 45 minutes

' Number of difficult questions attempted = $45 / 1.5 = 30$

Total number of difficult questions = 15 + 25 + 25 = 65

\therefore % of difficult questions solved by A = $\frac{30}{65} \times 100 = 46.1\%$

QNo:- 47 ,Correct Answer:- D

Explanation:- Person B will attempt questions after taking time to solve a question and probability of getting it right into consideration. Questions with higher value of probability/time taken will be attempted first.

Question type	Pr obability
	Time taken in min utes
Easy	$\frac{1}{2/3} = 1.5$
Moderate	$\frac{0.7}{1} = 0.7$
Difficult	$\frac{0.7}{1.5} = 0.466$

Hence, person B will attempt the question in exactly same way as person A i.e., number of easy, moderate and difficult questions

attempted are 45, 75 and 30 respectively.

'B's score = $45 \cdot 1 + 75 \cdot 0.7 + 30 \cdot 0.7 = 45 + 105 \cdot 0.7 = 45 + 73.5 = 118.5$. Hence, 4.

QNo:- 48 ,Correct Answer:- C

Explanation:- Before attempting questions, one has to compare the ratio of marks for each question and time taken to solve it in each section

Section	Type of question	$\frac{\text{Weightage}}{\text{Time taken in min utes}}$
I	Easy	$\frac{3}{2/3} = \frac{9}{2}$
	Moderate	$\frac{3}{1} = 3$
	Difficult	$\frac{3}{1.5} = 2$
II	Easy	$\frac{2}{2/3} = 3$
	Moderate	$\frac{2}{1} = 2$
	Difficult	$\frac{2}{1.5} = 1.33$
III	Easy	$\frac{1}{2/3} = 1.5$
	Moderate	$\frac{1}{1} = 1$
	Difficult	$\frac{1}{1.5} = 0.66$

Order of solving questions	Number of questions	Time taken to solve (in mins)	Cumulative time (in mins)
Section I - Easy	20	40/3	40/3
Section I - Moderate	30	30	50
Section II - Easy	10	20/3	
Section I - Difficult	15	15 \cdot 1.5 = 22.5	97.5
Section II - Moderate	25	25	
Section III - Easy	15	10	107.5
Section II - Difficult	25	25 \cdot 1.5 = 37.5	145
Section III - Moderate	20	20	-
Section III - Difficult	25	25 \cdot 1.5 = 37.5	-

The person will be able to solve only 5 moderate questions from section III.

' Total number of moderate questions attempted = $30 + 25 + 5 = 60$. Hence, 3.

QNo:- 49 ,Correct Answer:- B

Explanation:- To maximise the marks, the order of attempting questions should be easy questions first, then moderate questions followed by difficult questions in the end.

μ time taken to solve 45 easy questions = 30 minutes

... (as in solutions above)

\therefore Number of moderate questions solved by them = $\frac{90 - 30}{1} = 60$

\therefore A's marks = $45 \times 0.9 + 60 \times 0.8 = 40.5 + 48 = 88.5$

B's marks = $45 \times 1 + 60 \times 0.7 = 45 + 42 = 87$. Difference = 1.5. Hence, 2.

QNo:- 50 ,Correct Answer:- D

Explanation:- To maximize marks, person A should take weightage, time taken to solve and accuracy into consideration.

Type of questions	$\frac{\text{Weightage} \times \text{Accuracy}}{\text{Time taken in minutes}}$
Easy	$\frac{1 \times 0.9}{2/3} = \frac{0.9 \times 3}{2} = 1.35$
Moderate	$\frac{2 \times 0.8}{1} = 1.6$
Difficult	$\frac{4 \times 0.6}{1.5} = 4 \times 0.4 = 1.6$

\therefore A will attempt moderate and difficult questions first and then easy questions.

Time taken to solve 75 moderate questions = 75 minutes

Time taken, to solve 65 difficult questions = $65 \times 1.5 = 97.5$ minutes. Since, time taken to solve both of these exceeds 150 minutes, we cannot find the exact number of total questions attempted as any combination between the two type of questions is possible.

QNo:- 51 ,Correct Answer:- 0

Explanation:- Simply by looking at column (A), we can say that there is no bank which has a lower interest rate than Citi bank.

QNo:- 52 ,Correct Answer:- 1

Explanation:- In the first four columns; Federal bank's interest rates are the highest in the respective terms A, B, C and D. Now, we need not check for the remaining three columns as even if we get any bank/s whose interest is higher to that of Federal Bank in all the three columns even then the condition that a particular bank is rated A4+ cannot be fulfilled. Hence answer is 0.

