VARC

DIRECTIONS *for questions 1 to 6:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

Literature seeks to articulate something of the "mass and majesty" of experience. Most of us (and most of our societies) are constantly tending to narrow our focus, to ignore embarrassing qualifications and complexities, make all this into merely a backcloth to the stage on which our egos do act comfortably. Literature can help to bring us up short, to stop the moulds from setting firm. It habitually seeks to break the two dimensional frame of fixed 'being' which we just as habitually try to put round others to make us see them again as **three dimensional people** in a constant state of 'becoming'.
It is all the time implicitly inviting us to remain responsive and alert and to extend our humanity; we do not talk quite so easily about all farm labourers or even about 'all Russians' after we have read Hardy or Turgenev. It is implicitly inviting us to widen and deepen our knowledge of ourselves and of our relations with others, to realize that life is more this and more that than we had been willing to think.
All this, we have to remember, may be achieved – may sometimes only be achieved – in a mythic and parabolic way. When we speak of the moral intelligence of art' we are not speaking only of the will in action but also of a world outside the will, of the unconscious psychic-life literature of men – along with the other arts, which have their own ways of informing the imagination – that can help us to rediscover awe.
What is true of individuals is true also of societies. A society without a literature has that much less chance of embodying within its temper and so within its organizations sometimes of the fullness of human experience. We only know certain by articulating them. This does not mean that we have to 'argue them out'. We may know some things only by approaching them metaphorically, as 'dramatic play'.
So literature can make us sense more adequately the fullness, the weight, the inter relations and the demands of human experience and the possibilities of order. It can make us feel all this, but not necessarily act on this. We can see and do otherwise, always. But we are not then acting quite so much out of blindness and inarticulateness; we are selfishly or fearfully or willfully trying to short circuit what we know underneath to be more nearly the true state of things. Works of literature, properly read, give us the opportunity to extend our imaginative grasp of human experience; if we will to act well thereafter we may be able to do so with greater flexibility and insight. In this special sense literature can be morally educative. It can guide the moral will in so far as its illuminations depreciate certain modes of conduct and, conversely, reinforce others. But it cannot direct the moral will, be 'the soul of all (our) moral being.'
The relation of literature to the 'moral will' is not simple. Literature is 'a criticism of life' which must itself be judged. But we can only understand that criticism and make our own judgement on it if we first – in a sense – suspend the will, if we attend to the literature as itself, as if it were an autonomous object, and let it work in its own way. It may then be in an active relationship with our sense of ourselves, with our sense of life in time and life by values. Like the other arts, literature is involved with ends beyond itself. Things can never be quite the same again after we have read – really read – a good book.

Q1. Which of the following can be inferred from the last sentence of the passage?

a) Life is never the same after reading a book.
b) We can only understand the criticism of life and make our own judgement if we treat literature as an autonomous object.

c) One's knowledge or human experience is extended on really reading a good book.
d) Avid readers of only good books keep on learning new things.

Q2. Why does the author include the line "We do not talk quite so easily about all farm labourers ....." in the passage (para 2)?

a) In order to explain that literature helps deepen our understanding of others.
b) To prove that specific details will always be more helpful than general points of view.
c) To show that literature can help us talk more about things since it improves our knowledge.
d) To imply that everything that literature can help us achieve may only be achieved in a parabolic way.

Q3. The expression "three dimensional people" as mentioned in boldface (para 1) serves to make the point that

a) it is not sensible to expect a literary work to yield all its meaning on a first reading.
b) literature can affirm the diverse and complex experience of being human.
c) approaching things metaphorically can give one the fullness of human experience.
d) we can grasp the moral effects of literature only by embodying them.

Q4. According to the passage, which of the following statements is not true about literature?

a) Literature helps us widen our view and understanding of human experience.
b) Literature guides the moral will in a certain way but cannot govern it.
c) Ironically, literature which is a critique of life in itself must itself be judged.
d) It is not possible to understand literature as a criticism of life.

Q5. The passage suggests which of the following about "the moral will" in the context of literature?

a) Literature shows how the free will of a human is subject to constraints due to ignorance.
b) Our moral will is awakened especially when evil appears to triumph in literature.
c) Though literature cannot control the moral will, it can affect the temper with which we face experience.
d) Literature can be understood only in the metaphorical sense and it does not affect the moral will because it dispassionately pursues its explorations.

Q6. What is the primary concern of the author in the passage?

a) To discuss various ways in which literature provides a criticism of life and a basis for an informed humanity.
b) To point out how literature makes us morally aware by extending our imaginative grasp of human experience.
c) To argue for the pursuit of the moral intelligence of literature to deepen our knowledge of ourselves.

d) To explore how reading a good book kindles our imagination and makes us abstractly contemplative.

DIRECTIONS *for questions 7 to 12:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

Deterrence theory takes the perception of threat for granted and goes on to prescribe and explain the policies that are and should be adopted. This is a legitimate approach – any theory has to start from somewhere. But it leaves us with the question of the circumstances under which states see others as menaces to their security, a question that psychological theories can help answer. At the start a methodological problem should be noted: in order to determine what leads states to perceive others as threats one needs to examine cases in which this perception is absent as well as cases in which it is present. When one looks at only the latter – which is common in this area, as in many others in social science – the factors one locates may be necessary conditions but may not separate the circumstances that lead to the feeling of menace from those that do not. The most appropriate way for states to judge whether others are a threat would be by monitoring their capabilities. Using worst case analysis, they could assume that others were preparing to do as much harm to them as possible. Indeed, some versions of balance of power theory imply that statesmen should and do draw inferences in this way. But this does not seem to be the case. Although capabilities are rarely ignored, they do not determine the image that is formed. On the one hand, the United States could easily destroy Britain, France, and West Germany, yet those countries do not fear a U.S. attack; Britain and France could inflict grave damage on the United States, but the United States wants to see those countries increase rather than decrease their arms. On the other hand, in the mid and late 1940s the United States came to see the Soviet Union as hostile even while realizing that it was weak. Indeed, it was even weaker than Americans thought and, to a significant extent, perceptions of Soviet strength seem to have been more the product than the cause of perceptions of Soviet hostility.

Judging others' intentions is notoriously difficult. Any number of methods of inference can be used, all of them fallible. Statesmen can concentrate on what they believe is the other's objective situation if they believe that the external environment is the most important source of its behaviour; they can look to its past behaviour if they think national character or domestic attributes are crucial; they can study the goals, beliefs, and personalities of their opposite numbers if they think idiosyncratic characteristics matter. Of course, all three kinds of variables may and probably do influence foreign policy, but statesmen are no more able than scholars to construct useful hypotheses based on an excessive number of factors. Unfortunately, however, at present we know too little about decision makers' implicit views about the level of analysis to make this a useful vantage point for our investigation.

Although we cannot be sure what else statesmen do, they often use the recent behaviour of others as important sources of information. They take the pattern they think they observe and project it forward into the future. When high costs are incurred, observers will assume that major objectives must be being sought; even if the costs are low, when the immediate stakes seem still smaller, more far-reaching goals will be imputed. Small incidents, then, will have large implications if they are taken as indicating that the other will harm the state later.

Q7. Why does the author believe that it is important to also examine cases in which there is an absence of perceived threat between states?

a) By examining such cases, one may be able to identify the conditions necessary for a state to perceive another state as a threat.
b) It helps in differentiating the circumstances which result in a state perceiving another state to be a threat from those which do not.
c) In doing so, one will mitigate the chances of conflict between states.
d) If such cases are not considered, one will not be able to obtain any meaningful insights about the perception of threat.

Q8. Which of the following characteristics of statesmen will most likely result in small incidents having large implications?

a) Their propensity to predict the future using recent information.
b) Their belief that external environment is the most important source of behaviours of a state.
c) Their inclination to concentrate on incidents/objectives which incur high costs.
d) Their paranoia that other states are always looking to harm them.

Q9. Which of the following factors does the author mention when he discusses the approaches that statesmen can take to gauge the intentions of other states?

1. Past behaviour of the state
2. The personalities of the decision makers of the state.
3. The capability of the state to cause harm.

a) Only II and III
b) Only I and II
c) I, II and III
d) Only I and III

Q10. According to the author, which of the following is true regarding the capabilities of states?

a) The capability of a state to harm others is the basis for inferring the intentions of the state.
b) For a state to be considered as a threat by another state, the former must be stronger and more capable than the latter.
c) The capability of a state to harm another state is not indicative of the level of threat that the latter perceives in the former.
d) Statesmen assume that any state that is capable of causing them harm will do so.

