
SEM eCAT 04

INSTRUCTIONS

1. This test is divided into three sections, Sections 1, 2 and 3 have 25, 38, 22 questions each. You will be given two and half hours to complete the test.. **Each question carries four marks. Each wrong answer will attract a penalty of one mark.**
3. For each question, five suggested answers are given of which only one is correct. Choose the correct answer option.
4. Multiple answers will be treated as incorrect.
5. Use of calculators, scales and other measuring instruments is not permitted.
6. You will be required to demonstrate adequate competence on every section.
7. Wrong answers carry negative marks. Desist from guessing wildly.

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SECTION 1

This section contains 25 questions

1. Two robbers were making the escape plan to be executed after stealing money bag from a cash van that carries cash to ATMs. Robber 1 has to rob the money bag from the van. Robber 2 will come in a truck from the opposite direction of the cash van. Robber 1 should throw the money bag to robber 2 from the van. Robber 1 calculates that if he throws the bag just when the van crosses the front of the truck, the bag would reach the rear of the truck. So he advises robber 2 to stand at the rear end of the truck. The length of the truck is 10m.

If the cash van travels at a speed of 6m/s and the nearest possible distance between the van and the truck is 2m, at what speed should the truck travel if robber 1 throws the bag at a speed of 2m/s?

1. 4m/s 2. 5m/s 3. 1m/s 4. 3m/s 5. 6m/s
2. $d e f a b c = 6 \times a b c d e f$
If a b,c,d,e,f are 6 integers, then what is the value of $a + b + c + d + e + f$?
1. 25 2. 27 3. 26 4. 28 5. 29
3. There are 3 cans. Can A has 100 Lt of liquid A; can B has 100 lit of liquid B; can C has 100 Lt of liquid C. Can A has an outlet pipe. When can A is half drained, It is then refilled with liquid B. When can A again becomes half drained, It is refilled with liquid C. When can A is half drained again, it is later refilled with liquid B. Finally what percent of liquid C is left in can A?
1. 25% 2. 30% 3. 40% 4. 50% 5. 60%
4. If $T-1, T+3, T+11$ are 3 terms in GP, then what is the 5th term in the series? All the numbers are integers.
1. $T + 10$ 2. $T + 30$ 3. $T + 24$ 4. $T + 7$ 5. $T+59$
5. Let X, Y, Z be the first three consecutive integers greater than 10, each of which is divisible by the sum of its digits. Find $X+Y+Z$
1. 350 2. 315 3. 255 4. 333 5. 555

6. Which of the following positive integers cannot be written as the difference of the cube of two integers?

1. 1304 2. 876 3. 1206 4. 296 5. 127

7. A man in Utopia has Rs. 49 with which he has to buy cows, pigs, chickens and goats, each animal costs Rs.10, Rs.5, Rs.6 and Rs. 3 respectively. He has to buy at least 1 chicken (other animals are optional). How many options does he have in choosing the number of goats he can buy such that he expends his money completely? (There are maximum 10 goats).

1. 5 2.9 3. 7 4. 6 5. 8

8. Two passengers together have 100 kg of luggage and are charged Rs. 10 and Rs. 20 respectively for the excess weight above the standard weight allowed per passenger. If the whole luggage had belonged to one of them, he would have been charged Rs.40. If we assume that the charge for extra luggage varies with the extra weight carried, what is the quantum of luggage each passenger is allowed to carry free of any charge?

1. 20 kg 2. 15 kg 3. 25 kg 4. 10 kg 5. 30kg

9. Consider the set $S = \{2, 3, 4, \dots, 2n+1\}$, n is a positive integer larger than 2007. If X is defined as the average of the odd integers in S and if Y is defined as the average of the even integers in S . What is the value of $X-Y$?

1. 0 2.1 3. $n/2$ 4. $(n+1)/2n$ 5.2008

10. Three classes A, B and C take a test

The average score of class A is 64

The average score of class B is 61

The average score of class C is 68

The average score of class A and B together is 62

The average score of class B and C together is 65

What is the average score of the three classes?

1. 64.2 2. 64.8 3. 65.5 4. 66.2 5. 65

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11. If x, y and z are three positive real numbers and if $x+y+z=1$, the minimum value of

$$\left(x + \frac{1}{x}\right)^2 + \left(y + \frac{1}{y}\right)^2 + \left(z + \frac{1}{z}\right)^2 \text{ is :}$$

1. 11.11 2. 22.22 3. 33.33 4. 44.44 5. 55.5

12. A watch gains as many seconds per hour as a clock loses per hour. At 1:00 am on a particular day both show the same time. The next day when the watch showed 1:09 pm the clock 12:51 pm. How many seconds per hour does the watch gain?

1. 10 2. 12 3. 15 4. 16 5. 20

13. How many integral real solutions are there for $x^2 - 5x + 7^{x^2 + 14x + 48} = 1$?

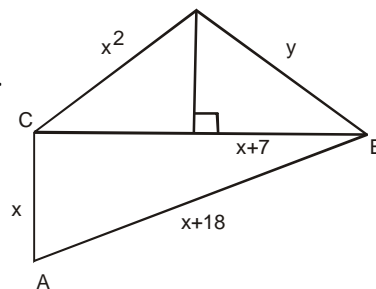
1. 2 2. 3 3. 4 4. 7 5. 5

14. Let w, x, y, z , be 4 numbers in AP. If the sum of squares of the numbers is equal to the square of a number, then what is the value of y ?