QNo:- 53 ,Correct Answer:- B

Explanation:- Andhra Bank is ranked A3 - with respect to Indian Overseas Bank.

QNo:- 54 ,Correct Answer:- D

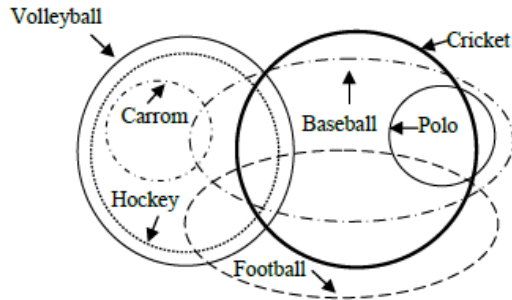
Explanation:- Zeta Index of UCO with respect to SBI is 0. Zeta Index of SBI with respect to UCO bank is 6. Required answer A2 -.

QNo:- 55 ,Correct Answer:- 4

Explanation:- There are four such banks, Andhra Bank, Bank of Baroda, Corporation Bank and HDFC Bank.

QNo:- 56 ,Correct Answer:- A

Explanation:- One possible configuration is as follows:
Also, intersection of any two regions may not have any numbers.



Hockey circle contains whole Carrom circle, if Ravi is in circle of hockey it doesn't mean Ravi is also inside the carrom circle. He may or may not be inside the carrom circle.

Hockey circle passes through basketball, Football and Cricket but one cannot be sure whether Ravi likes Basket ball, Football or Cricket because some parts of Hockey circle are outside of these circles too. Hence, [1].

Alternatively,

The region denoting Hockey intersects the regions; Cricket, Basketball and- Football. Also, it contains carrom. But it is not necessary that Ravi may play, any/all of these games. Hence, [1],

QNo:- 57 ,Correct Answer:- C

Explanation:- Hockey circle can passes through all the circles except polo circle. So, Amod doesn't enjoy Polo. Hence, [3].

QNo:- 58 ,Correct Answer:- A

Explanation:- 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, l.

Alternatively,

From the figure, it is clear that [3] is the correct statement.

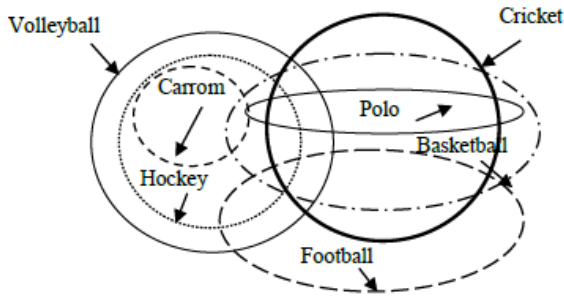
Also, it is not necessary that Sheetal should like Cricket. Polo region intersects Football region. She may or may not enjoys Football. Hence, [1].

QNo:- 59 ,Correct Answer:- C

Explanation:- 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],

QNo:- 60 ,Correct Answer:- C

Explanation:- 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],

QNo:- 61 ,Correct Answer:- A

Explanation:- As given that no two persons gave equal number of true replies, the number of true replies is 0, 1, 2, 3, 4 and 6 (as if five replies are correct the sixth reply also has to be correct).

If all the replies of Aman are correct, then Biswa and Dev will have equal number of correct replies i.e., 1 each.

Similarly if all the replies of Biswa are correct, then Aman and Charan will have 1 each as correct replies.

If all the replies of Charan are correct, then Biswa and Dev will have 1 each as correct replies.

Similarly Dev and Fazal also cannot have all the replies correct.

∴ If all the replies of Emma are correct, then

Aman - 4

Biswa - 0

Charan - 3

Dev - 2

Emma - 6

Fazal - 1

∴ The persons and the city pairs are as follows :

Emma - Bangalore; Charan - Hyderabad. Biswa - Chennai; Aman - Kolkata, Dev - Delhi; Fazal - Mumbai

QNo:- 62 ,Correct Answer:- C

Explanation:- As given that no two persons gave equal number of true replies, the number of true replies is 0, 1, 2, 3, 4 and 6 (as if five replies are correct the sixth reply also has to be correct).

If all the replies of Aman are correct, then Biswa and Dev will have equal number of correct replies i.e., 1 each.

Similarly if all the replies of Biswa are correct, then Aman and Charan will have 1 each as correct replies.

