

MOCK CAT**SECTION – I**

Direction for questions 1 – 4: Five alternative summaries are given below each text. Choose the option that best completes the essence of the text.

1. India and America are not always likely to share strategic interests. Nevertheless, we must remain friends in the sense of a higher commitment to certain values. Alliances based on interests are but transient. We should support America if it seeks to export the ideal of genuine liberal democracy around the world and warn it of the fate which befell earlier hegemony that chose to pursue narrow selfish interests. This position, as their friend in freedom, is what we owe them. Frankness, in other words, must be the primary virtue of our often strained but nevertheless true friendship.
- (1) India and America share common values of democracy and freedom. Therefore, it is in India's own interest to support America if the latter supports democracy worldwide, and caution it if it doesn't.
 - (2) International relations ought to be based on common interests. Since, India and America do not share strategic interests, their friendship can only be based on frankness.
 - (3) Selfless friendships are more enduring, India and America may not always have commonality of interests, but they must share ideological common ground and be mutually supportive on such shared values.
 - (4) Friendships based on mutual interest are longer-lasting. India and America do not share common interests. Yet India should support America, where the latter is in the right.
 - (5) True friendship, based on mutual support and frankness, should define India's relations with America.
2. In the philosophy of the Vedanta, matter is not an entity isolated from the realm of eternity but is merely an appearance of the Eternal through space, time and causation. The activities of the material world are all consciously directed towards the fulfillment of the cosmic purpose of Self-realisation. Matter is not an unwilling self but a willing cooperator in the grand scheme of the cosmos. Matter appears to be an impediment when the Spirit is forgotten, but when one consciously and deliberately puts forth efforts towards the realisation of the Spirit in one's own self, one would discover that the material universe becomes a stepping stone in the process of this grand ascent.
- (1) The material pursuits are a stepping stone to the ultimate realization of self.
 - (2) There is but a thin line of demarcation between the inert and the alert, and ultimately both are a pre-requisite to the fulfillment of the real purpose in life.
 - (3) Though material universe is not eternal, the spirit and the cosmic purpose are.
 - (4) In the realm of Vedanta, material world is part of the grand scheme of things in which self-realisation is the ultimate purpose.
 - (5) Vedanta defines matter as the expression of the spirit through space, time and causation.

3. A group of strict vegetarians have formed an association called Proveg. They protested recently against a famous and popular manufacturer on the issues of a chemical additive that goes into his toothpaste. The additive is dicalcium phosphate, and apparently the company obtains it from animal bones. Let me hasten to point out that I respect the right of this group to adopt and to propagate vegetarianism. I can also understand their sensibilities regarding animal bones. But, I am afraid, their concern may be misplaced. What they need to be reassured about is that the dicalcium phosphate is free of any organic contaminant from animal tissues. If the manufacturer proves that this phosphate is pure, the matter should rest there. If, on the other hand, tests reveal that the material is contaminated with any organic material from the animal, Proveg would be justified in their worries and protests.
- (1) Appearances are often deceptive.
 - (2) What can't be cured must be endured.
 - (3) Empty vessels create more noise.
 - (4) You can't throw the baby out with the bathwater.
 - (5) Let's not get hold of the wrong end of the stick.
4. The "best and the brightest" in the IMF and the World Bank were aghast at the sudden collapse in South East Asia. They thought they had been managing the world economy wonderfully well, following what came to be known as "the Washington Consensus". The Washington Consensus was a set of aphorisms shared by the IMF, the World Bank, the U.S. Treasury, Washington think-tanks and their friends around the world. The Washington Consensus called for an implicit faith in the efficacy of market economy, free movement of international capital and an unrestricted and free trade of goods throughout the world. Unable to place their finger on the precise reason for the collapse, they blamed short term capital managed by financial intermediaries - commonly referred to as "hot money". In a globalised economy, they discovered with feigned wonderment, billions of dollars can be moved at the stroke of a computer key and this fact makes it almost impossible to manage or control its movement. At the same time, they said, imposing any restrictions on the movement of this "hot money" is just not permissible, since it went against the basic credo of globalisation, namely, the free movement of capital. When Malaysia imposed a few restrictions, there was a howl of protest from all over the West. They said the imposition of such restrictions scared away capital from such countries and would prove counter-productive in the long run.
- (1) The collapse of the economies in South East Asia was the result of the faulty policies pursued by the governments of these countries.
 - (2) South East Asian crisis presented a dilemma to the champions of Free Market economy.
 - (3) South East Asian crisis was caused by the unrestrained entry and exit of "hot money".
 - (4) The Washington consensus presented a conflicting view on the reasons for the financial crisis in South East Asia.
 - (5) When the bubble burst, there were no explanations.