1. 6 2. 7 3. 8 4. 10 5. 11

15. If $\angle BCA = 90^\circ$ and all sides of triangle ABC are integers, find y .

1. 50 2. 40 3. 45 4. 48
5. 42



16. A window is in the form of a rectangle surmounted by a semicircle. If the perimeter of the window is 30 meters, find the length of the window (in meters) so that the greatest possible amount of light may be admitted.

1. $\frac{15}{p+4}$ 2. $\frac{30}{p+2}$ 3. $\frac{30}{p+4}$ 4. $\frac{15}{p+2}$ 5. None of these

17. Jim and Joe are climbing up an escalator which moves at a constant speed. Jim takes three steps, for every two of Joe's steps. Jim gets to the top of the escalator after having taken 30 steps while Joe (because his slower pace lets the escalator do a little more work) takes only 24 steps to reach the top. If the escalator was turned off, how many steps would they have to take to reach the top?
1. 40 2. 50 3. 60 4. 80 5. 100
18. What is the area enclosed by a particle such that every pt. (x,y) satisfies condition $\max(|x|+|y|, |x||y|) = 3$.
1. 10 2. 12 3. 18 4. 16 5. 15
19. If K is any natural number such that $0 < K \leq 200$ how many K 's exist such that $K!$ has n zeros at the end and $(K+1)!$ has 2 more zeroes in the end?
1. 3 2. 8 3. 7 4. 5 5. 4
20. A semicircular piece of paper of radius R is made into a cone by folding along the diameter, making the opposite radii touch each other. What is the volume of the cone?
1. $\frac{p R^3}{8}$ 2. $\frac{p R^3}{8\sqrt{3}}$ 3. $\frac{p R^3}{16\sqrt{3}}$ 4. $\frac{p R^3}{16}$ 5. $\frac{p R^3}{4\sqrt{3}}$
21. What is the unit's digit in the number $(1! + 2! + \dots + 99!) (2! + 4! + 6! + \dots + 98!)$?
1. 2 2. 5 3. 8 4. 7 5. 6
22. The sum of an infinite geometric series is 1000. The sum of a new series constructed by squaring the terms of the original series is 10 times that of the original series. Find the common ratio of the original series.
1. $\frac{99}{101}$ 2. $\frac{9}{10}$ 3. $\frac{88}{101}$ 4. $\frac{90}{101}$ 5. None of these
23. Each side of a regular hexagon whose side is 2 cm is common to six other regular hexagons. If a rectangle circumscribes the 7 hexagons, then what is $\frac{\text{Area of the rectangle not covered by the hexagons}}{\text{Total area enclosed by the hexagons}}$?
1. 0.3 2. 0.89 3. 0.7 4. 0.6 5. 0.4

24. Find the remainder when $\sum_{n=1}^{100} (n^2 + 3n + 1)n!$ is divided by 10.

1. 3

2. 7

3. 5

4. 2

5. 4

25. How many pairs of positive integers m, n satisfy $\frac{1}{m} + \frac{4}{n} = \frac{1}{12}$ where n is an odd integer less than 60?

1. 6

2. 4

3. 7

4. 5

5. 3

SECTION 2

This section contains 38 questions

Directions for questions 26 to 30: Read the passage and answer the questions based on what is stated or implied in the passage.

Passage : 1

Exceptions to adaptive behavior in animals occur when their conditions of life are abruptly changed. The existence of such non adaptive tendencies can be understood from its advantage to the animal. Animals pursue what is good for them. Since the conditions of life for the higher animals are complex, and not constant over long periods, present behavior is usually found to be only moderately well adapted. As a consequence we find that desire and pleasure are more or less divorced from physiological usefulness. In the case of man, it is impossible to explain all his tastes and desires on the simple principle that they lead to useful behavior. In many cases they are survivals from a time when he lived in quite different conditions; and while they may have been adapted to his needs at one time in the past, they are sometimes far from being adaptive now. Adaptation is not a law of organic behavior. It is merely a common consequence of those laws. It is the rule.

The universal proliferation of magical beliefs and practices is one of the most startling instances of non adaptive human behavior. Abstraction forms the basis of learning from experience without which the repetition of the same experience, the same situation becomes meaningless. But in reality no situation is exactly repeated, and unless irrelevant differences could be ignored, recognition of a situation would be impossible. It is only to the more extreme cases of such ignoring of differences that the term abstraction is usually applied. But there is no important psychological difference between a dog's recognition of the effective situation 'bone' ignoring irrelevant accidents, and a

man's recognition of the effective situation 'drug'. In each case situations that are actually different are responded to as they were the same in virtue of certain common elements which, taken together, constitute the effective situation. Unless these elements are correctly selected, the response will be inappropriate, and the animal is then said to mistake one thing for another.

There are possibilities of multiplying error and confusion with more and more experiences. In the complex sequence of human behavior the inappropriateness of a response is not always obvious. Someone who responds to a conflagration by treating it with ether, believing the substance to be a good extinguisher, will indeed experience a rude shock, and if he survives, the belief will not survive with him. But he can readily retain for the whole of his life all manner of fantasies concerning matters where the effects of his own actions are less immediate. In such cases he cannot easily devise an alternative method of his own but tends rather to act in the manner he has learned from tradition. If what he does fails in due course to produce the desired result, he may well ascribe the failure to some omission of his own, some error in carrying out the traditional procedure.