Q11. Which of the following is most likely true of a statesman who perceives that another state is a threat because it has waged a lot of wars in the past?

a) He believes that external environment is the most important characteristic for judging the capability of a state to inflict harm on other states.

b) He believes that history is indicative of national character which he considers the most important characteristic in judging the capability of a state to inflict harm on other states.
c) He believes that external environment is the most important characteristic for judging the intentions of a state.
d) He believes that history is indicative of national character which he considers the most important characteristic in judging the intentions of a state.

Q12. Regarding Deterrence Theory, the author opines that

a) the shortcoming of Deterrence theory is that it does not explain the circumstances under which states perceive other states as threats.
b) Deterrence theory raises more questions than it answers.
c) Policies must be formulated using psychological theories when there is perception of threat.
d) the scope of Deterrence theory does not include understanding the circumstances which lead to the perception of threat between states.

DIRECTIONS *for questions 13 to 18:* The passage given below is followed by a set of six questions. Choose the best answer to each question.

The unknown is always with us – and always has been. Walking the ordinary path of everyday existence, we may sometimes forget that on either side of that path lies the unexplained.
Whenever experiences occur on the margins of reality, people wonder how best to fit them into the pattern of their daily lives. The simplest response is the way of acceptance. The British anthropologist Edward Evan Evans-Pritchard said of the Azande people of Africa, “They have no conception of ‘natural’ and therefore neither of the ‘supernatural’. Witchcraft is to the Azande an ordinary and not an extraordinary event.” For Australian Aboriginal people, the existence of a parallel order of things is taken for granted. The Dreaming spirits not only created their world, but also remain very much a part of their everyday lives, as much a part of the natural order as thunder and lightning.
But in some cultures there emerge individuals who believe they know better than their fellows, who proclaim that thunder and lightning are signs of divine displeasure, and interpret dreams and visions as glimpses of a hidden order that they alone have the skill to interpret. This is the way of belief, which has dominated response to the uncanny for much of recorded history.
Throughout the Dark Ages, all thinking was controlled by the prevailing religious establishment. In the East it was codified into rigid structures of belief; in Europe every happening was subjected to rigid interpretation. If a nun had beatific visions, she had enjoyed a divine grace; if she went into convulsions, she had been possessed by an evil spirit. ...
The inevitable reaction to the way of belief is the way of rejection. When in seventeenth-century Sweden scores of innocent people were burnt as heretics on the simple say-so of young children, even those who believed most fervently in the existence of the devil came to question the practice of holding him responsible for every mysterious evil. By 1768 English preacher John Wesley could note that “the English in general, and indeed most of the men of learning in Europe, have given up all accounts of witches and apparitions as mere old wives ‘fables.’”
This was the Age of Enlightenment, when it seemed only a matter of time before science, which had solved so many mysteries, would explain those that remained. In their role as

society's watchdogs, scientists dismissed ghosts as figments of the imagination, while the mere possibility of telepathy was roundly rejected by the nineteenth-century German physiologist Herman von Helmholtz: "Neither the testimony of all the Fellows of the Royal Society, nor the evidence of my own senses, could lead me to believe in the transmission of thoughts from one person to another independently of the recognized channels of sensation. It is clearly impossible." Other scientists declared that tables at seances spin only due to muscular pressure exerted by the sitters.
Nearly a hundred years later, Walter Franklin Prince of the Boston Society for Psychical Research suggested that a kind of enchantment surrounds the uncanny and causes otherwise intelligent people to abandon customary standards of judgment, brushing aside the evidence in a way they would never consider doing in other matters. ...
Incidents of the uncanny have shown remarkable similarities over the centuries. The ancient Greeks recorded ghost stories; the Romans told of haunted houses. There is not a culture in the world that does not possess some tradition of communication between the living and the dead. The American philosopher William James wrote: "The phenomena are there, lying broadcast over the surface of history. No matter where you open the pages, you find things recorded under the name of divinations, demoniacal possessions, trances, ecstasies, and occult powers possessed by peculiar individuals ... There was never a time when these things were not reported just as abundantly as now."
What has changed has been the way we respond to these events. The ways of acceptance, belief and rejection are no longer adequate. ... Acceptance, belief, rejection can all lead us astray. Perhaps the surest road to understanding is the way of experience, which begins by seeing each story as an event that has actually happened. This does not mean we accept it without question: when someone claims to have been abducted by aliens, we may find it probable that the person has travelled no farther than the confines of his or her own mind. But we need not reject the story as mere fantasy, nor twist it to fit conventional laws of science.

Q13. What is the author trying to conclude in the passage?

a) One should reject the possibility of someone being abducted by aliens.
b) Acceptance, belief and rejection are brilliant means for understanding the unknown.
c) The best way to understanding the unknown is the way of experience.
d) Unnatural peculiar beliefs have always been present for centuries.

Q14. What does the author imply by the lines "There is not a culture in the world that does not possess ....." (para 8)?

a) Not every culture in the world possesses the same tradition of communication between the living and the dead.
b) Every culture in the world possesses some or other peculiar or divine beliefs.
c) The possibility of interaction between the living and the dead has long been pondered over by William James.
d) Nowadays, beliefs over supernatural things have increased to a great extent.

Q15. According to the passage, which of the following are not mentioned as responses towards the supernatural beliefs?
Identify all that apply and enter the corresponding number in the input box given below. You must enter your answer in increasing order only. For example, if you think (1) and (2) apply, then enter 12 (but not 21) in the input box.

1. Acceptance

2. Beliefs
3. Scientific learning
4. Rejection
5. Experience
6. Experimentation

Q16. What, according to the author, is the difference between acceptance and belief as being a response towards the unknown?

a) People in Africa believed in acceptance while those in Australia depended on belief being a response.
b) People in Europe believed in acceptance while those in Australia depended on belief being a response.
c) In acceptance, people accept the unnatural events to be equivalent to thunder and lightning while in belief, people do not.
d) In acceptance, people accept the unnatural events to be a part of their daily life while in the way of belief, people believe the unnatural events based on some religious establishment.

Q17. Which of the following is not an example of “rejection” according to the passage?

a) Scientists dismissing ghosts as figments of imagination.
b) Brushing aside the evidence of unnatural events by intelligent people.
c) Most learned men in Europe giving up all accounts of witches or considering them to be mere fables.
d) The accounts of witnesses leading to people believing in supernatural events.

Q18. Why does the physiologist Herman von Helmholtz say “Neither the testimony ..... clearly impossible” (para 6)?

a) According to him, telepathy is not clearly impossible.
b) It is because scientists declare that tables at seances spin due to muscular pressure exerted by the sitters.
c) Herman believed that transmission of thoughts from one person to another was not possible.
d) The testimonies of the Fellows of Royal Society are never believable.

DIRECTIONS *for questions 19 to 21:* The passage given below is followed by a set of three questions. Choose the best answer to each question.

Specific odors can trigger a flood of memories. Psychologists call it the "Proustian phenomenon," after French novelist Marcel Proust. Near the beginning of the masterpiece "In Search of Lost Time," Proust"s narrator dunks a madeleine cookie into a cup of tea – and the scent and taste unleash a torrent of childhood memories for 3,000 pages.
Now, this phenomenon is getting the scientific treatment. Neuroscientists have discovered, for instance, how sensory memories are shared across the brain, with different brain regions remembering the sights, smells, tastes and sounds of a particular

experience. Meanwhile, psychologists have demonstrated that memories triggered by smells can be more emotional, as well as more detailed, than memories not related to smells.
When you inhale, odor molecules set brain cells dancing within a region known as the amygdala, a part of the brain that helps control emotion. In contrast, the other senses, such as taste or touch, get routed through other parts of the brain before reaching the amygdala.
The direct link between odors and the amygdala may help explain the emotional potency of smells, scientists say.
"There is this unique connection between the sense of smell and the part of the brain that processes emotion," says Rachel Herz, a cognitive neuroscientist at Brown University in Providence, R.I.
But the links don"t stop there. Like an octopus reaching its tentacles outward, the memory of smells affects other brain regions as well.
In recent experiments, neuroscientists at University College London asked 15 volunteers to look at pictures while smelling unrelated odors. For instance, the subjects might see a photo of a duck paired with the scent of a rose, and then be asked to create a story linking the two.
Brain scans taken at the time revealed that the volunteers" brains were particularly active in a region known as the olfactory cortex, which is known to be involved in processing smells. Five minutes later, the volunteers were shown the duck photo again, but without the rose smell. And in their brains, the olfactory cortex lit up again, the scientists reported recently in Neuron.
The fact that the olfactory cortex became active in the absence of the odor suggests that people"s sensory memory of events is spread across different brain regions, says the University College London team leader, Jay Gottfried.
Imagine going on a seaside holiday, he says. The sight of the waves becomes stored in one area, whereas the crash of the surf goes elsewhere and the smell of seaweed in yet a third place.
There could be advantages to having memories spread around the brain. "You can reawaken that memory from any one of the sensory triggers," says Gottfried, "maybe the smell of the sun lotion, or a particular sound from that day, or the sight of a rock formation."