If all the replies of Charan are correct, then Biswa and Dev will have 1 each as correct replies.

Similarly Dev and Fazal also cannot have all the replies correct.

∴ If all the replies of Emma are correct, then

Aman - 4

Biswa - 0

Charan - 3

Dev - 2

Emma - 6

Fazal - 1

∴ The persons and the city pairs are as follows :

Emma - Bangalore; Charan - Hyderabad. Biswa - Chennai; Aman - Kolkata, Dev - Delhi; Fazal - Mumbai

QNo:- 63 ,Correct Answer:- 5

Explanation:- As given that no two persons gave equal number of true replies, the number of true replies is 0, 1, 2, 3, 4 and 6 (as if five replies are correct the sixth reply also has to be correct).

If all the replies of Aman are correct, then Biswa and Dev will have equal number of correct replies i.e., 1 each.

Similarly if all the replies of Biswa are correct, then Aman and Charan will have 1 each as correct replies.

If all the replies of Charan are correct, then Biswa and Dev will have 1 each as correct replies.

Similarly Dev and Fazal also cannot have all the replies correct.

∴ If all the replies of Emma are correct, then

Aman - 4

Biswa - 0

Charan - 3

Dev - 2

Emma - 6

Fazal - 1

∴ The persons and the city pairs are as follows :

Emma - Bangalore; Charan - Hyderabad. Biswa - Chennai; Aman - Kolkata, Dev - Delhi; Fazal - Mumbai

QNo:- 64 ,Correct Answer:- 2

Explanation:- As given that no two persons gave equal number of true replies, the number of true replies is 0, 1, 2, 3, 4 and 6 (as if five replies are correct the sixth reply also has to be correct).

If all the replies of Aman are correct, then Biswa and Dev will have equal number of correct replies i.e., 1 each.

Similarly if all the replies of Biswa are correct, then Aman and Charan will have 1 each as correct replies.

If all the replies of Charan are correct, then Biswa and Dev will have 1 each as correct replies.

Similarly Dev and Fazal also cannot have all the replies correct.

∴ If all the replies of Emma are correct, then

Aman - 4

Biswa - 0

Charan - 3

Dev - 2

Emma - 6

Fazal - 1

∴ The persons and the city pairs are as follows :

Emma - Bangalore; Charan - Hyderabad. Biswa - Chennai; Aman - Kolkata, Dev - Delhi; Fazal - Mumbai

Only Emma gave her city name correctly

QNo:- 65 ,Correct Answer:- B

Explanation:-

Section	Boys (%)	Girls (%)
A	60	40
B	60	40
C	p	q

The ratio of boys to girls in the class is 9 :11.

So the percentage of boys is 45% and the percentage of girls is 55% in the class.

As the overall percentage of boys is 45% and in sections A and B it is 60% each, the value of $p < 45$.

Similarly as the overall percentage of girls is 55% and in sections A and B it is 40% each, the value of $q > 55$.

∴ $p < q$. So, 2nd option.

QNo:- 66 ,Correct Answer:- C

Explanation:-

Section	Boys (%)	Girls (%)
---------	----------	-----------

A	60	40
B	60	40
C	p	q

Number of girls in:

Section A = 40

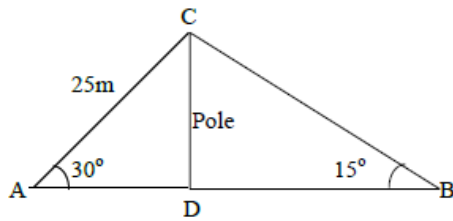
Section B = 120

Section C = 390

The ratio of girls in Section C: Section B: Section A = 39:12:4 = 78 : 24 : 8.

So, answer is 3rd option.

QNo:- 67 ,Correct Answer:- A



Explanation:-

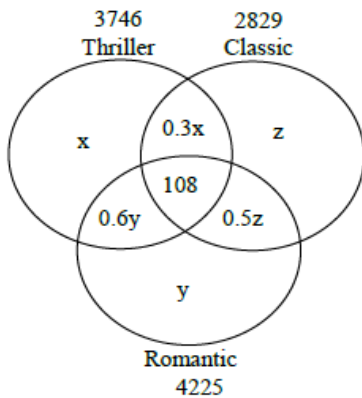
In $\triangle ADC$, by $30^\circ - 60^\circ - 90^\circ$ theorem:

$$CD \frac{25}{2} = 12.5m. AD = \frac{\sqrt{3}}{2} \times 25 = 21.625m$$

$$\text{From } \triangle CDB, CD/DB = \tan 15^\circ \Rightarrow 12.5/DB = 0.27 \Rightarrow DB = 46.3m$$

$$\text{Distance between A and B} = 21.625 + 46.3 = 68 \text{ m (approx.)}$$

QNo:- 68 ,Correct Answer:- 8041



Explanation:-

Let x, y and z be the number of persons who like to read only thriller, only romantic and only classical novels, respectively.