Direction for question 5: Which of the following statements **cannot** be inferred from the passage?

5. If the human mind, which is capable of such astonishing energy, is not seeking reality or God, every expression of its energy becomes a means of destruction and misery. To seek reality requires immense energy, and, if man is not doing that he dissipates his energy in ways which create mischief, and therefore society has to control him. Now, is it possible to liberate energy in seeking God or truth in the process of discovering what is true, to be a citizen who understands the fundamental issues of life and whom society cannot destroy? You see, man is energy, and if man does not seek truth, this energy becomes destructive. Therefore society controls and shapes the individual, which smothers this energy.
- (1) In the search for reality, energy creates its own discipline.
 - (2) The man who is seeking reality spontaneously becomes the right kind of citizen.
 - (3) Reality does not have to follow the pattern of any particular society or government.
 - (4) Time not spent in spiritual pursuits is time wasted in dissipating energy.
 - (5) Energy of human mind also needs a vent.

Direction for question 6 – 10: Given below are sets of three sentences. One, two or all the sentences may have error(s) of grammar or syntax or Standard English usage. Identify only the sentences that are **incorrect**.

6. (A) None except her and her father arrived at the venue in time.
(B) Either you, or your brother or sister ought to have informed me.
(C) Neither the students nor their teacher or the school came forward to tender an apology.
(1) Only (A) (2) Only (B) (3) Only (C) (4) Both (A) & (B) (5) Both (B) & (C)
7. (A) Everybody spoke up in unison for their rights.
(B) One has to reckon with the fact that he is ultimately responsible for his own deeds.
(C) Let me tell you this is not simply possible.
(1) Only (A) (2) Only (B) (3) Both (A) & (B) (4) Both (B) & (C) (5) All of these
8. (A) What I have been able to imply from this article is that mathematics is at the root of most physical sciences.
(B) Many of the most energetic students end up as under-achievers in life because of the lack of focus on their goals.
(C) None of those little naughty boys have turned up today.
(1) Only (A) (2) Only (B) (3) Only (C) (4) Both (A) & (B) (5) Both (A) & (C)
9. (A) There are lesser students in the class today than there were yesterday.
(B) Before I could move a limb, the reckless driver had run over the poor little pup.
(C) The higher your aspirations, greater the effort you need to put in.
(1) Only A (2) Only (B) (3) Only (C) (4) Both (A) & (C) (5) Both (B) & (C)

10. (A) He found out to his utter dismay that his son failed in the examination.
 (B) He did not, and never intended to, return the book.
 (C) The councilor has not and will not file his nomination for re-election.
 (1) Only A (2) Only (B) (3) Only (C) (4) Both (A) & (C) (5) Both (B) & (C)

Direction for questions 11 – 15: In each question below a set of four statements is given, followed by five answer options to categorise these statements as facts, inferences, and judgments. Consider the statements and decide which of the choices out of the four given is true.

F: Fact: If it relates to a known matter of direct observation, or an existing reality or something known to be true.

J: Judgment: If it is an opinion or estimate or anticipation of common sense or intention.

I: Inference: If it is a logical conclusion or deduction about something, based on the knowledge of facts.

11. 1. From the statement of the Finance Minister, it seems that the Central government may introduce a separate market regulator to check the growing inflation.
 2. With interest rates escalating over the past months, small firms are finding it difficult to cut cost inputs.
 3. The consumer index has increased substantially and the Central government is under obligation to raise the D.A slab of the Central employees.
 4. The inflationary pressure is likely to dampen the spirit of the domestic and foreign investors as the volatility in the stock market increases.
 (1) IFIJ (2) JIJJ (3) IIIJ (4) JIJJ (5) IIII

12. 1. Global production of wheat is declining every year and grim days for India are imminent as there are more mouths to feed.
 2. The potential problem is that even if Australia and USA remain favorable and the harvest is good, these two exporters may not have enough to hawk in the world market.
 3. According to the latest USDA estimates, world production of wheat has dropped from 629 million tonnes in 2004-05 to 593 million of tonnes in 2006-07.
 4. The escalation of food-grain prices is likely to create problems for the farmers who thrive on animal farming.
 (1) JFFI (2) JIFI (3) IIFJ (4) IJFJ (5) JIFJ

13. 1. Caste based vote bank politics in India is striking at the very roots of Indian democracy, and in the elections of Punjab and UP, caste politics might aggravate violence.
 2. The Supreme Court, in its interim order, has stayed the 27% reservation for OBC's in educational institutions to the chagrin of the ruling UPA government.
 3. Industry Chamber FICCI has welcomed the SC Judgment indicating the need for further debate on the reservation issue.

