

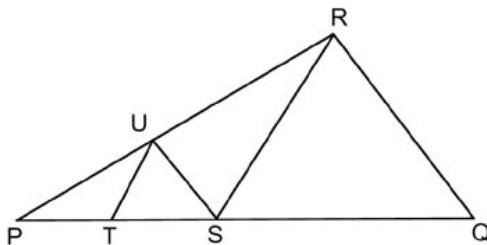
**INSTRUCTIONS**

1. Read the instructions given at the beginning/end of each section or at the beginning of a group of questions very carefully.
2. This test has two sections with a total of 100 questions – 50 questions each in section I and section II. The total time available for the test is **170 minutes**. You can allot this time across the sections as you wish. However, you are expected to show your competence in both the sections.
3. All questions carry three marks each. Each wrong answer will attract a penalty of one mark.

**SECTION – I**  
**Number of Questions = 50**

**DIRECTIONS** for questions 1 to 5: Answer the questions independently of each other.

1. A milkman mixed 20 litres of water with 100 litres of milk. He sold one-fifth of the mixture and added as much water to the remaining mixture as the quantity he sold. Find the ratio of water and milk in the mixture now.  
(A) 1 : 5    (B) 1 : 3    (C) 1 : 4    (D) 1 : 2
- 2.



- In triangle PQR, T and S are points on PQ and U is a point in PR such that UT and RS are parallel and US and RQ are parallel. If PS : SQ = 2 : 3, find TS : SQ.
- (A) 3 : 5    (B) 2 : 5    (C) 4 : 5    (D) 2 : 3
  3. A four-digit number is such that the number 56 is a part of the number. If the number formed by the digits, if any, to the left of 56 is always less than 56, how many such four-digit numbers are possible?  
(A) 236    (B) 189    (C) 216    (D) 235

**DIRECTIONS** for questions 6 and 7: Answer the questions on the basis of the information given below.

The following information is regarding the sales of widgets by company X during the period 2006-2013:

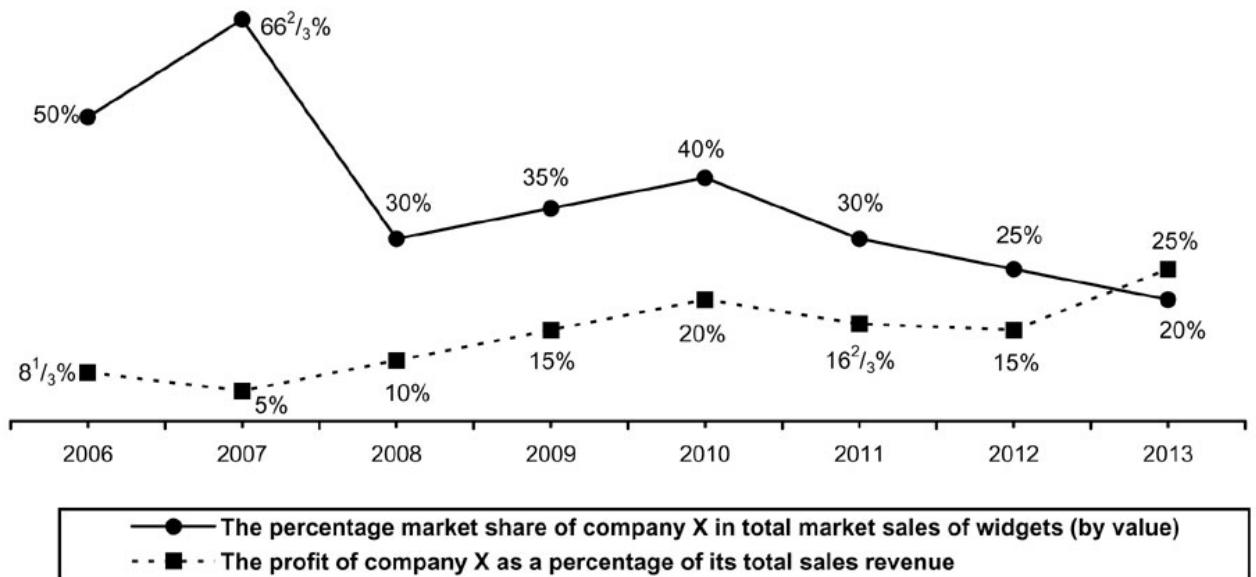
Year	Total market sales of widgets (in ₹ thousand)	Average selling price per widget of company X (in ₹)
2006	5,860	5
2007	6,600	4
2008	8,500	8
2009	10,500	7
2010	12,000	12
2011	14,500	15
2012	16,600	20
2013	18,800	20