$$x + 0.3x + 0.6y + 108 = 3746. \text{ i.e., } 13x + 6y = 36380 \quad | \cdot (1)$$

$$z + 0.3x + 0.5z + 108 = 2829. \text{ i.e., } 3x + 15z = 27210 \quad | \cdot (2) \text{ and}$$

$$y + 0.6y + 0.5z + 108 = 4225. \text{ i.e., } 16y + 5z = 41170 \quad | \cdot (3)$$

$$(3) \cdot 3 - (2) \text{ gives } 16y - x = 32100 \quad | \cdot (4)$$

$$(4) \cdot 13 + (1) \text{ gives } y = 2120. \quad x = 1820 \text{ and } z = 1450$$

Thus the total number of persons who were surveyed in the library

$$= x + y + z + 0.3x + 0.6y + 0.5z + 108 = 1820 + 1450 + 2120 + 546 + 725 + 1272 + 108 = 8041$$

QNo:- 69 ,Correct Answer:- A

Explanation:- Let the initial total investment be Rs. 100, then the amount added by Ramakant afterwards = $0.25 \cdot 0.45 \cdot 100 = \text{Rs.}$

11.25.

The total investment after everyone added some amount = $((0.25 \times 45) + (0.65 \times 35) + (0.2 \times 20)) + 100 = \text{Rs. } 138$.

Thus, when Ramakant adds Rs. 11.25 more, the total investment becomes Rs. 138.

∴ If Ramakant adds Rs. 10000, the total investment becomes $\frac{10000}{11.25} \times 138 = \text{Rs. } 122667$.

QNo:- 70 ,Correct Answer:- 30

Explanation:- The cost price of the article is Rs. 2250 and the profit earned by the shopkeeper is Rs. 540

∴ Selling price of the article = $2250 + 540 = \text{Rs. } 2790$

$$\therefore \text{Discount} = \frac{MP - SP}{MP} \times 100 = \frac{3990 - 2790}{3990} \times 100 = 30\%$$

QNo:- 71 ,Correct Answer:- C

Explanation:- Let the percentage of the 1st friend (maximum percentage) be $(10x + y)\%$.

∴ The percentage of the 2nd friend (minimum percentage) = $(10y + x)\%$.

Let the percentage of the 3rd friend be $a\%$

$$\therefore \frac{(10x + y) + (10y + x) + a}{3} = a \therefore 11x + 11y + a = 3a$$

$$\therefore 2a = 11x + 11y \therefore a = 11/2 (x + y)$$

This means the percentage of the 3rd friend is a multiple of 11 (i.e., 66).

Hence option 3.

QNo:- 72 ,Correct Answer:- A

$$P \propto \frac{T}{V} \Rightarrow P = \frac{KT}{V} \Rightarrow 20\% \downarrow T \Rightarrow 25\% \downarrow V \Rightarrow P^1 = \frac{K \cdot \frac{3}{4} T}{\frac{4}{5} V} = \frac{15}{16} \frac{KT}{V}$$

Explanation:-

$$\% \text{ change} = \frac{1 - \frac{15}{16}}{1} \times 100 = \frac{1}{16} \times 100 \Rightarrow \text{reduce by } \frac{25}{4} \%$$

QNo:- 73 ,Correct Answer:- 605

Explanation:- Let a be the first term and d be the common difference of the A.P.

Let a be the first term and d be the common difference of the A.P.