4. In its interim order, the honorable Supreme Court held that the government has no detailed data on OBCs other than that of the 1931 census, which put OBC's at 52% of the population.
 (1) IFJJ (2) JFIJ (3) JFFF (4) IFIJ (5) JFJF
14. 1. The gruesome episode of Nandigram has compelled the Central government to review its SEZ policy and to scrap the ceiling; the states have been directed to buy land from the farmers at the floor rate.
 2. In specifying the floor rate, the state government will be a mere facilitator in the land acquisition process.
 3. Over the years, corporates and industrialists have been paying low rates for the land that commands greater market value, and this has resulted into the Nandigram catastrophe.
 4. Floor rate in the eastern region is just Rs. 5 lakh per acre, whereas it is Rs. 20 lakh in Haryana.
 (1) IFIF (2) FIIF (3) JIJF (4) FIJF (5) JFJF
15. 1. The Commerce Ministry constituted many expert committees to find an alternative to the duty entitlement passbook scheme (DEPB) but no workable replacement for the scheme was suggested.
 2. The DEPB scheme is designed by the Commerce Ministry to reimburse basic and special customs duty paid by an exporter on imported goods.
 3. The DEPB scheme is full of anomalies as there is a plethora of taxes existing at the state level and the Central government may not have the authority to reimburse state taxes.
 4. Hooda committee has recommended extending the DEPB scheme by three years but this is no tangible solution.
 (1) JFIJ (2) FFIJ (3) IJIF (4) FIJF (5) JFJF

Direction for questions 16 – 25: Read through the following passages and answer the questions that follow.

PASSAGE – I

Paranoia neurosis is fast growing in modern utilitarian society where money is the be all and end all of all moral and spiritual values. In extreme cases, it drives people to murder, and even in mild ones, it nods them into a states of agitation. Paranoia is said to be the morbid and neurotic fear of being duped or abused. It is most prevalent in people who have been taken advantage of repeatedly, or belong to a group that has been discriminated against. People are often very sensitive and vulnerable; they lose their temper and become crazy on petty matters. For them it is a short step from taking warranted precautions to taking unwarranted ones, and it is believed that this syndrome consists essentially of overprotecting ourselves.

This syndrome is also prevalent among people seldom exploited in actuality, whose fear of being taken advantage of has been generated by warnings from friends and parents. It is common among women, living and working in the big cities late hours. Their domestic life is often paralyzed. Those that have been repeatedly mistreated and abandoned become the victims of paranoia. The diagnosis of this neurosis is

applied only in extreme condition, in state mental hospitals; it is made when there are delusions of grandeur or delusions of persecution. When either of these two syndromes becomes strong, it is nearly always accompanied by the other. If you think mistakenly that one person does not like you, you may become the victim of persecution. In case a man thinks he is a genius, and people are indifferent, he suffers the neglect of others; it would seem to him that other people are persecuting him. To be great without being celebrated is to be discriminated against and this creates a situation of being a paranoid.

The common symptoms of this neurosis are feelings of transparency and delusions of reference. The sufferer from severe paranoia sometimes believes he is so transparent that people can read his mind. The victim often jumps to the conclusion that there is no way escaping his tormenters except killing them. A large number of crimes are committed every day because of the neurotic situations when people become crazy killers. Thoughts of reference are unrealistic presumptions that other people are talking about us. This consciousness makes us anxious. Even in mild cases of paranoia, we may observe all the symptoms together. No wonder, mild cases often flare up into acute cases of anxiety and restlessness. Whenever you have given a friend slight reason to be piqued, if there seems to you a major chance that he will want to end the relationship, you are suffering from a mild case of paranoia. Jealousy in love affairs is another major variant of paranoia and often the young students particularly the teenagers who are rash and impulsive and who cannot tolerate their rivals in love and sex, become the victims of neurosis, and commit unimaginable crimes in a fit of paranoia.