4. Find the maximum possible value of the product  $xy$ , where  $x$  is given by the solution to the equation  $|x + 3| = 4$  and  $y$  is given by  $y = 7 - |x - 2|$ .  
(A) 7    (B) -49    (C) 6    (D) 14
5. A set P comprises 303 squares of natural numbers, selected at random. What is the maximum number of elements of P that one can always find such that each of them leaves the same remainder when divided by 9?  
(A) 72    (B) 68    (C) 76    (D) 81

**DIRECTIONS** for questions 6 and 7: Answer the questions on the basis of the information given below.

Ritu was asked to multiply a two-digit number N by a three-digit number M. But she mistakenly multiplied N by the number formed by writing the digits of M in the reverse order, thereby getting an answer which was 22770 more than the correct answer.

6. Find the correct product of N and M, if it is known that had Ritu reversed the digits of both the numbers N and M, she would have got an answer 12816 more than her earlier answer.  
(A) 9982    (B) 13284    (C) 32752    (D) 45568
7. What is the minimum possible sum of the digits of M?  
(A) 11    (B) 7    (C) 6    (D) 5



Note: The company X manufactures and sells only widgets.

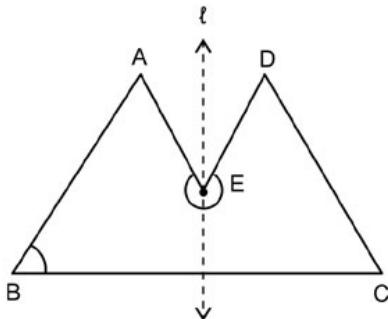


**DIRECTIONS** for questions 12 to 16: Answer the questions independently of each other.

12. A group of students were given the names of eight countries and their capitals, in two columns. Each student is expected to match the eight countries with their respective capitals. A student is awarded 3 marks for each correct match. What is the maximum possible number of students who give different sets of valid responses and end up getting 15 marks?

(A) 64      (B) 56      (C) 112      (D) 224

13. In the figure given below (not drawn to scale), ABCDE is a concave pentagon, with  $\angle B = 60^\circ$ ,  $AB = 12 \text{ cm}$ ,  $\angle E = 300^\circ$  and area of the pentagon =  $56\sqrt{3} \text{ sq.cm}$ . If the pentagon is symmetric about the line  $\ell$  (shown as dotted line), drawn perpendicular to BC and passing through E, find the length BC.






**DIRECTIONS** for questions 17 to 20: Answer the questions on the basis of the information given below.

Two statements are considered to be inconsistent with each other, if the data given in one statement contradicts the data given in the other statement or if it is possible to arrive at conclusions that contradict each other using the two statements.

In each of the following questions, there is a main statement (MS) followed by two additional statements, I and II. Study whether the MS is inconsistent or not inconsistent with each of the two statements and then mark your answer.

- (A) if MS is inconsistent with I but is not inconsistent with II.
- (B) if MS is inconsistent with II but is not inconsistent with I.
- (C) if MS is inconsistent with I and also inconsistent with II.
- (D) if MS is inconsistent with neither I nor II.