26. If there is no sudden change in the conditions of life, which of the following would be true?

1. Organisms pursue life-enhancing experiences.
2. Adaptations to environmental conditions continue to occur.
3. Animals would try to bring in alterations in those conditions.
4. Adaptive behaviors would cease to exist.
5. All of these

27. Which of the following is/are prerequisites for the formation of abstraction?

- a. Encountering a situation again and again
- b. Discerning clear distinctions between situations
- c. Establishing similarity between situations

1. a and b 2. a, b and c 3. b and c 4. a and c 5. a only

28. Overlooking apparently ignorable differences between experiences

1. Helps form a generalization by unifying common elements.
2. Enables the use of instinctive responses to analogous situations.
3. Helps bridge the gap between two occurrences.
4. enables formulation of an approach to learning.
5. can result in erroneous learning.

29. If an animal mistakes one situation for another the most likely reason is

1. the wrong selection of common elements in the two situations.
2. the lack of common elements in the two situations.
3. the choosing of a unfamiliar clue.
4. the tendency to consider as important trivial elements.
5. None of these

30. Which of the following best summarises the last paragraph of the passage?

1. The process of abstraction is unique to human beings.
2. In humans, response to known situations would not depart from tradition.
3. Responses to trained stimuli are uniform across animals.
4. If a response to a situation fails, humans are capable of innovating a different tactic.
5. The process of abstraction increases as man's range of experience increases.

Directions for questions 31 to 34: *read the passage and answer the questions based on what is stated or implied in the passage.*

Passage – 2

Reason is the prime source of knowledge; reason rather than sense data, authority, revelation, or intuition is the only valid basis for knowledge, belief, and action. Such perspective distinguishes rationalists from other schools of thought. Its major proponents- Descartes, Leibniz, and Kant- confront empiricism at almost every turn. For the empiricist, our ideas are passive copies of sense data; for the rationalist, sense data are unstructured, undifferentiated chaos and only provide raw material to an interpretive mechanism that considers these raw data as clues regarding their probable source and meaning. The raw data can be interpreted only according to certain forms- more precisely, according to certain classes of innate perceptual assumptions with which the mind begins.

Different rationalist philosophers have considered different notions as 'self evident' truths. Events always appear to us embedded in a temporal-spatial framework: physical events occur at a particular time and at a particular place. Kant and Descartes thought that our knowledge of space was simply the projection onto the world of the 'self-evident truths'.

A general criticism rationalists have leveled against classical empiricism is that the empiricist theory of perception provides an inadequate account of the unitariness of percepts and the role relations play in creating perceptual unities. The rationalists claim that relations among elementary sense points are just as primary and psychologically vivid as the sense points themselves; we do not hear a series of tones but a coherent melody.

Gestalt psychology began as a revolt against the elementaristic and reductionist analyses of perceptual experience provided by classical empiricism. The Gestaltists supposed that perceptual experience revealed 'emergent' properties not derivable from additive combinations of the properties of its elements. Perceptions were said to become organized according to certain laws of segmentation, relational grouping, and simplicity; perceptual processes were said to seek out 'good forms' and to impose such organizations and interpretations upon chaotic or amorphous 'matter,' to use Kant's term.

31. The passage suggests that rationalists would've accepted empiricist views, if empiricists did which of the following?

1. Provided evidence to support their own assumption that relations among elementary sense points are first as vivid as the sense points themselves.
2. Gave a clear account of the wholeness of the impressions of things perceived and how relations create perceptual oneness.
3. Challenged the mechanism by which specific generalizations are formed out of particular sense experiences.
4. Clarified their belief that the mind was preset to 'project' causality into our interpretations of successive events in the world.
5. Reconciled seemingly contradictory observations into a coherent proposition.

32. Which of the following best summarises the main belief of rationalists?

1. All knowledge is expressible in self-evident propositions or their consequences.
2. Sense data is central to our mental construction of reality.
3. Internal perceptual assumptions tend to distort external reality.
4. Reason is a construct of the mind aided by sense experience.
5. Real knowledge lies in the raw data that we absorb through sense perception.

33. Which of the following best states the relationship between empiricism and rationalism?

1. Both are theories of sense perception
2. Both are propositions on the causality of events in time and space.
3. They are contradictory epistemologies.
4. They are complementary methods of enquiry.
5. The former is the offshoot of the latter.

34. Events appearing as embedded in a temporal spatial framework are instances of

1. undifferentiated perception
2. interpretive assumption
3. mental image of reality
4. empirical correlation
5. transformation of reality

Directions for questions 35 to 41: *read the passage and answer the questions based on what is stated or implied in the passage.*

Passage3

The modern multinational corporation is described as having originated when the owner-managers of nineteenth-century British firms carrying on international trade were replaced by teams of salaried managers organized into hierarchies. Increases in the volume of transaction in such firms are commonly believed to have necessitated this structural change. The other key factors contributing to the change are inventions like the steamship and the telegraph which facilitates coordination of managerial activities. 16th and 17th century chartered trading companies, despite the international scope of their activities, are usually considered irrelevant to this discussion: the volume of their transaction is assumed to have been too low and the communication and transport of their day too primitive to make comparisons with modern multinationals interesting.