Paranoid fears may be extensions of warranted concerns. In the beginning, unless it reaches psychotic proportions, the sufferer from paranoia senses that his conclusions about other people may be wrong. He may not voice his doubts, knowing that if they are not right he'll appear foolish. He tries his best to be cautious, is well advised in his worry but little displeases him more than having his kindness called into question by someone. It is needless to contend that when he becomes certain of other's malevolence, he gets irritated and becomes a victim of the neurosis. It is pertinent to note that not all suspicious people are victim of neurosis. Whether we become paranoid or not depends largely on how we handle a certain kind of situation. Often the victims of this syndrome make the wrong choices and handle the situation impulsively and not rationally; thus we produce paranoia and often intensify it, convincing ourselves that people are conspiring against us. Once the victims have embarked on the paranoid path, they do not listen to the rational arguments of others and tend to believe that what others are saying is wrong and misleading. The farther they move along this path, the more reasonable their paranoid acts appear. It follows that the decisions which would save them from becoming paranoid require only slight courage in the beginning and become increasingly more difficult to make. Psychologists such as Dr Karen Horney firmly believe that by the time the disease is severe, the course of getting out of the paranoid situation is lost forever. Hence, a clear and rational handling of the situation is required in the pre-paranoid situation. How the victims handle the situation is the best defense against paranoia.

16. What can be best concluded from the passage about paranoia neurosis?
- (1) The author's study brings into focus an irrefutable link between temperament and paranoia.
 - (2) Paranoia can be an expression of a state of fear as mind is prejudiced against the judgment of others.
 - (3) Paranoia is a type of pathological dread of being ill-treated and neglected by others.
 - (4) Paranoia is abnormal psychotic feeling of being unsafe for an individual, the outcome of a psychological obsession.
 - (5) Paranoia is essentially the growth of a mental neurosis when an individual takes unwarranted precautions against his fellow beings and avoids a situation.
17. What best describes the organization of the passage?
- (1) The author highlights the features of a psychological study and discusses the future of his research.
 - (2) The passage is a convergence of varying opinions on the different aspects of a phenomenon, with suggestive measures for guarding against it.
 - (3) The author suggests the possible cures of paranoia and the ways to treat it.
 - (4) The author gives the findings of his research on paranoia, highlights its causes, but does not reach a concrete conclusion.
 - (5) The author gives his observations on the origin of a disease, highlights the symptoms, and emphasizes its psychological aspects.
18. Which of the following are factors mentioned by the author that lead to the growth of paranoia in human beings?
- (1) The belief that not all human beings become the victims of paranoia, only weak individuals are prone to this neurosis.
 - (2) The belief, that the intensity of paranoia in women cannot be accurately measured.
 - (3) The belief that the symptoms of paranoia are initially unobservable, and only in exigent circumstances is the diagnosis possible.
 - (4) The belief that hypertension and anxiety cause paranoia.
 - (5) The belief that neglect and megalomania cause paranoia.
19. The author's argument about paranoia is presented primarily by
- (1) treating the disease as a mental aberration.
 - (2) providing experimental evidence against a conclusion.
 - (3) presenting new findings about a malady and showing its defects
 - (4) presenting the diagnosis and suggesting means for protection.
 - (5) treating the disease as a common misunderstanding, lacking in true substance

20. The primary purpose of the passage is to
- (1) discuss paranoia as a neurosis and propose that prevention is the better part of valour.
 - (2) analyze the symptoms of the disease from a general point of view.
 - (3) present all possible causes of the disease and allow readers to draw a conclusion.
 - (4) outline a new idea about the disease in the context of latest research.
 - (5) raise several pertinent questions about the disease and offer personal tips.

PASSAGE – II

The traditional view of language was that it creates perceptions of reality. The modern thinkers opine that all language constructs rather than reflects reality. For instance, time passes in all cultures and still different communities perceive 'past' 'present' and 'future' differently. There is no conceptual framework to make theory about the passage of time. Again, the measurement systems based on diurnal and sidereal observation may give scientific universality, but certainly different communities will take time measurement in different manner.