17. **MS:** For the natural numbers N and D, the remainder when  $2N$  is divided by D is 10.
- The remainder when N is divided by 2D is 26.
  - The remainder when N is divided by D is 17.

18. **MS:** AB and EF are the chords of the circle  $C_1$ . The perpendicular bisectors of AB and EF intersect at P. The length of the chords AB and EF are 14 cm and 6 cm respectively.
- The distance of the point P from the chords AB and EF are 9 cm and 11 cm respectively.
  - The distance of the point P from the chords AB and EF are 6 cm and 7 cm respectively.

19. **MS:** In a certain management entrance, there were a total of 75 questions, spread across 3 sections. Four marks were awarded for each correct answer and one mark was deducted for each wrong answer. No marks were awarded or deducted for any unanswered questions. A student is free to attempt any number of questions. Bunty got a total of 124 marks in the exam.
- Bunty attempted a total 49 questions in the exam.
  - Twenty of Bunty's answers were wrong.

**DIRECTIONS for questions 21 to 23:** Answer the questions independently of each other.

20. **MS:** In a school of 200 children, 100 play cricket, 120 play hockey and 180 play football. 70 children play all the three games.
- 26 children do not play any of the three games.
  - 36 children play both hockey and football but not cricket.

**DIRECTIONS for questions 21 to 23:** Answer the questions independently of each other.

21. If  $x^2 - (a^2 + 2)x + (a^2 - 5a + 5) = 1$  has roots of opposite sign, then find the range of  $a$ .
- (A)  $(-5, 9)$
  - (B)  $(2, 8)$
  - (C)  $(1, 4)$
  - (D)  $R - \{0\}$

22. The inhabitants of planet Rahu measure time in hours and minutes which are different from the hours and minutes of Earth. Their day consists of 36 Rahuiian hours with each hour having 120 Rahuiian minutes and therefore the dials of their clocks show 36 hours. What is the angle (in Rahuiian degrees) between the hour hand and the minute hand of a Rahuiian clock when it shows a time of 9:48? Rahuiians measure angles in degrees, the way we do on earth. But for them, the angle around a point is 720 Rahuiian degrees (instead of the  $360^\circ$  that we have on earth).

- (A) 100
- (B) 112
- (C) 24
- (D) None of these

23. ABCD is a rhombus of side 12 cm. The diagonals of the rhombus meet at the point P. Line segments PX and PY are joined, where X and Y are the midpoints of the sides AD and CD respectively. If the length of the line segment PD is 10 cm, find the length of the line segment XY.

- (A)  $2\sqrt{11}$  cm
- (B)  $3\sqrt{11}$  cm
- (C)  $4\sqrt{11}$  cm
- (D) Cannot be determined

**DIRECTIONS for questions 24 to 27:** Answer the questions on the basis of the information given below.

The supply of municipal water to the Sagar and the Afzal colonies was through a large municipal tank. Exactly, two main taps, A and B, were provided for the residents of Sagar colony and Afzal colony respectively for drawing water, from the tank. The two main taps were on either side of the tank and were at the same level. The main taps were connected at a certain height above the bottom of the tank such that a certain quantity of water would remain in the tank even if the main taps go dry. This water, below the level of the main taps, was called the *emergency stock* of water which could be drawn out only through an emergency tap provided at the bottom of the tank. All the water available above the level of the main taps was called the *normally available water*. On any day, if the residents of the colonies draw all of the *normally available water*, then the *emergency stock* of water can be drawn, on special request, through the emergency tap, as and when emergencies arise.

On each day, the normal and emergency supply (if any) of water is allowed only between 9:00 a.m. and 9:00 p.m. Everyday, the municipal authorities pump water into the tank only between 1:00 a.m. and 3:00 a.m.

The following table gives the details, for ten consecutive days, about the quantity of water pumped into the tank by the municipal authorities, the *normally available water* and the water drawn by Afzal colony through the main tap B.