In reality, however, early trading companies successfully purchased and outfitted ships, built and operated offices and warehouses, manufactured trade goods for use abroad, and sold those goods both at home and in other countries. The large volume of transactions associated with these activities seems to have necessitated hierarchical management structures well before the advent of modern communications and transportation. For example, in the ABC company, each distant trading outpost was managed by a salaried agent, who carried out the trade with the Native Americans, managed day-to-day operations, and oversaw the post's workers and servants. One chief agent, answerable to the Court of Directors in London through the correspondence committee, was appointed with control over all of the agents on the bay.

The early trading companies depended heavily on the national governments of their home countries and thus characteristically acted abroad to promote national interests. Their top managers were typically owners with a substantial minority share, whereas senior managers' holdings in modern multinationals are usually insignificant. They operated in a preindustrial world, grafting a system of capitalist international trade onto a pre-modern system of artisan and peasant production. Despite these differences, however, early trading companies organized effectively in remarkable modern ways and merit further study as analogues of more modern structures.

35. Which of the following is the central idea of the passage?
1. Modern multinationals originated in the sixteenth and seventeenth centuries with the establishment of chartered trading companies.
 2. The success of early chartered trading companies, like that of modern multinationals, depended primarily on their ability to carry out complex operations.
 3. Early chartered trading companies should be more seriously considered by scholars studying the origins of modern multinationals.
 4. Scholars are quite mistaken about the origins of modern multinationals.
 5. The early trading companies refused to uphold their nationalities in the overseas markets.
36. The author of the passage would characterize the activities engaged in by early chartered trading companies as being
1. complex enough in scope to require a substantial amount of planning and coordination on the part of management.
 2. too simple to be considered similar to those of a modern multinational corporation.
 3. as intricate as those carried out by the largest multinational corporation today.
 4. often unprofitable due to slow communications and unreliable means of transportation.
 5. irrelevant to the discussion of the origin of modern business corporations.
37. The various activities of early chartered trading companies are listed primarily to
1. analyze the various ways in which these activities contributed to changes in management structure in such companies.
 2. demonstrate that the volume of business transaction of such companies exceeded that of earlier firms.
 3. refute the view that the volume of business undertaken by such companies was not substantial.
 4. emphasize the international scope of these companies' operations.
 5. suggest that those companies had no scope in the international scene.
38. The author of the passage is most likely to agree with which of the following generalizations regarding management structures?

1. Hierarchical management structures are the most efficient in the modern context.
 2. Firms that routinely have a high volume of business transactions find it necessary to adopt hierarchical management structures.
 3. Modern communications and transportation are essential for the implementation of hierarchical management structures.
 4. Modern multinational firms with a relatively small volume of business transactions usually follow a flat management structure.
 5. Management structures play an insignificant role in productivity in indigenous corporations.
39. The passage suggests that modern multinationals differ from early chartered trading companies in that
1. Unlike early trading companies the top managers of modern multinationals own stock in their own companies rather than simply receiving salary.
 2. modern multinationals depend on a system of capitalist international trade unlike earlier trading systems.
 3. modern multinationals have operations in a number of different foreign countries unlike their predecessors.
 4. unlike early trading companies the overseas operations of modern multinationals are not governed by the national interests of their home countries.
 5. all of these
40. The author mentions the artisan and peasant production systems of early chartered trading companies as an example of
1. an area of operations of these companies that was unhampered by rudimentary systems of communications and transport.
 2. a similarity that allows fruitful comparisons of these companies with modern multinationals.
 3. a positive achievement of these companies in the face of various difficulties.
 4. a characteristic that distinguishes these companies from modern multinationals.
 5. the identical nature of their management structures.
41. Which of the following aptly summarises the last paragraph of the passage?
- A. The early trading companies did differ strikingly from modern multinationals in many respects.
 - B. The differences between early trading companies and modern multinationals get blurred when we consider their international presence.
 - C. In the final analysis, the similarities between the early trading companies and modern multinationals are more than the differences.

- D. The early trading companies set a benchmark for the modern corporations in safeguarding their home countries' national interests.
- E. The distant outposts of early companies, unlike those of modern companies, were loss making propositions.

Directions for questions 42 to 45: *Read the passage and answer the questions based on what is stated or implied in the passage.*

Passage 4

The whole task of education is 'morality' according to Herbart. He was emphasizing proper 'character building' as the central function of education. I think a more appropriate and comprehensive concept to improve upon this would be 'self-actualization.' It is essentially a Humanist concept. Humanism has a basic philosophical standpoint; it considers and accepts man as essentially worthy and good, in sharp and refreshing contrast to the Freudian view that man, born with 'id' containing 'eros' the sex instinct, and 'thanatos' the death instinct, and operating on 'libido' or sex energy as the total energy system, is essentially bad. If one were to say by common observations or even psychological tests, that man is essentially selfish and self-centered, we could perhaps concede it, adding that it is but the animal level or relatively low level of his existence from which he has to rise to truly human levels and beautiful cultured forms. And education is meant to facilitate this elevation.

The essential worth of man consists in his immense innate potential coupled with a built-in urge to actualize it. Having obtained a quantum jump in the evolutionary hierarchy from other animals including the immediate ancestor, the ape, and being endowed with a large and superior brain, far excelling that of other mammals in terms of proportion to body weight, biochemical qualities and psychological possibilities, man is genetically designed to conquer – and be the monarch of - almost all that he surveys, at least on the earth and in this world. The human brain also contains a relatively large forebrain, much of which is uncommitted at birth and is therefore available for effective utilization for almost unlimited learning. Where it cannot by itself master certain levels of complexities or attain the desired speed of operation, degree of telescoping or freedom from error, it is capable of designing or inventing superior computers etc., and programming them suitably to do the job for it.