Sum = $n/2 [2a + (n - 1)d]$, where n is the number of terms.

$$S_{20} = \frac{20}{2} [2a + 19d]$$

$$670 = 10 [2a + 19d]$$

$$67 = 2a + 19d \quad \dots (1)$$

$$\text{and } S_{50} = \frac{50}{2} [2a + 49d]$$

$$3925 = 25 [2a + 49d]$$

$$157 = 2a + 49d \quad \dots (2)$$

Solving equation (1) and (2) we have $a = 5$ and $d = 3$

$$\text{Thus, sum of the first five terms of G.P.} = \frac{a(r^5 - 1)}{(r - 1)} = \frac{5(3^5 - 1)}{(3 - 1)} = 605.$$

QNo:- 74 ,Correct Answer:- 872

Explanation:- $n \in \mathbb{N}$, and $x = n + 1$. ∴ $[x]_n = (n + 1)!$

$$\therefore \sum_{n=1}^5 [x]_n = 2! + 3! + 4! + 5! + 6! = 2 + 6 + 24 + 120 + 720 = 872$$

QNo:- 75 ,Correct Answer:- C

Explanation:- Let the radius of the inner circular track be r m $(r + 4)$ m is the radius of the outer circular track.

Ratio of speeds of the athletes is $4 : 7$.

Since they both complete one round on their respective tracks in the same time, the slower athlete must be on the inner track and the faster athlete on the outer track.

Also, distance is directly proportional to speed. $\therefore \frac{2\pi r}{2\pi(r+4)} = \frac{4}{7} \Rightarrow r = \frac{16}{3}$ m

The slower athlete takes 90 seconds to cover $2\pi(r+4)$

Let S m/s be the speed of the slower athlete, then $90 = \frac{2\pi\left(\frac{16}{3} + 4\right)}{S}$

$S = \frac{28 \times 2 \times 22}{3 \times 90 \times 7}$. \therefore Speed of the other athlete $= \frac{7}{4} \times \frac{28 \times 2 \times 22}{3 \times 90 \times 7} = 1.14$ m/s.

QNo:- 76 ,Correct Answer:- 509.8

Explanation:- D 's speed = 80 m/min. B 's speed = 160 m/min

$\therefore B$ and C finished at the same time, we have, $\frac{1000}{160} = \frac{985}{C's\ Speed}$

C 's speed = 157.6 m/min. At the end of 2 minutes from the start, D covers 160 m starting in opposite direction and C covers 315.2 m. But C already has a start of 15 m.

\therefore Distance covered by C at the end of 2 minutes = $315.2 + 15 = 330.2$ m

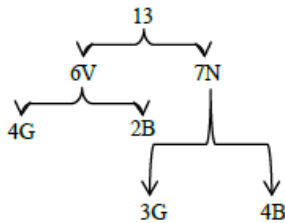
Now, since C and D start from opposite ends the distance between them after 2 minutes is $1000 - (160 + 330.2) = 509.8$ m.

QNo:- 77 ,Correct Answer:- B

Explanation:- Since, no two non-vegetarians are sitting together, the 13 persons can be arranged as

$N V N V N V N V N V N$

Where N represents non-vegetarians and V , vegetarians.



As the Gujaratis always sit together, they can be as

$N V N V N V N V N V N V N$
 $1 2 3 4 5 6 7 8 9 10 11 12 13$

- (a) $G G G G G G G$
- (b) $G G G G G G G$
- (c) $G G G G G G G$

In each case, (a), (b) and (c), the Gujaratis can be placed in $4! - 3!$ ways while the Biharis can be placed in $2! - 4!$ ways. Hence, the total number of ways = $3 (4! - 3! - 2! - 4!)$.

QNo:- 78 ,Correct Answer:- 18

Explanation:- Let their GM = $3x$, then AM = $5x$

$$\text{Then, HM} = \frac{\text{GM}^2}{\text{AM}} = \frac{9}{5}x.$$

$$\text{Also, } 3x + 5x + 5\left(\frac{9}{5}x\right) = 34 \therefore x = 2.$$

Now, if the required numbers are a and b , then $\text{GM}^2 = ab = (3 - 2)^2 = 36$ and

$$\text{AM} = \frac{a+b}{2} = 5 \times 2 = 10.$$

$$\begin{cases} a + b = 20 \\ (20 - b)b = 36 \end{cases} \Rightarrow 0 = b^2 - 20b + 36. \quad \therefore b = 18 \text{ or } 2.$$

\therefore The two numbers are 2 and 18.

Alternatively,

In option [3], $6 \cdot 10 = 60$ and G.M. will not be an integer. In option [1], [2] and [4] G.M. = 6. But for (4, 9) A.M. is not an integer and the condition is satisfied with (2, 18). So, it is the option.

QNo:- 79 ,Correct Answer:- B

Explanation:- Since only two players are playing a game. $P(\text{Draw}) = 1 - \left(\frac{1}{3} + \frac{1}{6}\right) = \frac{1}{2}$

We are interested in the event where a player wins two of the first three games.