(in kilolitres)

Day	Water pumped into the tank	Normally available water in the tank at 3:00 a.m.	Water drawn by Afzal colony through the main tap B
1	72.5	76.2	46.2
2	68.6	72.5	43.2
3	82.2	81.4	50.6
4	72.5	74.4	48.5
5	75.2	71.9	51.2
6	85.2	80.6	47.3
7	79.4	80.2	45.3
8	82.2	80.9	42.5
9	76.2	78.9	45.3
10	80.2	76.6	44.4

**DIRECTIONS** for questions 34 and 35: Answer the questions on the basis of the information given below.

There are  $p$  numbers,  $a_1, a_2, a_3, \dots, a_p$ , each of which has a value of  $-1$  or  $0$  or  $1$ .

$$\text{Also, } a_1a_2a_3a_4 + a_2a_3a_4a_5 + a_3a_4a_5a_6 + \dots + a_{p-2}a_{p-1}a_pa_1 + a_{p-1}a_pa_1a_2 = 0$$

34. If  $p = 40$ , at most how many of the  $a_i$ 's are equal to  $-1$ ?  
(A) 30      (B) 33      (C) 34      (D) 39

35. If  $p \geq 10$  and exactly ten of the  $p$  numbers are equal to 1, what is the least possible value of  $p$ ?  
 (A) 10      (B) 11      (C) 14      (D) 12

**DIRECTIONS** for questions 36 to 39: Answer the questions on the basis of the information given below.

Six teams – A, B, C, D, E and F – participated in a hockey tournament. The tournament had five rounds and in each round of the tournament, each team played exactly one match with one of the other teams. In the first three rounds, each team played with three different teams. In any match, for any team, 3 points were awarded for a win, 1 point for a draw and zero points for a loss. The following table gives partial information about the total number of goals scored (Goals for), the number of goals conceded (Goals Against), the number of matches won, drawn and lost and total number of points obtained by each of the six teams at the end of the first three rounds.

In any match, no team scored more than four goals. In any match, the difference between the number of goals scored and the number of goals conceded by any team is at most two. No match ended goalless, i.e., with neither team scoring any goals.

Team	Goals for	Goals against	Won	Drawn	Lost	Points
A	11	5				
B	9	9				
C	5	7				
D	1	4	1			
E	7	7				4
F	4					3

Further, the following additional information is known:

38. How many goals did E concede in the third round?  
 (A) 4      (B) 3      (C) 2      (D) 1
39. D won against team  
 (A) E in third round.      (B) C in third round.  
 (C) C in second round.      (D) F in second round.
- DIRECTIONS** for questions 40 to 42: Answer the questions independently of each other.
40. In a game show, a contestant is given three boxes and asked to choose one of them. Only one of the three boxes contains a prize. After the contestant chooses one of the boxes, the host opens that box. If that box contains the prize, the contestant wins it. Else, the host allows the contestant a last chance to choose one of the two remaining boxes. What is the probability that the contestant wins the prize?  
 (A)  $\frac{1}{3}$       (B)  $\frac{1}{2}$       (C)  $\frac{5}{6}$       (D)  $\frac{2}{3}$
41. The prices of an apple, a mango and a custard apple are ₹5, ₹6 and ₹4 respectively. If Manas spent ₹P, ₹2P and ₹3P on the three kinds of fruits respectively, what is the minimum possible total amount he could have spent in purchasing the three varieties of fruits?  
 (A) ₹180      (B) ₹60      (C) ₹240      (D) ₹360
42. If the first three numbers of an arithmetic series are  $3x$ ,  $2x + 8$  and  $6x - 4$ , then what is the sum of the first 10 numbers of that series?  
 (A) 200      (B) 250      (C) 275      (D) 300