In the Chinese language, the verbs are not inflected and do not conjugate, hence, time is marked adverbially and through suffixes. In Latin verb formation there is a substantial range of temporal differentiation. Chinese language is the growth of two aspects, i.e. each individual must preserve and maintain morality, and integrity in the community. The individual loss of face can incapacitate a Chinese individual as a member of his community. No wonder the conflict theories and the dispute-settlement strategies are widely different from the Western equivalents. Thus, in Chinese language, the relationship between signifiers and their signified are ontologically irrelevant. The growth of a language is the cognitive processes and establishes the levels of connotation that constitute the social reality in each culture. People who speak with different phonological, syntactical, and semantic systems construct different worldviews. The modern linguists have evolved particular sign system expressing the understanding of reality of a particular culture. The fact remains that reality is constructed by interaction between mind, perception, and meanings. Language is the mechanism through which common experiences of human beings are encoded and decoded. If the experiences change with the passage of time the lexical words of the past are deconstructed and reconstructed to reflect new experiences. This historical process may be called narrativisation. Briefly stated, the community is constructing a narrative about its own knowledge and experience that marks some areas of knowledge as more important than others. In this evolutionary process, the symbolical function of the lexical words differentiates their value and this system leads to the certainty of net discourses or Meta realities in which a community reflects its knowledge. Language thus becomes functional. Most lexical words refer to classes of things i.e. animals and insects or to concepts which are non-human.

The term "biosemiotic" was first used by F.S. Rothschild in 1962. In biology it is interpreted as sign systems study but in broader perspective it is a study of the signification. Interestingly, life is considered not just from the perspectives of molecules and chemistry, but as signs conveyed and interpreted by other living signs – it is a process from molecular biology to brain science and behavioral studies. Biosemiotics provides new concepts, theories, and case studies of biology with a view to throw light on the study of sign processes

highlighting the origin of signification in the universe. Signification does not mean the transfer of information from one place to another, but the generation of new content in human sign producers and sign receivers.

Living system is highly organized in physical and chemical processes. Ernest Mayor has observed the informational aspect as one of the emergent features of life. It is this process, which distinguishes life from anything else in the physical world except man made computers. The information teleology is a unique feature of organisms and this intrinsic Biosemiotics, thus is a modern study of signs, a study of the signification, communication and habit formation of living processes. It studies the production, action and interpretation of signs in the physical world and is the basis of all signs and sign interpretations. Then Semiotics and Biosemiotics are two important fields of modern structural language patterns dealing with teleology and evolutionary linguistics.

21. What can be best inferred from the passage about semiotics system of language formation?
- (1) Semiotics provides an irrefutable link between cultural patterns of a community and the process of language construction and deconstruction.
 - (2) Semiotics involves an evolutionary psychological process and not a revolutionary process.
 - (3) The semiotic approach provides the conceptual framework to create a language; thus the main thrust in Semiotics is the signification of the lexical words.
 - (4) The growth of language in a semiotic process is natural in a community; a continuous process of achieving symbolisation.
 - (5) Semiotics is a cognitive process to establish the connotation that constitutes the social reality for a community.
22. Which of the statements is the author most likely to disagree with?
- (1) Semiotics and Biosemiotics are fundamental in any cognitive process; the former deals with the theory of language construction; the latter is a study of sign interpretation.
 - (2) The perceptions of language can be diachronic as the evolution of language is through cultural growth of a community.
 - (3) The Chinese language does not lay much emphasis on the difference between the observer and the observed.
 - (4) Semiotics investigate the construction and deconstruction of words, Biosemiotics explore the impact of perceptions on language patterns.
 - (5) The extraneous methodology may lend a semblance of similarity; it is the detail that does not lend itself to uniform interpretation.
23. The passage answers all the given questions about Semiotics and Biosemiotics except.
- (1) Does Semiotics create a form of meta reality?
 - (2) Is language an evolutionary process of construction and deconstruction in the context of cultural patterns of a community?
 - (3) Is Biosemioitcs a study of generation and interpretation of signs in the biological life?
 - (4) Is Biosemiotics a behavioral science to answer the general study of sign processes?

- (5) Do Semiotics and Biosemiotics define and investigate the role of cognitive psychology of individuals living in a community?

24. The passage is a

- (1) treatise on the historical process of evolution of language from the structural and functional angle.
- (2) a description of the various phases of cognitive processes and difficulties involved in assigning lexical words to symbolic, syntactic and semantic derivatives in the process of language formation.
- (3) a statement of the problems of construction and deconstruction of language through semiotic and biosemiotic levitations
- (4) an esoteric discussion on the methods of language formation, highlighting the problems encountered by modern linguists due to variety of interpretations
- (5) a scientific study to investigate the evolution of language from deterministic point of view.