Q19. Which of the following is a reason why memories triggered by odors are usually more detailed than those that are not?

a) Odors excite more number of brain cells in the amygdala than do other senses.
b) Odors directly excite the amygdala while other senses do not do so directly.
c) Odors act as sensory triggers which can reawaken associated memories but the other senses are incapable of reawakening associated memories.
d) The part of the brain which processes smells is more active than the parts of the brain which process other sensory perceptions.

Q20. Which of the following is the most apt generalization of the findings of the experiments conducted by the neuroscientists at University College London?

a) Olfactory stimulus can affect the visual and auditory parts of the brain.

b) Visual stimulus can affect the olfactory and auditory parts of the brain.
c) Olfactory stimulus can affect the visual part of the brain.
d) Visual stimulus can affect the olfactory part of the brain.

Q21. According to Gottfried, which of the following is an advantage of having memories spread across the brain?

a) We are less likely to forget a memory when the associated scents, sights and sounds are spread across the brain.
b) Any scent, sight or sound associated with a memory can help us recollect the details of the memory.
c) Having memories spread across the brain will help us recollect more details about the memory.
d) Various parts of our brain remain more active if the memories are spread across the brain.

DIRECTIONS *for questions 22 to 24:* The passage given below is followed by a set of three questions. Choose the best answer to each question.

Electric cars are still a tiny minority of those on the road, but their number is growing very fast as they become more affordable and more practical. Their advantages to society are obvious: they pollute far less than internal combustion engines, and use less energy too. A city of electric cars will be cleaner and quieter than our present stinking streets. And at some stage in the next decade, their advantages to private drivers will become overwhelming. The electric car will become a mainstream status symbol and it is the buyers of internal combustion vehicles who will feel like weird outsiders. The Dutch parliament has considered a measure which would make all cars sold there electric by 2025. A recent think tank report suggests that 10 years after that a third of all the vehicles sold in the world will be electric.
Electric cars of the future must travel further and recover from their journeys in less time than those that can be bought today, when long journeys are still fraught with anxiety. This means lighter batteries that hold more charge and can be charged more quickly; they are appearing already and the huge amounts of global investment make it likely that progress will continue and technology will supply what the market needs.
Stepping back for a moment, the rise of electric and largely automated cars might change the world around us almost as profoundly as the internal combustion engine did. Part of this is their obvious role in transportation. All-electric traffic will be faster, reversing the trend of the last century. Lighter cars will accelerate and brake more quickly, while increasing automation will mean traffic moves more freely. If those trends continue, the private car might disappear altogether, replaced by a network of hired autonomous vehicles, at least within cities. The beginnings of this development are already visible in the reluctance of young people to learn to drive.
Less obvious, but just as important, are all the symbolic values of cars. It's not just for Bruce Springsteen that they embody freedom, autonomy and power. The car that you own says almost as much about your social position and your aspirations as the clothes you wear. Car ownership was for much of the world a mark of status in the way that owning a horse made you a knight. The coming revolution threatens far more than the vehicle manufacturing industry. If cars do come to be valued for their usefulness, not as means of ostentation, the motor car would be a prized possession only for the rich, as useless, if still as loved, as the private horse now is.

Q22. Which of the following does the author predict will most likely happen?

a) No one will own any cars that use internal combustion engine.
b) Vehicles which can navigate by themselves without human intervention will become commonplace.
c) It will become difficult to go on long journeys as the batteries powering the electric cars will not be able to hold much charge.
d) It will polarize the society into two halves – those with electric cars and those with motor cars.

Q23. What trend does the author most likely refer to when he says that all-electric traffic will reverse "the trend of the last century"?

a) People preferring to buy cars that are more powerful and faster.
b) Increase in the number of cars which can drive themselves.
c) Vehicles becoming slower due to the increase in traffic.
d) The increase in the number of electric cars on road.

Q24. Which of the following is true regarding the similarity between motor cars and horses?

a) Motor cars and horses served no practical purpose but were considered only as status symbols.
b) Owning a motor car and owning a horse were both considered prestigious by the society.
c) Motor cars and horses embody freedom, autonomy and power.
d) Motor cars are loved by their owners as much as horses were.

Q25. **DIRECTIONS** *for questions 25 to 29:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in the correct answer for the question given below the five sentences.

1. Better still, the ore there has unusually high iron content.
2. Simandou, a mountainous area in Southern Guinea, has been called the El Dorado of iron ore.
3. "An emblematic tragedy" is how Sir Paul Collier, an advisor to the British government, describes this situation in Guinea – referring not to the Ebola outbreak but the saga of Simandou.
4. It is the world's largest known untapped deposit of the stuff, with enough ore to sustain annual production of 200 m tonne for more than a quarter of a century.
5. But the mining project proposed in Simandou is mired in allegations of corruption, expropriation and corporate espionage.

Q26. DIRECTIONS *for questions 25 to 29:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in the correct answer for the question given below the five sentences.

1. Between them, though, the heart of the country is trapped in ethnic and sectarian strife, vicious political factionalism and foreign meddling.
2. In the north and south people are emerging from the deepest of traumas into a world of possibilities.
3. Mesopotamia, the ancient name for Iraq, means “land between the rivers”.
4. The virtually independent Kurdish region and the oil-rich Shia provinces also already enjoy peace and a fair, or rising, degree of prosperity.
5. Today, though, the lines which divide the country, not those which circumscribe it, matter most.

Q27. DIRECTIONS *for questions 25 to 29:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in the correct answer for the question given below the five sentences.

1. What would be nice is a machine that could also print the electronics that go into devices.
2. In the digital era of the 1970s, laser and inkjet printers arrived.
3. Since then, movable type has given way to other processes, such as lithography which was invented in 1796 and screen printing which was developed in 1910.
4. Printing has come a long way since Johannes Gutenberg perfected the commercial use of the printing press around 1439.
5. Then 3D printers emerged to make solid objects by building up layers of material.

Q28. DIRECTIONS *for questions 25 to 29:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in the correct answer for the question given below the five sentences.

1. But it is turning into an annual slugfest of racial politics.
2. The character is derived from 17th century paintings of Moorish slaves, and many Dutch with African ancestry find it offensive.
3. Most white Dutch fail to see the problem, and react angrily to accusations that their tradition is racist.
4. The problem is the figure of Zwarte Piet, an impish clown with a black face who accompanies the bearded St. Nicholas (“Sinterklaas”) on his rounds, distributing presents and biscuits.
5. The Dutch festival of Sinterklaas is celebrated on December 5th, the country’s most important children’s holiday.

Q29. DIRECTIONS *for questions 25 to 29:* The sentences given below, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a number (1, 2, 3, 4 or 5). Decide on the proper order for the sentences and key in the correct answer for the question given below the five sentences.

1. That pitted him against economists who argued that rising prices should mitigate the squeeze by calling forth more supply.
2. Paul Ehrlich, a biologist of Malthusian disposition, argued in "The Population Bomb", a 1968 book, that rising populations would inevitably exhaust natural resources, sending prices soaring.
3. He won, as the effects of rising prices in the 1970s showed up in energy conservation and more oil exploration.
4. In a famous 1980 wager Julian Simon, an economist, bet Mr. Ehrlich that commodity prices would be lower a decade later.
5. But when exuberance returned to commodity markets in the 2000s, so did the old argument that price pressure and shortage of resources will inevitably be a permanent feature of our lives.

Q30. DIRECTIONS *for questions 30 and 31:* In each of the following questions, there are sentences or fragments of sentences that form a paragraph. Identify the sentence(s) or fragments of sentence(s) that is/ are correct in terms of grammar and usage, including spelling, punctuation and logical consistency. Enter the number corresponding to the sentence(s) or fragments of sentence(s) in the input box provided below the question. [Note: Enter your answer in increasing order only. For example, if you think that the fragments (2) and (4) are correct, then enter 24 (but not 42) in the input box.]