42. The Humanist perceives human beings as

- 1. Moral beings
- 2. naturally self-actualised
- 3. Inherently good
- 4. having animal instincts
- 5. creations of nature but not product of evolution

43. Humanism and Freudianism differ in

1. Their description of the essential nature of human beings
2. The proposed ways in which humans strive to excel
3. The way in which humans acquire language
4. How human beings use their innate energy
5. Definition of the purpose of education

44. The function of education, in the author's perspective, is

1. To create morally strong persons
2. To educate man to control his instincts
3. To make man worthy in the world
4. To create a philosophical man
5. To produce self actualized individuals

45. The statement, 'man is genetically designed to conquer' implies that

1. Man wants to be the monarch, who controls the world and its inhabitants.
2. Man wants to elevate himself from a biological existence to a philosophical one.
3. The urge to conquer the world is thrust upon him by experiences.
4. Man has immense potential and an accompanying urge to actualize the urge.
5. None of these

Directions for questions 46 to 48: *In each of the questions, a word has been used in sentences in five different ways. Choose the option corresponding to the sentence in which the usage of the word is incorrect or inappropriate.*

46. MASTER

1. He is a master of martial arts.
2. Anirudh could not master the guts to copy during the exam.
3. The master circuit board had collapsed due to power failure.
4. Roshan had mastered his fear of failure by the time the tournament began.
5. His title made him the master of all he surveyed.

47. ARC

1. The students struggled to draw an arc with their compass.
2. The sun in eclipse formed an arc of golden light.
3. The mountains were beyond the arc of our view
4. The motorist took an effortless arc on the road stunning the audience of the bike stunt show.
5. The children stood side by side, their hands arcing together symbolizing the lotus flower.

48. TRACK

1. The detective was able to track down the culprit with his amazing sleuthing skills.
2. I have lost the track of the conversation.
3. These mountain tracks can be quite precarious.
4. I will try to track in the book for you.
5. All radars are trained to track the rocket's progress across the stratosphere.

Directions for questions 49 to 55: *The sentences given in each question, when properly sequenced, form a coherent paragraph. Each sentence is labeled with a letter. Choose the most logical order of sentences from among the given choices to construct a coherent paragraph.*

49.

- A. In 1869 the land was ostensibly owned by the Hudson's Bay Company, who sold it to Canada and fearful of having another French influence in parliament, the Canadian government attempted to install an English protestant governor.
- B. Angry that they were left out of the deal and determined to have elected representatives the Metis prevented the governor from entering the territory.
- C. Neel's knowledge of English, Montreal education, and overall charisma made him a natural leader.
- D. Neel belonged to the community known as the Metis, a mixture of Native Americans and French settlers who lived along the Red River just north of Minnesota.
- E. Democratically inclined he organized a provisional government that included the minority English settlers.

1. DABCE
2. ABDCE
3. DCABE
4. ADCEB
5. ACDBE

50.

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- A. His curse is Waldo, a mischievous cat who walks on his hind legs.
- B. Co-written with Deitch's brother, Simon, Boulevard focuses on Ted Mishkin, a talented animator whose gifts can never quite overcome his curse.
- C. Waldo may be a delusion or he may be real, but only Ted can see him.
- D. As Mishkin describes him, he's all charm and cute on the outside, but inside he is pure devil'.
- E. While 'Waldo' becomes a national icon, Waldo sends poor Ted to the bottle and in and out of sanatoriums.

1. BECAD 2. BACDE 3. CEBA 4. DEBCA 5. DEBCA

51.

- A. Theories fall into two categories : fundamentalist and technical.
- B. The random walk theory has come into vogue ; this theory holds that the market fully discounts all future developments so that the individual participant's chances of over or under performance are even.
- C. Existing theories about the behaviour of stock prices are inadequate.
- D. The line of argument has served as theoretical justification for the increasing number of institutions that invest their money in index funds.
- E. The theory is false as it has been disproven by George Soros who has been consistently outperforming the averages over a period of 12 years.

1. CBADE 2. CABDE 3. ABDEC 4. ACBDE 5. BACDE

Directions for questions 52 to 55: *each question below has a sentence partly or fully underlined. Choose the option that replaces the underlined part*

52. The research report makes it clear that such hazards are no different from animals produced naturally.

- 1. that of animals produced naturally.
- 2. those animals which are produced naturally.
- 3. those seen in animals produced naturally.
- 4. the naturally produced animals.

53. Elementary education being mainly a state subject, government expenditure on primary and secondary education vary widely among the states.

- 1. vary widely among the states
- 2. varies widely among the states

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3. widely vary between the states
4. have varied widely among the states

54. Proficiency in English involves not only producing language correctly, but also use language for particular purpose.

1. but also use language for particular purpose
2. and also using language for particular purpose
3. but also, for particular purpose, use language
4. but also using language for particular purpose
5. and also in the use of language particularly

55. Subatomic physics as well as Newton's laws have all helped us understand the functioning of the inanimate universe from the innards of an atom to the distant galaxies.