25. Why is 'the growth of language' termed as a 'cognitive process'?

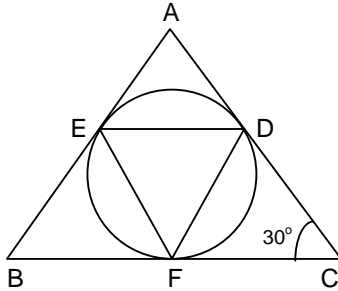
- (1) The growth of language is cultural; it is a cognitive process as man's perceptions accumulate as he grows.
- (2) The growth of language is interactive; it becomes cognitive as man accumulates his experiences in life.
- (3) The growth of language is cognitive because it reflects the impact of environment on construction and deconstruction.
- (4) The growth of language is spontaneous as the cognitive abilities of man are nurtured through the semiotic and biosemiotic processes.
- (5) The growth of language is societal; it is cognitive because of his interaction with others.

SECTION – II

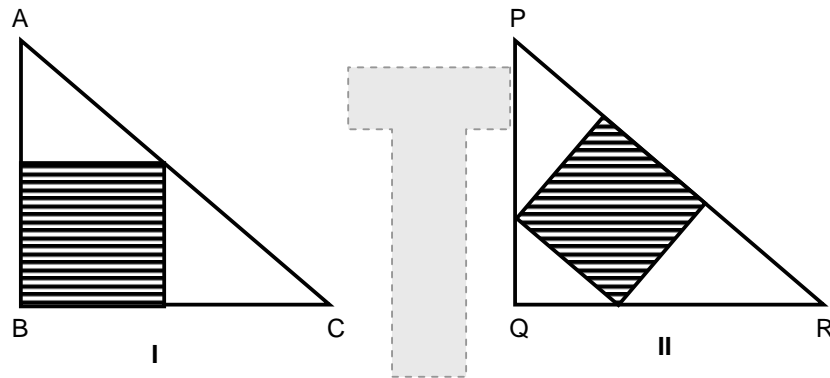
26. A boy is playing on the slope of a park of height of 6 m. Starting from the ground, when he covers a horizontal distance of 2.1 m along the slope, which reaches 30% of the actual height above the ground. How much distance should he cover to be at 15% of the actual height?
 (1) 6.9 m (2) 0.45 m (3) 0.80 m (4) 1.8 m (5) 0.20 m
27. A container contains pure orange juice. Harish mixes pure water equal to $\frac{1}{4}$ th of the volume of the orange juice in the container. Manish does not know it and sells $\frac{1}{4}$ th of this mixture and adds water to it to replenish the quantity that he sold. What is the current proportion of water and orange juice in the container?
 (1) 2 : 3 (2) 3 : 2 (3) 1 : 3 (4) 3 : 4 (5) 4 : 3
28. $P = 7^{3n} - 3^{5n}$, when n is a positive integer. Which of the following would always divide P?
 (1) 100 (2) 150 (3) 225 (4) 250 (5) 175
29. If $\log_{36}5 = a$ and $\log_{30}3 = b$, $\log_8 30 =$
 (1) $3(1 - a - b)$ (2) $\frac{1}{3(1 - a - b)}$ (3) $\frac{3}{(1 - a - b)}$ (4) $\frac{1 - a - b}{3}$ (5) None of these
30. If $N = 1000^8 - 8$, what is the sum of its digits?
 (1) 200 (2) 207 (3) 208 (4) 209 (5) 175
31. What is the remainder when $\sum_{n=1}^{3000} n^5$ is divided by 4?
 (1) 0 (2) 1 (3) 2 (4) 3 (5) 4
32. P is a point on the side AD of a square ABCD whose area is 64 cm^2 . The perpendicular to the line PC at C meets the line segment AB extended at Q. If the area of $\triangle CQP$ is 50 cm^2 , the length of BQ is
 (1) 12 cm (2) 6 cm (3) 4 cm (4) 3 cm (5) 2 cm
33. If p, q, r, and s are four positive real numbers, the minimum value of $\frac{p}{q} + \frac{q}{r} + \frac{r}{s} + \frac{s}{p}$ is
 (1) 1 (2) 2 (3) $2\sqrt{2}$ (4) 4 (5) 5
34. If m is an integer, what is the value of m for which $m^4 - 20m^2 + 4$ is a prime number?
 (1) 0 (2) 1 (3) 2 (4) more than 2 (5) None of these

Questions 35 – 36 are based on the following information.