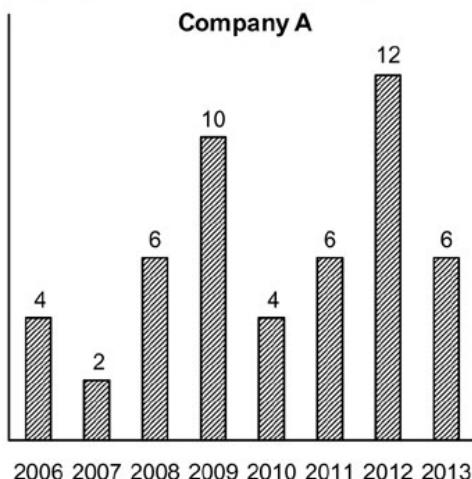
**DIRECTIONS** for questions 43 to 46: Answer the questions on the basis of the information given below.

Each question gives certain information followed by two quantities I and II. Compare I and II, and then mark your answer.

- (A) if I > II  
 (B) if II > I  
 (C) if I = II  
 (D) if the relationship cannot be determined from the given data.

**DIRECTIONS** for questions 47 to 50: Answer the questions on the basis of the information given below.

The bar graphs given below represent the percentage increase in the production of cement, over the previous year, for four cement manufacturing companies – A, B, C and D – across eight years. The companies A, B, C and D accounted for 10%, 5%, 15% and 20% respectively of the total cement production in 2005.



43. A baker had a certain number of boxes and a certain number of cakes with him. Initially, he distributed all the cakes equally among all the boxes and found that there was no cake left without a box. He later found that he had one more box with him and so he redistributed all the cakes equally among all the boxes with him and found that there was one cake less per box than initially and one cake was left without a box.

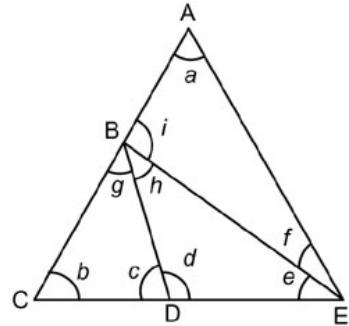
- I. The number of cakes per box in the first case.  
 II. The total number of boxes.

44. I.  $18^{49} + 18^{50} + 18^{51}$   
 II.  $19^{51} - 19^{50} - 19^{49}$

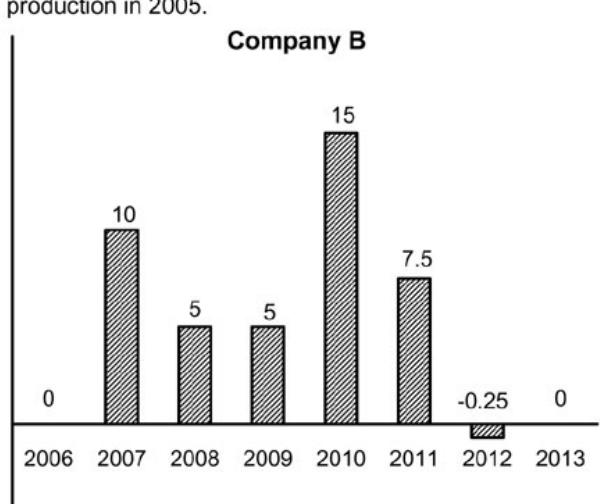
45. A piece of work is carried out by a group of men, all of equal capacity, in such a way that on the first day one man works and on every subsequent day one additional man joins the work. A group of women, all of equal capacity is engaged to carry out a second piece of work with ten women starting the work on the first day and one woman leaving the work at the end of everyday. The second piece of work requires three times the effort required for the first piece of work and each man is thrice as efficient as each woman. It is known that one man working alone can complete the first piece of work in 6 days.