1. have all helped us understand the functioning of the inanimate universe from
2. has helped us understand the functioning of the inanimate universe from
3. have helped us understand the function of the inanimate universe from
4. had helped understanding the function of the inanimate universe from
5. helped understanding the functions of inanimate universe with

Directions for questions 56 to 59: *From the given options, choose the one that summarizes the paragraph in the most appropriate way.*

56. With respect to globalization, the specific themes that Stiglitz deals with are: making international trade fair, shaping the patents regime to go beyond profits and to benefit people, administering global resources, especially energy resources, saving the planet, disciplining multinational corporations, reducing the burden of debt of poor countries, reforming the Global Reserve System and democratising globalisation. In each one of these themes Stiglitz presents a well-documented account of what has been happening in the past and of the present position.

1. If Stiglitz's policies have to work, then the distortions in the global markets have to be corrected.
2. There are specific approaches around which globalization can be democratised.
3. Changes in institutional structures and decision-making procedures help steer globalisation in the desirable directions.
4. The way globalization had been implemented and how the impact of it has turned out to be are contradictory.

5. The challenges in achieving the set goals of globalizations are extraneous.

57. Aristotle believed that the friend of wisdom is also a friend of myth, Plato also knew what intellectual experiences make for true humanity and suggested that the future of citizens of his ideal republic begin their literary education with the telling of myths, rather than with mere facts or so called rational teaching.
 1. The common man wants his children to be exposed only to real people and everyday events.
 2. Plato has understood clearly what forms the mind of man.
 3. Modern thinkers study myths and fairy tales from a philosophical point of view.
 4. Myths and fairy tales were derived from the quest to live in a higher plane of existence.
 5. Myths can act as models of human behavior giving meaning and value to life.

58. Wherever you see mold forming on a piece of bread, or a pile of leaves turning to compost, or a blown down tree becoming pulp on the ground, you are watching a fungus eating. Without fungus action the earth would be piled high with the dead plant life of past centuries. In fact, certain plants which contain resins that are toxic to fungi will last indefinitely. The dilemma of the fungus is that it is a plant without chlorophyll and depends on other plants for energy.
 1. Thus, in the search for energy, the fungus has become the earth's major source of rot and decay.
 2. Conclusively, plants other than fungi receive their energy from the sun and relinquish it at some point.
 3. Consequently, some specimen of wood can be seen on the forest floor for centuries.
 4. Thus, plants put the sun's energy to work for them by combining nutrients of the ground and air.
 5. Fungus must look else where for the energy, not in the soil.

59. When unpleasant emotions are present, we know it. We feel them and react accordingly, regardless of whether they are spoken about or held silently. At work we know, when our star is rising, when peers disapprove of us, when we are not in sync with what is going on, when layoffs are coming and when a prospective change might threaten us. We become speculative, anxious, worried.
 1. Our emotions warn us, that is their function.
 2. Some emotions are spoken about, others held silently.
 3. Others can pick up our feelings.

4. Emotional intelligence emerges from the working of the heart not from intellect.
5. Emotions motivate us to pursue our unique potential.

Directions for questions 60 to 63: *Each of the following questions has a paragraph with one italicized word that does not make sense. Choose the most appropriate replacement for that word from the options given below the paragraph.*

60. The old adage extols the virtue of silence by claiming it is golden, yet experience tells us that silence is hard to come by as the precious metal itself. The benefit of silence to the human ear is scientifically demonstrable- less superfluous noise, less impairment to the hearing. Yet this precious commodity is no longer valued. Noise is *conteering* in modern life and is an accumulative experience.

1. Omnipresent
2. Outpouring
3. Fleeting
4. Transient
5. Energy-gobbling

61. Healthy attitudes, besides enduring relaxation would confer that altered state perception whereby one one could also begin to love what he had formerly condemned. This also is the working of cognitive behavior therapy. Truly there is nothing good or bad but thinking makes it so. Consistency and the sacred, substantial never fading bliss would *pritter up* the single slip.

1. Subject to
2. Guard against
3. Flare up
4. Consume
5. Resort to

62. Oil extraction has a history of detrimental impacts on tropical regions similar to Yasuni, particularly pollution from toxic wastes and forest loss from exploration and drilling operations. During the drilling of even the most *drullering* well, some degree of environmental dislocation will occur.

1. officious
2. timorous
3. hydrated
4. injurious
5. Conscientious

63. The divergence in response to evolution is commonly expressed by altering the form and function of some part of the organism. For example the creeping foot of the snail is seen in relates marine pteropods to be modified into a flapping organ useful for swimming, and is changed into *plopping* arms that bear suctorial disks in the squids and other cephalopods.

1. prehensile
2. stretchable
3. swaying
4. Homologous
5. mammalian

SECTION 3

This section contains 22 questions

Directions for questions 64 -66: Answer the questions based on the information given below.

The year was 2006. All six teams in Pool A of World Cup hockey play each other exactly once. Each win earns a team three points, a draw earns one point and a loss earns zero points. The two teams with the highest points qualify for the semifinals. In case of a tie, the team with the highest goal difference (Goals For Goals Against) qualifies.

In the opening match, Spain lost to Germany. After the second round (after each team played two matches), the pool looked as shown below:

Pool A

Teams	Games Played	Won	Drawn	Lost	Goals For	Goals Against	Points
Germany	2	2	0	0	3	1	6
Argentina	2	2	0	0	2	0	6
Spain	2	1	0	1	5	2	3
Pakistan	2	1	0	1	2	1	3
New Zealand	2	0	0	2	1	6	0
South Africa	2	0	0	2	1	4	0

In the third round, Spain played Pakistan, Argentina played Germany, and New Zealand played South Africa. All the third round matches were drawn. The following are some results from the fourth and fifth round matches.