The two games can be selected in ${}^3C_2 = 3$ ways.

Case 1:

Anand wins 2 games. Then the third game may be a draw or may be won by Kasparov.

$$\text{The probability, in this case} = 3 \left[\left(\frac{1}{3}\right)^2 \times \frac{1}{2} + \left(\frac{1}{3}\right)^2 \times \frac{1}{6} \right] = 3 \left[\frac{1}{18} + \frac{1}{54} \right] = \frac{2}{9}$$

Case 2:

Kasparov wins 2 games. Then the third game may be a draw or may be won by Anand.

$$\text{The probability, in this case} = 3 \left[\left(\frac{1}{6}\right)^2 \times \frac{1}{2} + \left(\frac{1}{6}\right)^2 \times \frac{1}{3} \right] = 3 \left[\frac{1}{72} + \frac{1}{108} \right] = \frac{5}{72}$$

$$\therefore \text{The required probability} = \frac{2}{9} + \frac{5}{72} = \frac{7}{24}$$

QNo:- 80 ,Correct Answer:- 56

Explanation:- Let the volumes of a cup and a cone be x and y respectively.

$$\begin{cases} 17x + 9y = 704 & \text{---(1)} \\ \text{and } 9x + 17y = 752 & \text{---(2)} \end{cases}$$

$$(1) + (2) \text{ gives } x + y = 56 \quad \text{---(3)}$$

QNo:- 81 ,Correct Answer:- 68

Explanation:- $1764 = 42^2 = \text{Number of boys}$. Number of girls = $42/2 + 5 = 26$

\therefore Total strength of class = $42 + 26 = 68$.

QNo:- 82 ,Correct Answer:- 28800

Explanation:- Number of ways in which the men can be seated is $(6 - 1)! = 5!$

Now, as a particular couple sits together, we have two positions for one lady to sit next to her husband and the remaining ladies can sit in $5!$ Ways.

Thus, the total number of ways is $5! \cdot 2 \cdot 5! = 28800$.

QNo:- 83 ,Correct Answer:- B

Explanation:- Consider the pendant and the two red beads beside it as a single unit.

Then the remaining 30 beads and this unit can be arranged in a circular manner in $\frac{30!}{5!6!8!1!1!}$

Since, the pendant looks different from both the sides, the necklace can be made in $\frac{2 \times 30!}{5!6!8!1!1!}$ ways.

QNo:- 84 ,Correct Answer:- C

Explanation:- Let Shyams present age be x years. ∴ Satish's present age = $5/3x$ years

Swati is Shyams wife and Savita is Satish's wife. ∴ Swati's age = $5/6x$ years and Savita's age = $25/18x$.

One year ago, Siddhi was $1/3^{\text{rd}}$ her father's present age.

Siddhi's present age = $\left(\frac{x}{3} + 1\right)$ years.

Sonu will be $1/3^{\text{rd}}$ of his mother's present age two years later.

∴ Sonu's present age = $\frac{1}{3}\left(\frac{5x}{6}\right) - 2$ years.

Sum of ages of all the family members is 197.

∴ $x + \frac{5}{3}x + \frac{5}{6}x + \frac{25}{18}x + \left(\frac{x}{3} + 1\right) + \left(\frac{5x}{18} - 2\right) = 197$

∴ $\frac{99}{18}x = 198 \Rightarrow x = 36$. Thus, Savita's present age = $\frac{25}{18} \times 36 = 50$ years.

QNo:- 85 ,Correct Answer:- 3

Explanation:- In the first choice, Anil would have paid back an amount = $15000\left(1 + \frac{11}{100}\right)^2$
 = $15000(1.11)^2 = \text{Rs. } 18481.5$.

While in the second choice, Anil paid back the amount = $15000 + \frac{15000 \times 3 \times 8}{100} = 15000 + 3600 = \text{Rs. } 18600$

∴ The merchant gains $18600 - 18481.5 = \text{Rs. } 118.5$ from Anil's choice of repayment of loan.