1. For a generation almost, psychologists around the world have been engaged in
2. a spirited debate over a question that most of us would consider to have settled years ago.
3. Question is this: Is there such a thing as innate talent?
4. The answer obvious is yes. Not every hockey player born in January ends at playing at the professional level.
5. Only some do – the innately talented ones. Achievement is talent plus preparation.

Q31. DIRECTIONS *for questions 30 and 31:* In each of the following questions, there are sentences or fragments of sentences that form a paragraph. Identify the sentence(s) or fragments of sentence(s) that is/ are correct in terms of grammar and usage, including spelling, punctuation and logical consistency. Enter the number corresponding to the sentence(s) or fragments of sentence(s) in the input box provided below the question. [Note: Enter your answer in increasing order only. For example, if you think that the fragments (2) and (4) are correct, then enter 24 (but not 42) in the input box.]

1. The Kepler telescope was launched off space in 2009 to look for extrasolar planets, those that circle stars other than the sun.
2. Since then it has spotted more than 2700 potential alien worlds that may be hospitable to life.
3. In doing so, it made “exoplanet” research one of the busiest areas of astronomy.
4. It also whetted up planet-hunters appetities. So it came as a blow when, on May 15th, the
5. telescope’s minders at NASA announced that the device was in trouble.

Q32. DIRECTIONS *for questions 32 to 34:* 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.

1. Altering his identity as he goes, the future man or the super-industrial man traces a private trajectory through a world of colliding subcults.
2. Restless movement from subcult to ephemeral subcult describes the arc of his life.
3. To be "between styles" or "between subcults" is a life-crisis, and the people of the future spend more time in this condition, searching for styles, than do the people of the past or present.
4. For the life style itself has become a throw-away item.
5. This trajectory is the social mobility of the future: not simply movement from one economic class to another, but from one tribal grouping to another.

Q33. DIRECTIONS *for questions 32 to 34:* 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.

1. A rice paddy has to be irrigated, so a complex system of dikes has to be built around the field.
2. Rice paddies are built, not opened up the way a wheat field is.
3. “Rice is life,” says the anthropologist Goncalo Santos, who has studied a traditional South Chinese village. “Without rice, you don’t survive.”
4. Channels must be dug from the nearest water source, and gates built into the dikes so the water flow can be adjusted precisely to cover the right amount of the plant.
5. That’s true. Rice fields are carved into mountainsides in an elaborate series of terraces, or painstakingly constructed from marshland and river plains.

Q34. DIRECTIONS *for questions 32 to 34:* 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.

1. Long consigned to silence, the money men are starting to practise their sales pitches.
2. That process has been bedevilled by delays but it seems inevitable it will overturn a Depression-era ban on “general solicitation”.
3. These bans may soon be lifted in America.
4. Hedge funds and other purveyors of alternative investments have suffered similar prohibitions on marketing their products.
5. Tobacco and alcohol brands face heavy restrictions when it comes to advertising.

DILR

DIRECTIONS *for questions 1 to 4:* Answer these questions on the basis of the information given below.
On a particular day, exactly six persons – Akbar, Birbal, Chetan, Gautam, Hari and Rahul – met in a restaurant for dinner. In the restaurant, they sat in six equally spaced chairs around a circular table. The six persons had a six course meal which comprised an Entrée, a Salad, a Soup, a Main Course, a Sorbet and a Dessert. Each person placed the order for exactly one course among the six courses of the meal. The sequence in which the orders were placed for each of the six courses is the same as the sequence in which the names of the six courses have been mentioned above.
The following information is known about their positions around the table and the courses for which they placed the orders:

1. Birbal, who was sitting opposite the person who placed the order for the Entrée, was not sitting adjacent to the person who ordered the Sorbet.
2. The person who placed the order for the Main Course was sitting three places to the right of the person who placed the order for the Sorbet.
3. Gautam, who did not place the order for the Dessert, placed an order after Rahul did and the two of them were sitting neither opposite each other nor adjacent each other.
4. Chetan, who placed the order for the Salad, placed the order after Hari did.
5. Akbar was sitting to the left of the person who ordered the Dessert.

Q1. DIRECTIONS *for questions 1 to 4:* Select the correct alterative from the given choices.
Who placed the order for the Main Course?

a) Gautam
b) Hari
c) Rahul
d) Akbar

Q2. DIRECTIONS *for questions 1 to 4:* Select the correct alterative from the given choices.

The person sitting opposite Rahul placed the order for

a) Dessert.
b) Entrée.
c) Salad.
d) Soup.

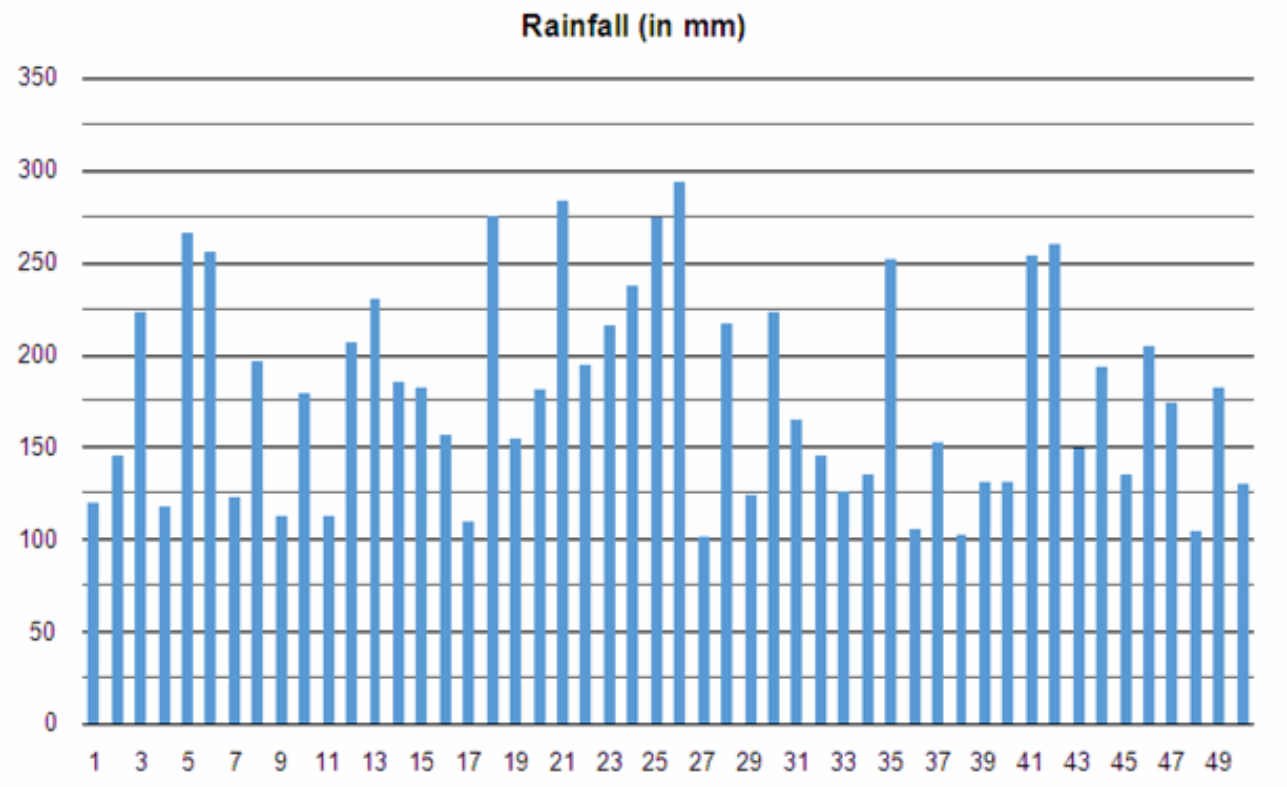
Q3. DIRECTIONS *for questions 1 to 4:* Select the correct alterative from the given choices.
How many pairs of persons are sitting adjacent to each other and placed the orders one immediately after the other?

a) **0**
b) **1**
c) **2**
d) **3**

Q4. DIRECTIONS *for questions 1 to 4:* Select the correct alterative from the given choices.
How many of the six persons placed an order before the person sitting opposite Gautam did?

a) **3**
b) **4**
c) **5**
d) **2**

DIRECTIONS *for questions 5 to 8:* Answer these questions on the basis of the information given below.
The following graph presents the rainfall (in mm) in a city for fifty consecutive days, Day 1 to Day 50:



Q5. DIRECTIONS *for questions 5 to 7:* Select the correct alterative from the given choices.
What is the maximum difference in rainfall between any two consecutive days during the given period approximately?