- Spain won both the fourth and fifth round matches
- Both Argentina and Germany won their fifth round matches by 3 goals to 0.
- Pakistan won both the fourth and fifth round matches by 1 goal to 0.

64. Which of the following statements is true about matches played in the first two rounds?

1. Germany beat New Zealand by 1 goal to 0.
2. Spain beat New Zealand by 4 goals to 0.
3. Spain beat South Africa by 2 goals to 0.
4. Germany beat South Africa by 2 goals to 1.
5. None of these.

65. Which of the following statements is true about matches played in the first two rounds?

1. Pakistan beat South Africa by 2 goals to 1.
2. Argentina beat Pakistan by 1 goal to 0.
3. Germany beat Pakistan by 2 goals to 1.
4. Germany beat Spain by 2 goals to 1.
5. None of these

66. If Pakistan qualified as one of the two teams from Pool A, which was the other team that qualified?

1. Argentina 2. Germany 3. Spain 4. South Africa 5. Cannot be determined

Directions for questions 67 -70: The year is 2089. Beijing, London, New York, and Paris are in contention to host the 2096 Olympics. The eventual winner is determined through several rounds of voting by members of the IOC, with each member representing a different city. All the four cities in contention are also represented in IOC.

- In any round of voting, the city receiving the lowest number of votes in that round gets eliminated. The survivor after the last round of voting gets to host the event.
- A member is allowed to cast votes for a maximum two different cities, in all rounds of voting combined. (Hence, a member becomes ineligible to cast a vote in a given round if both the cities (s)he voted for in earlier rounds are out of contention in that round of voting.)
- A member is also ineligible to cast a vote in a round if the city (s)he represents is in contention in that round of voting.)
- As long as the member is eligible, (s)he must vote and vote for only one candidate city in any round of voting.

The following incomplete table shows the information on cities that received the maximum and minimum votes in different rounds, the number of votes cast in their favour, and the total votes that were cast in those rounds.

Round	Total votes	Maximum votes cast		Eliminated	
		City	No. of votes	City	No. of votes
1		London	30	New York	12
2	83	Paris	32	Beijing	21
3	75				

It is also known that:

- All those who voted for London and Paris in round 1, continued to vote for the same cities in subsequent rounds, as long as these cities were in contention. 75% of those who voted for Beijing in round 1, voted for Beijing in round 2 as well.
- Those who voted for New York in round 1, voted either for Beijing or Paris in round 2.
- The difference in votes cast for the two contending cities in the last round was 1.
- 50% of those who voted for Beijing in round 1, voted for Paris in round 3.

67. What percentage of members from among those who voted for New York in round 1, voted for Beijing in round 2?

1. 33.33 2. 50 3. 66.67 4. 75 5. 80

68. What is the number of votes cast for Paris in round 1?

1. 16 2. 18 3. 22 4. 24 5. 60

69. What percentage of members from among those who voted for Beijing in round 2 and were eligible to vote in round 3, voted for London?

1. 33.33 2. 38.10 3. 50 4. 66.67 5. 70

70. Which of the following statements must be true?

- I. IOC member from New York must have voted for Paris in round 2.
II. IOC member from Beijing voted for London in round 3.

1. Only I 2. Only II 3. Both I and II 4. Either I or II but not both 5. Neither I nor II

Directions for questions 71- 73: Answer the questions based on the information given below

The following table provides information about the arrival time and the departure time of 20 trains at the station as well as the various facilities in these trains. Any train that arrives at the station is on the platform for exactly one hour after its arrival and any train that departs from the station is on the platform for exactly one hour before the departure. After 1 hr of its arrival, trains go to the train shed and come out on the platform 1 hour before the departure time. The time required by a train to move from platform to the train shed and from the train shed to platform are negligible.

	AC/Non AC	AT (HH : MM)	DT (HH : MM)
Train 1	Non AC	10 : 47	3 : 42
Train 2	Non AC	6 : 22	18 : 34
Train 3	AC	11 : 21	10 : 24
Train 4	Non AC	20 : 54	19 : 36
Train 5	AC	15 : 17	4 : 32
Train 6	Non AC	23 : 12	13 : 19
Train 7	AC	1 : 56	12 : 10
Train 8	Non AC	22 : 27	8 : 04
Train 9	Non AC	19 : 30	10 : 10
Train 10	Non AC	18 : 24	2 : 38
Train 11	AC	21 : 39	1 : 31
Train 12	Non AC	12 : 34	23 : 57
Train 13	AC	23 : 48	20 : 25
Train 14	AC	11 : 27	16 : 24
Train 15	Non AC	9 : 43	22 : 11
Train 16	NAC	4 : 30	19 : 26
Train 17	Non AC	10 : 47	21 : 37
Train 18	AC	3 : 26	13 : 29
Train 19	AC	15 : 12	2 : 38
Train 20	Non AC	22 : 39	7 : 35

AC – Air Conditioned

AT – Arrival Time

AM – 00 : 00 Hrs to 11 : 59 Hrs

Non AC – Non Air Conditioned

DT – Departure Time

PM - 12 : 00 Hrs to 23 : 59 Hrs

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71. What is the minimum number of platforms that are required at the Railway station to handle the railway traffic?