QNo:- 86 ,Correct Answer:- 2

Explanation:-
$$\frac{a^3 + b^3}{(a+b)(a^3 + b^3) - (a-b)^2(a^2 - ab + b^2)}$$

$$= \frac{(a+b)(a^2 - ab + b^2)}{(a+b)^2(a^2 - ab + b^2) - (a-b)^2(a^2 - ab + b^2)}$$

$$= \frac{a+b}{(a+b)^2 - (a-b)^2} = \frac{a+b}{4ab}$$

QNo:- 87 ,Correct Answer:- D

Explanation:- If we substitute $x = 1, 3$ in $f(x) = x^2 - 7x + 2$ and $x = -8$ in $f(x) = x^3 - (4-2)x^2 + (3-42)x + 32$, we get that $f(1) = 0$ i.e., x cannot take values 1, 3 and -8 if $f(x) = 0$. Alternatively,

Substituting $x = 1$, we get $f(1) = 0$.

So, option [1] & [2] are not answer options.

Check for 3, $f(3) = 0$.

QNo:- 88 ,Correct Answer:- B

Explanation:- $f(x) = x^3 - 8x^2 + 19x - 12 = (x - 1)(x^2 - 7x + 12) = (x - 1)(x - 4)(x - 3)$
 Since, $f(x) = x^3 - 8x^2 + 19x - 12$ for $x \neq 2$
 $f(x) = 0$ for $x = 4$ or 3
 Also, $f(x) = x^2 - 6 = 0$ $x = 6$ or -6
 But, $f(x) = x^2 - 6$ for $x < 2$ $f(x) = 0$ for $x = -6$
 $g(4) = 13 \cdot 4^3 - 2 \cdot 4^2 + 7 \cdot 4 - 3 = 825$.
 $g(3) = 17 \cdot 3^2 - 2 \cdot 3 + 1 = 148$.

QNo:- 89 ,Correct Answer:- B

After 15 min tank would be $\left[\frac{5}{20} + \frac{5}{25} - \frac{5}{30} \right]$ filled i.e., $\frac{17}{60}$.
 Therefore in 45 min, tank would be $\frac{51}{60}$ th part filled and unfilled = $\frac{9}{60}$ th part.
 So, $\frac{9}{60}$ part can be filled in $\frac{9/60}{1/20} = 3$ min. (by tap 1)

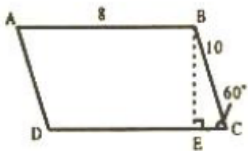
Explanation:-
 Total time = 45 + 3 = 48 min.
 Hence option 2.

QNo:- 90 ,Correct Answer:- 1

Explanation:- $\frac{7^{n+4} - 7^{n+2}}{7^{n+4}} + \frac{1}{7^2} \Rightarrow \frac{7^{n+4}}{7^{n+4}} - \frac{7^{n+2}}{7^{n+4}} + 7^{-2} = 1 - 7^{-2} + 7^{-2} = 1$.

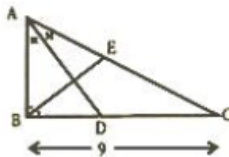
QNo:- 91 ,Correct Answer:- 3

Explanation:- $\mu AB \parallel CD$, ABCD is a trapezium and
 $\angle ABC + \angle BCD = 180^\circ$ (Supplementary or interior angles)
 $\angle BCD = 180^\circ - 120^\circ = 60^\circ$



Now, let $BE \perp DC$.
 In $\triangle BEC$, $\angle EBC = 30^\circ$, $\angle BCE = 60^\circ$ $BE = 10 \cdot \frac{3}{2} = 15$ cm
 $\text{Area}(ABCD) = \frac{1}{2} \cdot 15 \cdot (8 + 12) = 150$ cm²

QNo:- 92 ,Correct Answer:- C



Explanation:-
 In $\triangle ABD$ and $\triangle BAE$
 $\angle ABD = \angle BAE$ ($\mu BC = AC$ in $\triangle ABC$)

$\angle ABE = \angle BAD$ (μ $1/2$ $\angle ABD = 1/2$ $\angle BAE$)

and AB is a common side. $\therefore \triangle ABD \cong \triangle BAE$ (by A-S-A test)

Since, D cuts BC with $BD < DC$, $BD = \frac{1}{2} BC$, so $BC = 4.5$ cm. $\therefore BC = 4.5$ cm.

QNo:- 93 ,Correct Answer:- 2400

Explanation:- Sheela's share in the profit will be in the same ratio as her investment.