a) 135 mm
b) 145 mm
c) 165 mm
d) 195 mm

Q6. DIRECTIONS *for questions 5 to 7:* Select the correct alterative from the given choices.
During the given 50 days, there was a period of *n* consecutive days during which the rainfall did not exceed 200 mm on any day. What is the maximum possible value of *n*?

a) **3**
b) **4**
c) 5
d) **6**

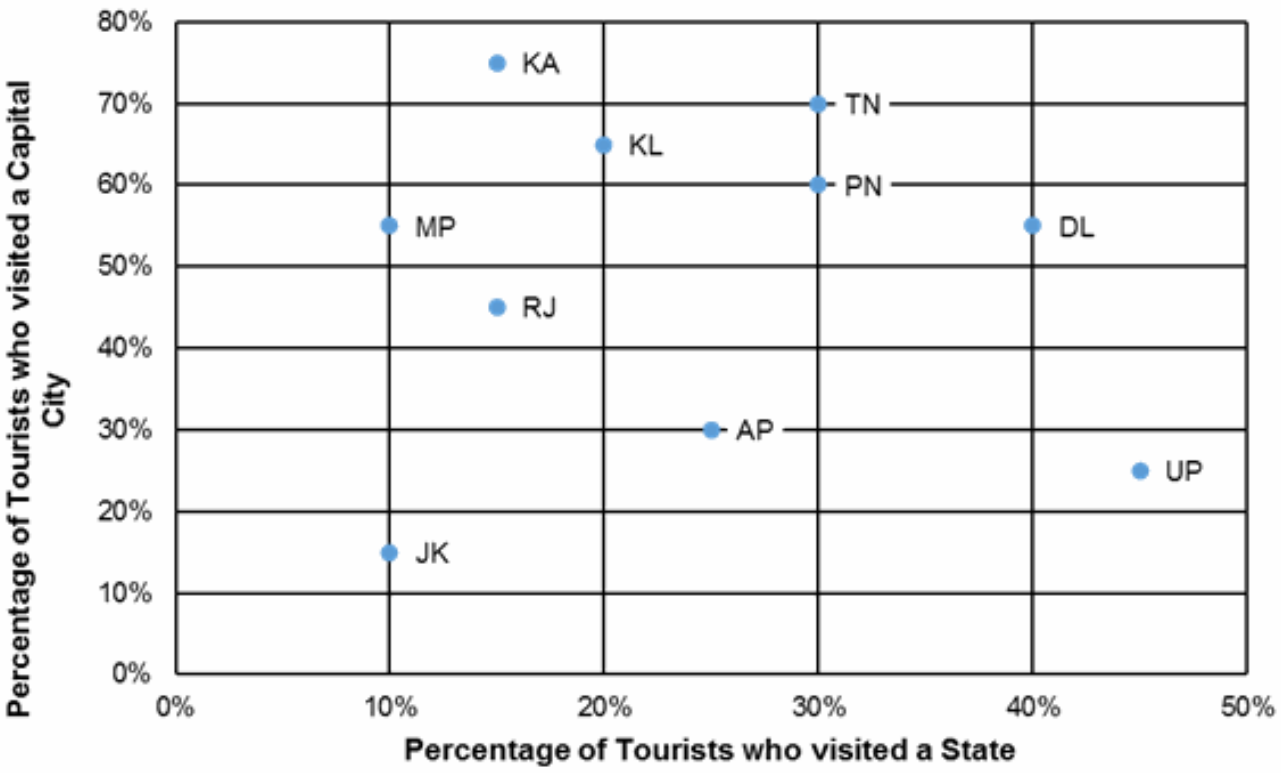
Q7. DIRECTIONS *for questions 5 to 7:* Select the correct alterative from the given choices.
During how many of the given days did the rainfall differ by 125mm or more when compared to the previous day?

a) **3**
b) **5**

c) 6
d) **7**

Q8. DIRECTIONS *for question 8:* Type in your answer in the input box provided below the question.
If the average rainfall per day over a period of three consecutive days was less than 125 mm, how many such periods are present in the given data?

DIRECTIONS *for questions 9 to 12:* Answer these questions on the basis of the information given below.
Pavan, who was working in the Ministry of Tourism of a country, collected information about the number of overseas tourists that visited each of the ten states in the country during a particular year. Further, he also collected the number of overseas tourists that visited the capital city of each state during that year. The following scatter graph presents, for that year, the number of overseas tourists that visited each state as a percentage of the total number of overseas tourists that visited the country and the number of overseas tourists that visited the capital city of a state as a percentage of the total number of overseas tourists who visited that state:



Q9. DIRECTIONS *for questions 9 to 11:* Select the correct alterative from the given choices.
An equal number of overseas tourists visited the capital cities of which of the following pairs of states?

a) KL, KA
b) TN, DL
c) MP, DL
d) KA, UP

Q10. DIRECTIONS *for questions 9 to 11:* Select the correct alterative from the given choices.
What is the average number of capital cities that each overseas tourist visited during the year?

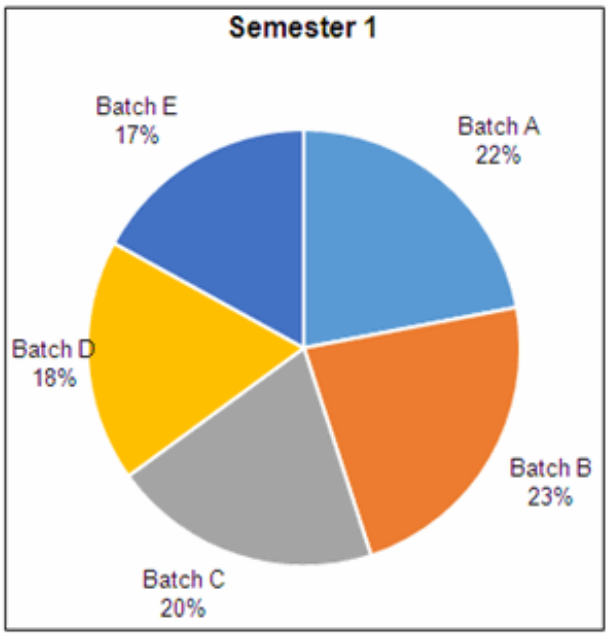
a) 4.95
b) 1.1825
c) 1.1975
d) 1.1775

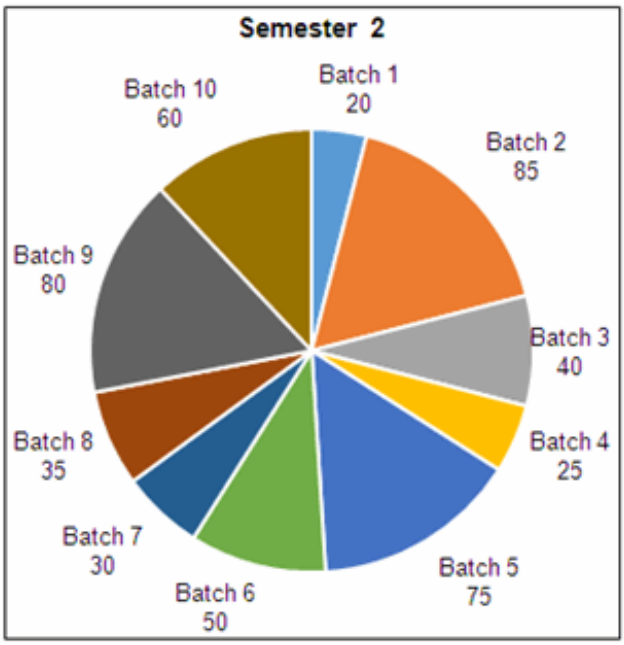
Q11. DIRECTIONS *for questions 9 to 11:* Select the correct alterative from the given choices.
The capital city of which state was visited by the third lowest number of overseas tourists?

a) **MP**
b) **JK**
c) RJ
d) **AP**

Q12. DIRECTIONS *for question 12:* Type in your answer in the input box provided below the question.
It is known that the overseas tourists that visited UP and those that visited another state, X, did not visit any other state. If no overseas tourist who visited UP visited X, how many of the nine states (excluding UP) can be X?

DIRECTIONS *for questions 13 to 16:* Answer these questions on the basis of the information given below.
Raghu, a Biology Professor, teaches a course which spans two semesters – Semester 1 and Semester 2. At the beginning of Semester 1, he divided all the students who enrolled in his course into five batches – Batch A through Batch E. It is known that in each of these five batches, the number of girls exceeded that of boys by at least 30%.
At the beginning of Semester 2, he further divided each of the five batches into two batches – one with all the boys from the batch and one with all the girls from the batch – such that there were ten batches in all – Batch 1 through Batch 10 – with the batches numbered in no particular order. All the students who enrolled in his course studied for both the semesters.
The following pie charts provide information about the percentage of students in each batch in Semester 1 and the number of students in each batch in Semester 2:





Q13. DIRECTIONS *for question 13:* Type in your answer in the input box provided below the question.
During Semester 1, how many boys were in Batch A?