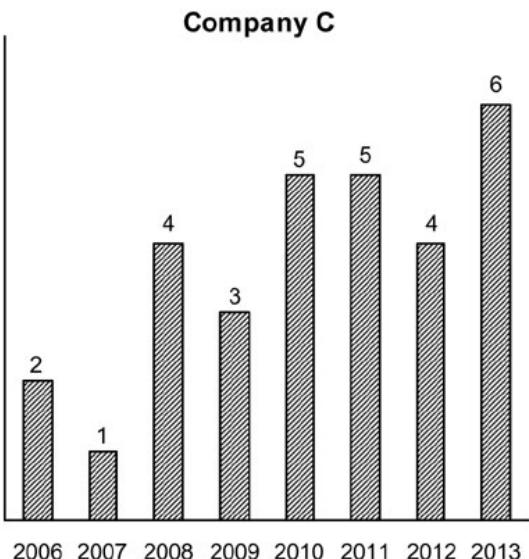
- I. Number of days in which the second piece of work is completed.  
 II. Number of days in which the first piece of work is completed.

46.



- I.  $g + c - e$   
 II.  $a + f$





47. During which year was the production of cement by the four companies put together, the highest?  
(A) 2010                   (B) 2013  
(C) 2012                   (D) Cannot be determined

48. During the period 2005 to 2013, when was the production of cement by the companies B and D put together, the least?  
(A) 2005  
(B) 2006  
(C) 2007  
(D) Cannot be determined

49. What is the approximate overall percentage increase in the production of cement by the four companies put together, from 2005 to 2009?  
(A) 6                   (B) 12                   (C) 18                   (D) 23

50. If the total cement production in 2009 is more than that in 2005 by 25%, what is the approximate percentage increase in the production of cement by all the companies other than A, B, C and D, from 2005 to 2009?  
(A) 33                   (B) 28                   (C) 18                   (D) 38

**SECTION – II**

**DIRECTIONS** for questions 51 to 54: Read the following passage and answer the questions that follow it.

For classical liberals – sometimes called the ‘old’ liberalism – liberty and private property are intimately related. From the eighteenth century right up to today, classical liberals have insisted that an economic system based on private property is uniquely consistent with individual liberty, allowing each to live her life – including employing her labour and her capital – as she sees fit. Indeed, classical liberals and libertarians have often asserted that in some way liberty and property are really the same thing; it has been argued, for example, that all rights, including liberty rights, are forms of property; others have maintained that property is itself a form of freedom. A market order based on private property is thus seen as an *embodiment* of freedom. Unless people are free to make contracts and to sell their labour, or unless they are free to save their incomes and then invest them as they see fit, or unless they are free to run enterprises when they have obtained the capital, they are not really free.

Classical liberals employ a second argument connecting liberty and private property. Rather than insisting that the freedom to obtain and employ private property is simply one aspect of people's liberty, this second argument insists that private property is the only effective means for the protection of liberty. Here the idea is that the dispersion of power that results from a free market economy based on private property protects the liberty of subjects against encroachments by the state. As F.A. Hayek argues, 'There can be no freedom of press if the instruments of printing are under government control, no freedom of assembly if the needed rooms are so controlled, no freedom of movement if the means of transport are a government monopoly'.

What has come to be known as 'new', 'revisionist', 'welfare state', or perhaps best, 'social justice', liberalism challenges this intimate connection between personal liberty and a private property based market order. Three factors help explain the rise of this revisionist theory. First, the new liberalism arose in the late nineteenth and early twentieth centuries, a period in which the ability of a free market to sustain what Lord Beveridge called a 'prosperous equilibrium' was being questioned. Believing that a private property based market tended to be unstable, or could, as Keynes argued, get stuck in an equilibrium with high unemployment, new liberals came to doubt that it was an adequate foundation for a stable, free society. Here the second factor comes into play: just as the new liberals were losing faith in the market, their faith in

government as a means of supervising economic life was increasing. This was partly due to the experiences of the First World War, in which government attempts at economic planning seemed to succeed more importantly, this reevaluation of the state was spurred by the democratization of western states, and the conviction that, for the first time, elected officials could truly be, in J.A. Hobson's phrase 'representatives of the community'. As D.G. Ritchie proclaimed:

be it observed that arguments used against 'government' action, where the government is entirely or mainly in the hands of a ruling class or caste, exercising wisely or unwisely a paternal or grandmotherly authority — such arguments lose their force just in proportion as the government becomes more and more genuinely the government of the people by the people themselves.