1. 4 2. 5 3. 6 4. 7 5. 8

72. A particular rake of Train 4 is in the train shed for

1. 20 hrs 42 min 2. 21 hr 18 min 3. 22 hrs 42 min 4. 21 hrs 21 min
5. None of these

73. How many NAC trains arrive at or leave from Railway station between 8 AM and 8 PM on any day?

1. 1 2. 11 3. 12 4. 9 5. None of these

Directions for questions 74 -76: are based on the following information.

P Roadways is entrusted with the job of carrying rice between the districts in the state. The following sketch of the routes is given:

Venkat, a stockbroker, invested a part of his money in the stock of four companies – A, B, C and D. Each of these companies belonged to different industries, viz.,

Cement, Information Technology (IT), Auto, and Steel, in no particular order. At the time of investment, the price of each stock was Rs. 100. Venkat purchased only one stock of each of these companies. He was expecting returns of 20%, 10%, 30% and 40% from the stock of companies A, B, C and D, respectively. Returns are defined as the change in the value of the stock after one year, expressed as a percentage of the initial value. During the year, two of these companies announced extraordinarily good results. One of these two companies belonged to the Cement or the IT industry, while the other one belonged to either the Steel or the Auto industry. As a result, the returns on the stocks of these two companies were higher than the initially expected returns. For the company belonging to the Cement or the IT industry with extraordinarily good results, the returns were twice that of the initially expected returns. For the company belonging to the Steel or the Auto industry, the returns on announcement of extraordinarily good results were only one and a half times that of the initially expected returns. For the remaining two companies which did not announce extraordinarily good results, the returns realized during the year were the same as initially expected.

74. What is the minimum average return Venkat would have earned during the year?

1. 30% 2. 31.25% 3. 32.5% 4. 33% 5. Cannot be determined

75. If Venkat earned a 35% return on average during the year, then which of the following statements would necessarily be true?

- I. Company A belonged either to Auto or to Steel Industry.
II. Company B did not announce extraordinarily good results.
III. Company A announced extraordinarily good results.
IV. Company D did not announce extraordinarily good results.

1. I and II only 2. II and III only 3. III and IV only 4. II and IV only
5. I,II,III, and IV

76. If Venkat earned a 38.75% return on average during the year, then which of the statement(s) would necessarily be true?

- I. Company C belonged either to Auto or to Steel industry.
II. Company D belonged either to Auto or to Steel Industry.
III. Company A announced extraordinarily good results.
IV. Company B did not announce extraordinarily good results.

1. I and II only 2. II and III only 3. I and IV only 4. II and IV only
5. I and III only

QUESTIONS 77 TO 80 : Managers ABCD are given the task of laying a road of length 1500 m. A works with 150 workers and finishes the work.

B starts with 150 workers but from the second day onwards, he adds 10 workers each day & completes the work.

C starts with 150 workers. After every 3 days he increases the numbers of workers by 10 and completes the work.

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D starts with 150 workers, every alternate day he hires 30 workers to work with him, the other days he works with 150 workers and completes work.

Each of the managers pays the workers as per the information given in the table.

Number of workers	Cost/worker
≤ 150 workers	Rs. 10/day
150+ workers	Rs. 20/day

77. Who is/are the most economical manager(s)?(the total salary given to the workers should be the least)

1. A 2. B 3. C 4. D 5. A & B

78. How many days less B took when compared to C?

1. 2 2. 3 3. 4 4. 1 5. None of these

79. If $ROI = \frac{\text{number of units done per day for first 5 days}}{\text{salary}}$

Then which manager(s)' ROI is/are the highest? (Assume data from the previous question)

1. A 2. B 3. C 4. D 5. B & C

80. After 6 hours, how many units of work is completed by the workers under managers A, B, C, D put together?

1. ≤ 1000 2. 1001 to 2000 3. 2001 to 3000 4. 3001 to 4000
5. 4001 to 5000

Directions for questions 81 to 85

Each question is followed by 2 statements A & B. Mark

1. If the question can be answered by using statement A alone.
2. If the question can be answered by using the statements independently.
3. If the question can be answered by using both statements together but cannot be answered using either statement alone.
4. If the question cannot be answered even using both statement together.
5. If the question can be answered by using statement B alone.

81. What is the circumference of the circle?

- A. The sum of the opposite angles of the quadrilateral whose vertices lie on the circle is 180° .
- B. The diagonal of a quadrilateral whose vertices lie on the given circle measures 12 cm.

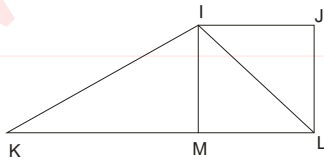
82. x is a number between 10 and 20. What is the value of x ?

- A. x is a prime number.
- B. x is a solution to the equation $x^2 - 23x + 132 = 0$

83. What is the average of 3 consecutive odd integers?

- A. One of the integers = -1.
- B. The sum of 2 of the integers is 4.

84.



Given that IJML is a square. What is the area of $\triangle IMK$?

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- A. ΔKIL is an isosceles Δ .
- B. LMK is a straight line and $\angle KIL = 90^\circ$

85. A three digit number is Q times the sum of the digits. The same number is A times the product of the digit. Is $Q = A$?

- A. The digits form an arithmetic progression
- B. Q and A are integers

Please email urmentor@semanticslearning.com for answer key and solutions

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