Q14. DIRECTIONS *for questions 14 to 16:* Select the correct alterative from the given choices.
During Semester 1, for which batch was the number of girls as a percentage of the total number of students in that batch the third highest?

a) Batch B
b) Batch C
c) Batch D
d) Batch E

Q15. DIRECTIONS *for questions 14 to 16:* Select the correct alterative from the given choices.
Among all the students who enrolled for Raghu's course, what is the total number of girls as a percentage of the total number of boys?

a) 250%
b) 233.33%
c) 225%
d) 200%

Q16. DIRECTIONS *for questions 14 to 16:* Select the correct alterative from the given choices.
During Semester 1, for how many batches was the number of girls more than the number of boys by at least 55%?

a) **1**
b) **2**
c) **3**

d) **4**

DIRECTIONS *for questions 17 to 20:* Answer these questions on the basis of the information given below.
Each of six trains – Train A through Train F – travels between exactly two cities from among six different cities – Chennai, Delhi, Kolkata, Mumbai, Bengaluru and Hyderabad – such that no two trains start from the same city and no two trains end at the same city. Further, no two trains travel between the same pair of cities. It is also known that the travel time of each train, defined as the number of hours that the train takes to travel from its origin to its destination, is a distinct positive integer less than 8.
The following information is known about the origins, destinations and the travel times of the six trains:

1. The destination of Train A is the same as the origin of Train D, but neither of these trains travel either from Delhi or to Delhi.
2. The travel time of Train E is two hours more than that of Train C.
3. One of the trains starts from Chennai and goes to Hyderabad, with a travel time of three hours.
4. The travel time of Train F, which travels to Kolkata, is less than seven hours, while the travel time of the train which starts from Kolkata is two hours.
5. The travel time of Train B, which starts from Bengaluru, is the average of the travel times of the train which starts from Mumbai and the train which starts from Hyderabad.
6. The train which travels to Delhi starts from Kolkata, while Train D does not start from Hyderabad.

Q17. **DIRECTIONS** *for questions 17 to 20:* Select the correct alterative from the given choices.
Which train starts from Hyderabad?

a) Train A
b) Train E
c) Train F
d) Cannot be determined

Q18. **DIRECTIONS** *for questions 17 to 20:* Select the correct alterative from the given choices.
What is the travel time (in hours) of Train A?

a) **7**
b) **6**
c) **5**
d) **4**

Q19. DIRECTIONS *for questions 17 to 20:* Select the correct alterative from the given choices.
Which of the following is the destination of Train B?

a) Chennai
b) Delhi
c) Hyderabad
d) Mumbai

Q20. DIRECTIONS *for questions 17 to 20:* Select the correct alterative from the given choices.
If each of the six trains starts from its origin city twice each day, once at 9:00 AM and once at 1:00 PM, what is the minimum number of hours required for a person to travel from Hyderabad to Bengaluru using these six trains?

a) **34**
b) **30**
c) **28**
d) **32**

DIRECTIONS *for questions 21 to 24:* Answer these questions on the basis of the information given below.
In a school, seven classrooms are present from left to right in a row. Each classroom is of a different class among Class II, Class III, Class IV, Class V, Class VI, Class VII and Class VIII. The number of students in each class is a different number among 20, 35, 40, 45, 50, 55 and 65.
Further, it is also known that

1. the classroom of Class II is not adjacent to the classroom of Class VII.
2. the number of students in the class whose classroom is in the middle is 20 more than the number of students in the class whose classroom is at the extreme right.
3. the number of students in Class III is 45 and the classroom of this class is present to the immediate left of the classroom of Class V, which, in turn, is not at the extreme right.
4. the number of students in Class VI is 15 more than the number of students in Class VII.
5. the classroom of Class II is two places to the right of the classroom of Class VI, which, in turn, is at the extreme left.
6. the number of students in Class V is 25 less than the number of students in Class VIII.

Q21. DIRECTIONS *for questions 21 to 24:* Type in your answer in the input box provided below the question.
What is the number of students in Class IV?

Q22. DIRECTIONS *for questions 21 to 24:* Type in your answer in the input box provided below the question.
What is the number of students in Class II?

Q23. DIRECTIONS *for questions 21 to 24:* Type in your answer in the input box provided below the question.

What is the total number of students in the classes present at the extreme ends?

Q24. DIRECTIONS *for questions 21 to 24:* Type in your answer in the input box provided below the question.
What is the maximum difference between the number of students in classes whose classrooms are adjacent to each other?

Q25. DIRECTIONS *for questions 25 to 28:* Select the correct alterative from the given choices.
Who was the last person to enter the cafeteria?

a) Ramesh
b) Vijay
c) Umesh
d) Srinath

Q26. DIRECTIONS *for questions 25 to 28:* Select the correct alterative from the given choices.
At which of the following times would both Vijay and Umesh have been in the cafeteria?

a) 1:25 PM
b) 1:35 PM
c) 1:50 PM
d) They would not have been in the cafeteria at the same time.

Q27. DIRECTIONS *for questions 25 to 28:* Select the correct alterative from the given choices.
If no employee other than the six employees visited the cafeteria, who would have met the maximum number of employees in the cafeteria?

a) Tarak
b) Vijay
c) Umesh
d) Pavan

Q28. DIRECTIONS *for questions 25 to 28:* Select the correct alterative from the given choices.
Who among the following would have spent the maximum amount of time alone in the cafeteria?

a) Vijay
b) Ramesh
c) Tarak
d) Srinath

DIRECTIONS *for questions 29 to 32:* Answer these questions on the basis of the information given below.
The following table provides, for different models of phones, the Battery Capacity (in mAh), Weight (in gm), Screen Size (in inches), Storage (in GB), Volume (in cm3) and Price (in INR):

Model	Battery Capacity (mAh)	Weight (gm)	Screen Size (inches)	Storage (GB)	Volume (cm^3)	Price (INR)
S2340	3500	250.00	5.5	32	68.25	25000
H4560	2250	196.00	5.5	64	70.12	35000
J1294	2500	265.00	5.1	32	65.23	15500
P234	3400	325.00	5.75	32	71.25	35500
N23	3900	351.00	6.1	64	74.85	39800
S4302	2100	254.00	5.1	128	81.54	25000
F3210	2500	269.00	5.1	64	91.25	25400
H1340	3600	241.00	5.5	128	65.21	18400
L1240	3400	255.00	5.75	64	84.52	34100
N195	3800	340.00	6.1	32	84.23	25400
K304	2900	500.00	6.1	32	94.25	36500
M12	2100	250.00	5.5	64	84.35	21500
N1120	2520	275.00	6.1	128	90.25	37400
O1233	3650	350.00	5.5	64	63.54	15800
K144	3950	240.00	5.75	64	68.25	16800
P2345	2500	250.00	5.1	128	72.35	35200
A123	2850	350.00	5.1	64	71.65	19900
H3249	3410	268.00	5.7	32	75.84	22500
Y2394	3600	274.00	5.5	32	65.35	23400
I394	2560	256.00	6.1	64	83.33	25000

Q29. DIRECTIONS *for questions 29 and 30:* Select the correct alterative from the given choices.
For which model is the ratio of its screen size to its weight the highest?

a) P2345
b) H4560
c) I394
d) None of the above

Q30. DIRECTIONS *for questions 29 and 30:* Select the correct alterative from the given choices.
What is the lowest price of a model for which the ratio of Battery Capacity to Volume is at least 50 mAh/cm3?

a) INR 15500
b) INR 16800
c) INR 15800
d) None of the above

Q31. DIRECTIONS *for question 31:* Type in your answer in the input box provided below the question.
How many models have a volume of at most 80 cm3 and weigh at least 270 gm?

Q32. DIRECTIONS *for question 32:* Select the correct alterative from the given choices.
What is the highest ratio of the volume of any model to its storage (in cm3/GB) approximately?

a) 2.485
b) 2.865
c) 2.945
d) 3.015

QA

Q1. DIRECTIONS *for question 1:* Type in your answer in the input box provided below the question.
Find the minimum possible value of a, where a is a positive integer, such that the sum $(a + 109) + (a + 110) + (a + 111) + \ldots\ldots + (a + 135)$ is the perfect cube of a natural number.