Seema : Sheela

25000 4 : 15000 8

5 : 6

\therefore Sheela's share in profit = $\frac{6}{11} \times 4400 = \text{Rs. } 2400$

QNo:- 94 ,Correct Answer:- B

Consider (A). Number of 3 digit multiples of 11 = $\frac{(990-110)}{11} + 1 = 81$

Number of 3 digit multiple of 13 = $\frac{(988-104)}{13} + 1 = 69$

Explanation:-

Number of common multiples of 11 and 13 (or multiples of 143) = 6

$$(A) = \frac{(81+69-6)}{900} = \frac{144}{900} = \frac{1440}{9000}$$

$$\text{Similarly, (B)} = \frac{693+819-63}{9000} = \frac{1449}{9000}$$

$$(B) = \frac{1449}{9000} = \frac{1440}{9000} + \frac{9}{9000} = (A) + 0.001$$

Hence, $(B) > (A)$ by 0.001.

Hence, option 2.

QNo:- 95 ,Correct Answer:- C

Explanation:- Since, $AOCB$ is a cyclic quadrilateral and $\angle COA = 120^\circ$, $\therefore \angle ABC = 60^\circ$. In $\triangle ABC$, since $AB = AC$, $\angle ACB = \angle BAC = \angle ABC = 60^\circ$ $\therefore \triangle ABC$ is equilateral. Hence, $AC = BC = 3$ cms

QNo:- 96 ,Correct Answer:- C

Explanation:- Let $d(A, C)$ denote the distance between A and C .

$$\text{Consider } d(A, C) = \sqrt{(3-10)^2 + (5-8)^2} = \sqrt{49+9} = \sqrt{58}$$

$$\text{and slope of } AC = \frac{8-5}{10-3} = \frac{3}{7}$$

Then, as $\square ABCD$ is a square, $d(B, D) = \sqrt{58}$ and slope of $BD = -\frac{7}{3}$

This is true only for option [3]:

$$d((8, 3), (5, 10)) = \sqrt{(8-5)^2 + (3-10)^2} = \sqrt{9+49} = \sqrt{58}$$

$$\text{and slope of line containing } (8, 3) \text{ and } (5, 10) = \frac{10-3}{5-8} = -\frac{7}{3}$$

Alternatively,

$$d(A, C) = \sqrt{(3-10)^2 + (5-8)^2} = \sqrt{58}$$

So, side of square should be $\sqrt{29}$.

Using co-ordinates from the options, calculate the distance between any two adjacent vertices. It should be 29 With (8, 3) and (5, 10), the distance calculated is 29

QNo:- 97 ,Correct Answer:- 2

$$\frac{a+b}{2} \geq \sqrt{ab} \text{ Using the relation with } b = \frac{1}{a}, \text{ we have}$$

$$a + \frac{1}{a} \geq 2\sqrt{a \times \frac{1}{a}}$$

Explanation:- $a + \frac{1}{a} \geq 2$

QNo:- 98 ,Correct Answer:- A

Explanation:- Sum of cubes = $(x-1)^3 + x^3 + (x+1)^3$
 $= x^3 - 1 - 3x(x-1) + x^3 + x^3 + 1 + 3x(x+1) = 3x^3 + 6x = 3x(x^2+2)$

If x is a multiple of 3 required number is 9.

If x is not multiple of 3, then,

Let $x = 3n + 1$ or $3n + 2$.

If $x = (3n + 1)$, then $x^2 + 2 = (3n + 1)^2 + 2 = 9n^2 + 1 + 6n + 2 = 3(3n^2 + 2n + 1)$

If $x = 3n + 2$, then $x^2 + 2 = 9n^2 + 4 + 12n + 2 = 3(3n^2 + 4n + 2)$

So in all cases it is divisible by 9.

QNo:- 99 ,Correct Answer:- B

Explanation:- Minimum number of balls required = $2 + 4 + 6 + 8 + 10 + 12 + 14 + 16 + 18 = 90$

These 90 balls can be given to the nine children in 1 way.

The remaining $126 - 90 = 36$ balls can be distributed among the 9 children in ${}^{36+9-1}C_{9-1}$ i.e., in ${}^{44}C_8$ ways. [n non-distinct things can be partitioned in to r distinct groups (some groups may be empty) in ${}^{n+r-1}C_{r-1}$ ways].

QNo:- 100 ,Correct Answer:- D

Explanation:- Since $xy = 54$; $ab = 54$. Since ka and lb have $HCF = LCF = 18$

$$ka=18; lb=18 \Rightarrow a,b \text{ can be } (6,9)(3,18) \therefore \frac{a}{b} \text{ or } \frac{b}{a} \text{ can be } \frac{6}{9}, \frac{9}{6}, \frac{3}{18}, \frac{18}{3}$$