Distance between TCY Ludhiana and TCY Jalandhar is less than 100 km. Aman started from TCY Ludhiana and after 10 hours; he came across a milestone showing the distance between it and TCY Ludhiana. He moved further and 2 hrs later; he came across another milestone showing the distance, exactly reverse of that shown by the previous milestone.

35. The total distance covered by Aman when he reaches the second milestone is
 (1) 64 km (2) 54 km (3) 76 km (4) 65 km (5) 70 km
36. What is Aman's speed?
 (1) 4.5 km/hr (2) 4.6 km/hr (3) 4.6 km/hr (4) 5.6 km/hr (5) 3.2 km/hr
37. Two cars A and B, 1 km apart, are travelling in the same direction with speeds of 58 km/hr and 40 km/hr respectively. What will be the distance (in m) between them 15 seconds before A collides with B?
 (1) 25 m (2) 5 m (3) 75 m (4) 80 m (5) 60 m
38. If P is a number having exactly two divisors, what is the remainder when $(P - 2)!$ is divided by it? .
 (1) 1 (2) - 1 (3) - 6 (4) - 5 (5) cannot be determined
39. In $\triangle ABC$, as shown in the following figure, the sides are tangential to an inscribed circle at DEF. If $\angle C = 30^\circ$, the measure of $\angle DEF$ is
 (1) 60° (2) 100°
 (3) 75° (4) 55°
 (5) none of these
- 
40. $\log_k x = 6$ and $\log_{25k} 8x = 3$, then $k =$
 (1) 12.5 (2) $\sqrt{12.5}$ (3) $(12.5)^{2/3}$ (4) $(12.5)^2$ (5) None of these
41. A vessel contains V litres solution of milk and water in the ratio 3 : 2. If 10 litres of water is added and the concentration of milk in the resultant solution lies between 50% + 40%, find the range of values of V?
 (1) $50 \leq V \leq 60$ (2) $20 \leq V \leq 50$ (3) $30 \leq V \leq 40$
 (4) Data insufficient (5) None of these

42. Two squares can be inscribed in a right-angled triangle in different positions, as shown in the following figures. The area of the first square is 441 cm^2 and that of the second square is 440 cm^2 . Find the ratio of the two shorter sides of the triangle.



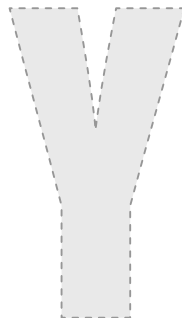
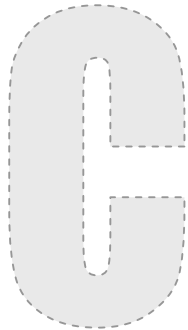
- (1) 43 cm (2) 86 cm (3) 462 cm (4) 254 cm (5) None of these
43. In a survey, it was found that the number of students in the college has increased by 20% over the previous year. The number of boys has increased by 10%, whereas the number of girls has increased by 35%. Find out the present percentage of girls in the college.
- (1) 40% (2) 45% (3) 55% (4) 75° (5) can't determine
44. $10000! = (100!)^K \times P$, where P and K $\in \mathbb{I}$. What can be the maximum value of K?
- (1) 97 (2) 102 (3) 103 (4) 104 (5) 107
45. There are two cubes painted. The first cube has 5 faces painted red and one face painted blue. The second cube has some faces painted red and some painted blue. When the two cubes are rolled simultaneously, the probability of both the cubes coming up with the same colour is $\frac{1}{2}$. How many faces of the second cube are painted red?
- (1) 1 (2) 2 (3) 3 (4) 4 (5) 5

Direction for questions 46 – 47:

In a question paper, there are 30 questions. If a person answers a question correctly, he is awarded 5 marks and if he gives wrong answer, he gets -2 marks. There is no negative marking for not attempting any question.