Q2. DIRECTIONS *for questions 2 to 7:* Select the correct alternative from the given choices.

A retailer bought different items among his supplies at different prices and then fixed the selling price of each item at 40% more than what the respective item had cost him. In order to clear his stocks on account of year-end sales, he reduced the selling price of each item by 30%. What would be his actual profit or loss percentage due to this reduction?

a) 2% loss
b) 5% profit
c) 10% profit
d) 12% loss

Q3. DIRECTIONS *for questions 2 to 7:* Select the correct alternative from the given choices.

If a is an integer, for how many integral values of n can the quadratic equation $x2 - (2a + 3)x + 4n = 0$, have real and equal roots for x?

a) **0**
b) **1**
c) **2**
d) **3**

Q4. DIRECTIONS *for questions 2 to 7:* Select the correct alternative from the given choices.

If *t* is a perfect square, which of the following gives the perfect square nearest to *t*?

a) $t2 + 2t + 1$

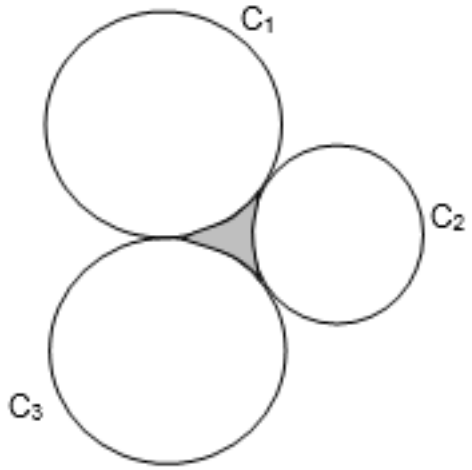
b) $t - 2\sqrt{t}\ 1$

c) $t + 2\sqrt{t} + 1$

d) $t2 - 2t + 1$

Q5. DIRECTIONS *for questions 2 to 7:* Select the correct alternative from the given choices.

Find the area (in sq. cm) of the shaded region in the figure below, if the circles C1, C2 and C3 touch each other externally as shown and have radii measuring 9 cm, 9 ($\sqrt{2}$ 1) cm and 9 cm respectively.



a)

$\frac{81}{4}(3\pi - 2\sqrt{2})$

b)

$81\left(1 - \pi + \frac{\pi}{\sqrt{2}}\right)$

c)

$\frac{81}{2}(2\pi - \sqrt{2})$

d)

$81\left(1-2\pi+\sqrt{3}\pi\right)$

Q6. DIRECTIONS *for questions 2 to 7:* Select the correct alternative from the given choices.
As Rishi was buying a book to gift it to his friend, he first paid the shopkeeper 60% of the money that he had with him. However, he immediately realized that the amount that he had paid was only 80% of the price of the book. So, he then further offered 40% of the money remaining with him to the shopkeeper and received Rs.8 in return as change, along with the book. Which of the following gives the amount left with Rishi after he bought the book?

a) Rs.120
b) Rs.200
c) Rs.80
d) Rs.8

Q7. DIRECTIONS *for questions 2 to 7:* Select the correct alternative from the given choices.
Vineet cut out two identical triangular pieces of cardboard, each of area 300 sq.cm, and placed both of them flatly upon the surface of a table, one on top of the other, such that the triangles perfectly overlap each other. Now, if he rotated one of the two triangles by 180°, about a vertical axis passing through its centroid, find the area that is common to both the triangles.

a) 200 sq.cm
b) 150 sq.cm
c) 100 sq.cm
d) $133\frac{1}{3}$ sq.cm

Q8. 8.DIRECTIONS *for question 8:* Type in your answer in the input box provided below the question.
If $\frac{1}{x}-\frac{1}{y}=\frac{1}{6}$ and xy2 – yx2 = 384, find the value of $y - x$, given that x and y are positive integers.

Q9. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.

If $\log_3\left(\log_{3^m}\left(\log_{3^n}\left(3^{135}\right)\right)\right)$ = 0, where m and n are positive integers, which of the following gives the maximum possible value of $(m + n)$?

a) **46**
b) **17**
c) **8**
d) **135**

Q10. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.

A 100-digit number is multiplied by a 200-digit number and the resulting product is then multiplied by another 300-digit number. Which of the following cannot be the number of digits in the final product?

a) **597**
b) **598**
c) **599**
d) **600**

Q11. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.
Find the sum of all the three-digit numbers which are equal to 22 times the sum of their digits.

a) **132**
b) **286**
c) **396**
d) **792**

Q12. DIRECTIONS *for questions 9 to 12:* Select the correct alternative from the given choices.

If $a \oplus b = \sqrt{ab-3}$ which of the following gives the value of $(2 \oplus 6) \oplus 13$?

a) **−4**
b) **−3**
c) **4**
d) **6**

Q13. DIRECTIONS *for question 13:* Type in your answer in the input box provided below the question.
In a colony, there were a total of 32 families, all of which attended a get together, with each family being represented by a married couple. If each woman at the get together exchanged a gift with every other person in that group except her spouse, and no gifts were exchanged between the men present, then how many gifts were exchanged in all in that get together?

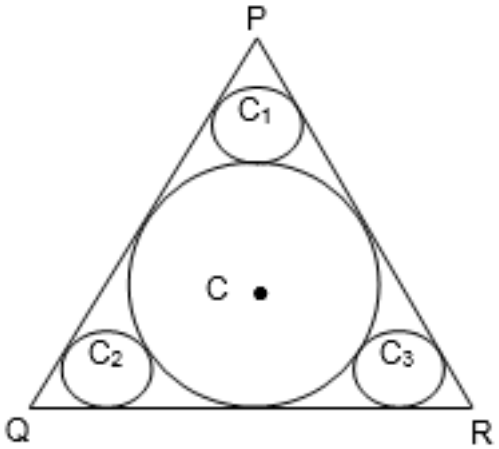
Q14. DIRECTIONS *for questions 14 and 15:* Select the correct alternative from the given choices.

A container which is $\frac{4}{5}^{th}$ filled with water will be $\frac{3}{4}^{th}$ filled, if two buckets of water are removed from it. How many more buckets of water should be poured into the container in order to completely fill it?

a) **4**
b) **6**
c) 8
d) **12**

Q15. DIRECTIONS *for questions 14 and 15:* Select the correct alternative from the given choices.

In the figure given below, PQR is an equilateral triangle. A large circle is first inscribed as shown in the triangle after which three smaller circles are inscribed in each corner, as shown, with each small circle touching the larger circle and exactly two sides of the triangle. Find the ratio of the sum of the circumferences of the three small circles to the circumference of the large circle.



a) $\frac{3}{4}$
b) $\frac{1}{2}$
c) **1**
d) $\frac{3}{2}$

Q16. DIRECTIONS *for question 16:* Type in your answer in the input box provided below the question.
Mr. Bhulakkar forgot his ATM password which is a four-digit number. However, he remembered that the first two digits (the left most digit is the first digit) of the password formed a two-digit number divisible by 12 and that the first and the fourth digits, when placed together, formed the cube of a natural number. If the password itself was a number divisible by 11, the sum of whose digits was odd, find the password.

Q17. DIRECTIONS *for questions 17 and 18:* Select the correct alternative from the given choices.

There are two varieties of rice, P and Q, which cost Rs.42 per kg and Rs.50 per kg respectively. If 24 kg of Q is mixed with *n* kg of P and the mixture obtained is sold at Rs. 60 per kg, a profit of 25% is realised. What should be the selling price of the mixture, if the two varieties of rice are instead mixed in the inverse ratio, and a profit of 25% needs to be realised?

a) Rs.52 per kg
b) Rs.48 per kg
c) Rs.55 per kg
d) Rs.56 per kg

Q18. DIRECTIONS *for questions 17 and 18:* Select the correct alternative from the given choices.
If *a* is added to each of the three numbers 20, 32 and 50, the resulting numbers will be in geometric progression. Which of the following gives the value of the fourth term in that progression?

a) **64**
b) **70**
c) 81
d) **96**

Q19. DIRECTIONS *for question 19:* Type in your answer in the input box provided below the question.
If A, B, C, D, E, F and G are seven natural numbers, with no three of the seven being equal and Y = A + 2B + 3C + 4D + 5E + 6F + 7G, what is the minimum possible value of Y?

Q20. DIRECTIONS *for questions 20 to 25:* Select the correct alternative from the given choices.

The straight lines $2x + 3y = 6$ and $3x - 2y = 12$ are reflected in the lines $y = x$ and $y = -x$ respectively, to obtain lines L1 and L2 respectively. Find the acute angle (in degrees) between the lines L1 and L2

a) **30°**
b) **45°**
c) **60°**
d) None of the above

Q21. DIRECTIONS *for questions 20 to 25:* Select the correct alternative from the given choices.

For which of the following ranges of x, is it not possible to find any value of x that satisfies the inequality $\frac{(x-1)(x-3)}{(x-2)(x-4)} > 0$

a) $\left(\frac{5}{3}, \frac{5}{2}\right)$
b) $\left(\frac{3}{2}, \frac{5}{2}\right)$
c) $\left(\frac{7}{2}, \frac{9}{2}\right)$
d) $\left(\frac{5}{4}, \frac{5}{3}\right)$

Q22. **DIRECTIONS** *for questions 20 to 25:* Select the correct alternative from the given choices.
If P1, P2 and P3 are the lengths of the altitudes of a triangle ABC, then how many of the following ratios of P1, P2 and P3 are possible?

1. P1 : P2 : P3 = 1 : 2 : 3
2. P1 : P2 : P3 = 2 : 4 : 5
3. P1 : P2 : P3 = 3 : 4 : 8
4. P1 : P2 : P3 = 3 : 5 : 8

a) **0**
b) 1
c) **2**
d) **3**

Q23. **DIRECTIONS** *for questions 20 to 25:* Select the correct alternative from the given choices.
Ten partners, six male partners and four female partners, started a company. Each male partner has an equal share of investment and each female partner has exactly thrice the share of investment as that of any of the male partners. From the profit made in every financial year, each female partner first gets 10% interest on her investment and the remaining profit is then divided among all the ten partners, in the ratio of their respective investments. If last year, the company made a 35% profit on the sales, what is the ratio of the net share of profit of any of the female partners to that of any of the male partners?

a) 9 : 2
b) 63 : 10
c) 6 : 1
d) Cannot be determined

Q24. **DIRECTIONS** *for questions 20 to 25:* Select the correct alternative from the given choices.

If *ab* is a two-digit number in the number system to the base 9, such that (*ab*)9 = (*ba*)13, where *ba* is a two-digit number in the number system to the base 13, how many such ordered pairs (*a*, *b*) exist?

a) **0**
b) **1**
c) **2**
d) More than 2

Q25. DIRECTIONS *for questions 20 to 25:* Select the correct alternative from the given choices.
There are four billiard balls randomly located on a pool table. Each ball is of a distinct colour from among Red, Blue, Green and Yellow. The balls are all struck simultaneously and it is observed that there are a total of 57 collisions between the balls before they all come to rest. If it is known that each collision involved exactly two balls, then which of the following statements are definitely false?

1. No ball was involved in 29 collisions or more.
2. No ball collided ten or more times with the same ball.
3. No ball was involved in more than 54 collisions.
4. Exactly one ball collided exactly 53 times with the same ball.

a) Only I, III and IV
b) Only I, II and IV
c) Only II and IV
d) Only I and II

Q26. DIRECTIONS *for question 26:* Type in your answer in the input box provided below the question.
If $\sqrt{3a+\frac{1}{2}\sqrt{b}} - \sqrt{3a-\frac{1}{2}\sqrt{b}} = 2$, where *a* is a positive integer and $90 < b < 160$, find *b*.
Mark your answer as '0', if you think that the answer cannot be determined with the information given.

Q27. DIRECTIONS *for questions 27 to 29:* Select the correct alternative from the given choices.
A spaceship takes off from Earth to Mars at a certain speed. At the end of every one hour of its journey, it doubles its speed. The spaceship would take 63 hours for the entire journey, if it were to instead travel the entire distance at the same speed at which it took off. Find the actual time taken by the spaceship for the entire journey.

a) $31\frac{1}{2}$ hours
b) 8 hours
c) 6 hours
d) 5 hours

Q28. DIRECTIONS *for questions 27 to 29:* Select the correct alternative from the given choices.
There is a cuboidal tank containing some methyl alcohol which evaporates at a constant rate (in litres per minute). If twelve identical pipes start pumping methyl alcohol into the tank, the tank will get filled in 96 minutes. Instead, if 14 such pipes are used, the tank will get filled in 72 minutes. How many such pipes would be required, if the tank needs to be filled in 48 minutes?

a) **20**
b) **16**
c) **18**
d) Cannot be determined

Q29. DIRECTIONS *for questions 27 to 29:* Select the correct alternative from the given choices.
Ankush wanted to buy 15 shirts of a specific brand. He went to a shopping mall where there were four shops, A, B, C and D, all selling shirts of the brand he was looking for. Each shirt was priced at Rs.850 at each of these shops but there were some discount schemes on offer in each shop as given below:
Shop A: Buy 3, get 2 free
Shop B: Two successive discounts of 10% and 30%
Shop C: Flat 45% discount
Shop D: Buy 2, get 1 free.
Which shop was offering the best deal for Ankush?

a) Shop A
b) Shop B
c) Shop C
d) Shop D

Q30. DIRECTIONS *for question 30:* Type in your answer in the input box provided below the question.
Today morning, Mary had to catch her office cab which leaves at 9 am from her house. From the time she woke up, she used three-eighths of the time remaining having a shower, then she used two-fifths of the time remaining getting dressed, and then she used two-sevenths of the time remaining having breakfast. Next, she used two-thirds of the time remaining revising the PPT on which she had to present a seminar and finished the revision at exactly 8:50 am. In total, how many minutes did Mary spend in completing the four activities?

Q31. DIRECTIONS *for question 31:* Select the correct alternative from the given choices.
In how many ways can a team of six members be selected from a group of persons comprising five men and five women, such that one particular man is always included and one particular woman is always excluded?

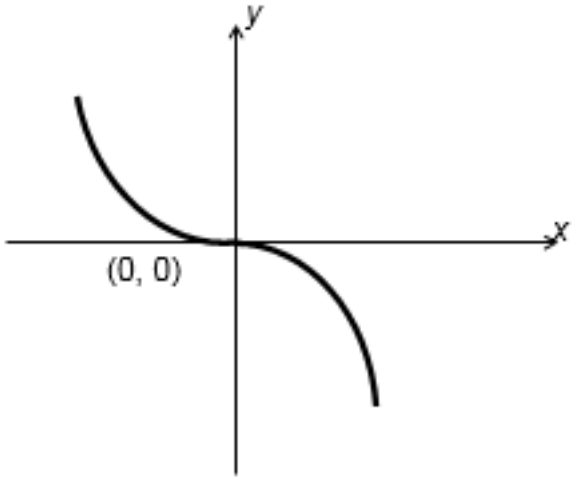
a) **84**
b) **56**

c) **126**
d) **70**

Q32. DIRECTIONS *for question 32:* Type in your answer in the input box provided below the question.
If A, B and C are the angles in a triangle such that cos5A + cos5B + cos5C = 1, find the value of the largest angle in the triangle (in degrees).

Q33. DIRECTIONS *for questions 33 and 34:* Select the correct alternative from the given choices.

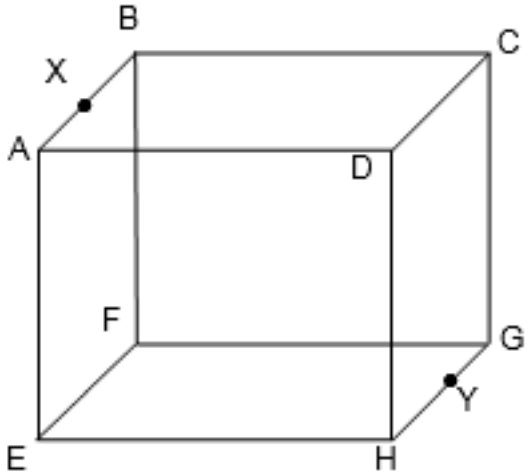
If the graph of *f* (*x*) is as below, then which of the following best describes *f* (*x*)?



a) *f* (*x*) = x3
b) $\boldsymbol{f(x) = x|x|}$
c) *f* (*x*) = –x2
d) $f(x) = -x|x|$

Q34. DIRECTIONS *for questions 33 and 34:* Select the correct alternative from the given choices.

The figure given below represents a cube, ABCDEFGH, of side 6 cm. Find the area (in sq.cm) of the quadrilateral XCYE, if X and Y are the midpoints of edges AB and GH respectively.



a) **9** $\sqrt{2}$

b) **9** $\sqrt{6}$

c) 18 $\sqrt{6}$

d) 24 $\sqrt{3}$