46. Priya secured 60% of the maximum marks in the paper. If a denotes the number of correct attempts and b denotes number of incorrect attempts, the total number of pairs of attempts (a, b) by Priya can at most be
- (1) 2 (2) 4 (3) 6 (4) 8 (5) None of these

47. How many natural numbers less than 150 can never equal the marks secured by any student taking the test?
(1) 0 (2) 6 (3) 10 (4) 8 (5) 12
48. If x is real, and $(a^2 + b^2)x^2 + 2a(b + c)x + (a^2 + c^2) = 0$, which of the following equations will always be true?
(1) $c^2 = ab$ (2) $b^2 = ac$ (3) $ab + bc + ca = 0$
(4) $ab - bc - ca = 0$ (5) $a^2 = bc$
49. If $a + b + c = 6$, what is the maximum value of $a.b^2.c^3$?
(1) 108 (2) 64 (3) 72 (4) 144 (5) 188
50. What is the probability of hitting a dart 1 cm away from the corner of a cardboard of dimensions 10 cm \times 8 cm.
(1) $\frac{22}{141}$ (2) $\frac{11}{140}$ (3) $\frac{11}{280}$ (4) $\frac{11}{141}$ (5) can't determine



54. After scheduled quarter finals, if each team plays one more match such that the first match is played between the teams standing first and second; the second match is played between the teams standing third and fourth and so on. The winner of each match secures 2 points and its total points are compared with the points of losing team; the team which secures the maximum points will reach the semi-finals. If the points are the same, the team with more run rate will reach the semifinals. Which team will definitely reach the semi-finals?
- (1) India (2) England (3) Sri Lanka (4) Australia (5) South Africa
55. It is decided that the teams can carry all the points earned in the league matches to the quarter finals. What will be the sum of the points of all the teams after the quarter finals if two league matches were drawn?
- (1) 80 (2) 88 (3) 86 (4) 90 (5) 100

Direction for questions 56 – 60:

The shortest possible road routes among 7 cities A, B, C, D, E, F, G, are represented as follows.

						A
						B
						98
					C	264
						166
				D	270	120
						218
				E	246	72
						192
				F	117	129
						141
						249
				G	266	149
						395
						221
						341
						243

Suppose, the distance between B and E or E and B is 192 km, as shown above.

Answer the following questions on the basis of the above data.

56. If NH5 connects cities A and D, which city should be on NH5?
- (1) B (2) C (3) G (4) E (5) F
57. Which city is connected to the maximum number of cities directly, that is, without any other city situated in between them?
- (1) A (2) B (3) E (4) G (5) D
58. Which city is connected to the least number of cities?
- (1) A (2) F (3) G (4) C (5) D
59. If you want to go from G to D via the shortest path, how many cities you have to cross in between?
- (1) 1 (2) 2 (3) 3 (4) 4 (5) 0

60. How many ways are there to reach E from A such that we do not have to go to any city twice?
(1) 1 (2) 2 (3) 3 (4) 4 (5) 5

Direction for questions 61 – 65:

PV and GV are two friends; one day, they went to a place, where they saw two lights red and green flashing at regular intervals. At that time, both PV and GV has an equal number of candies with them. Intelligent PV observed those lights and asked GV to play a game with him. The game was; GV would give a candy to PV, if the red light flashed, and PV would give 1 candy to GV, if green flashed and both of them would eat 1 candy each in case the both lights flashed together.

Answer the following questions.

61. If after 1 hour's play, PV had 60 more candies than GV had and the red light flashed 3 times per minute, how many times did both the lights flash together in one hour?
(1) 15 (2) 20 (3) 25 (4) 10 (5) 30
62. If after 1 hour's play, GV was left with half of the candies that he initially had and PV had the same number of candies that he had in the beginning, Which of the following numbers could be the total number of candies that both of them had in the beginning?
(1) 140 (2) 240 (3) 340 (4) 100 (5) 150
63. The red light flashed 3 times per minute, whereas the green light flashed 2 times per minute. If both PV and GV ate 2 candies each in the same time when both the lights flashed, how many more candies would GV have than those with PV?
(1) 50% more than PV (2) 100% more than PV (3) 150% more than PV
(4) 200% more than PV (5) 300% more than PV
64. If red light flashed twice as fast as green light, how many candies they had to eat when both lights flashed together such that PV had less than half of his initial candies and had no candies left?
(1) 1 (2) 2 (3) 3 (4) 4 (5) Data insufficient
65. According to PV's calculations, if they played for 1 hour, PV would 30 candies from G.V without losing any of his candies. But a good man named Deepak, the operator of those lights noticed that PV was cheating. After 30 minutes of their play, he decided to help to GV and stopped the switch of red light immediately. How much minimum time he had to stop the light so the GV did not lose any of his candies to PV in that 1 hour? (It is given that the red light flashed 2 times per minute).
(1) 10 min (2) 12 min (3) 15 min (4) 19 min (5) 20 min