The third factor underlying the development of the new liberalism was probably the most fundamental: a growing conviction that, so far from being 'the guardian of every other right', property rights generated an unjust inequality of power that led to a less-than-equal liberty (typically, 'positive liberty') for the working class. This theme is central to what is usually called 'liberalism' in American politics, combining a strong endorsement of civil and personal liberties with, at best, an indifference, and often enough an antipathy, to private ownership. The seeds of this newer liberalism can be found in Mill's *On Liberty*. Although Mill insisted that the 'so-called doctrine of Free Trade' rested on 'equally solid' grounds as did the 'principle of individual liberty', he nevertheless insisted that the justifications of personal and economic liberty were distinct. And in his *Principles of Political Economy* Mill consistently emphasized that it is an open question whether personal liberty can flourish without private property, a view that Rawls was to reassert over a century later.

One of the many consequences of Rawls's great work, *A Theory of Justice* is that the 'new liberalism' has become focused on developing a theory of social justice. For over thirty-five years liberal political philosophers have analyzed, and disputed, his famous 'difference principle' according to which a just basic structure of society arranges social and economic inequalities such that they are to the greatest advantage of the least well off representative group. For Rawls, the default is an equal distribution of (basically) income and wealth; only inequalities that best enhance the long-term prospects of the least advantaged are just. As Rawls sees it, the difference principle constitutes a public recognition of the principle of reciprocity: the basic structure is to be arranged such that no social group advances at the cost of another. Many followers of Rawls have focused less on the ideal of reciprocity than the commitment to equality. Indeed, what was previously called 'welfare state' liberalism is now often described as 'egalitarian' liberalism. And in one way that is especially appropriate: in his later work Rawls insists that welfare-state capitalism does not constitute a just basic structure. If some version of capitalism is to be just it must be a 'property owning democracy' with a wide diffusion of ownership; a market socialist regime, in Rawls's view, is more just than welfare-state capitalism. Not too surprisingly, classical liberals such as Hayek insist that the contemporary liberal fixation on 'the mirage of social justice' leads them to ignore the way that freedom depends on a decentralized market based on private property, the overall results of which are unpredictable. In a similar vein, Robert Nozick famously argued that any attempt to ensure that market transactions conform to any specific pattern of holdings will involve constant interferences with individual freedom.

**DIRECTIONS** for questions 55 to 58: Answer the questions on the basis of the information given below.

A waiting room has ' $n$ ' equally spaced seats in a single row. The 1<sup>st</sup> person who enters the room can sit anywhere in the row. The 2<sup>nd</sup> person who enters, sits in the row such that he maintains maximum distance from the 1<sup>st</sup> person. The distance between any two persons is the number of seats between them (excluding their own seats). The 3<sup>rd</sup> person who enters, sits in the row such that the sum of his distances from the 1<sup>st</sup> and the 2<sup>nd</sup> person is maximum. The 4<sup>th</sup> person who enters, sits in the row such that the sum of his distances from the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> person is maximum, and the process continues in the same way for all the remaining persons who enter the room.

55. If  $n = 17$ , find the maximum possible sum of distances of the 7<sup>th</sup> person from the 1<sup>st</sup> person to the 6<sup>th</sup> person.  
(A) 42      (B) 40      (C) 38      (D) 36

56. If the maximum possible sum of distances of the 9<sup>th</sup> person from the 1<sup>st</sup> person to the 8<sup>th</sup> person is 40, find the value of ' $n$ '.  
(A) 16      (B) 15      (C) 14      (D) 13

57. If  $n = 9$ , which of the following is not a possible seating arrangement, where '—' and 'p' denote an empty seat and an occupied seat respectively?  
(A) p — — p — — — p p  
(B) p p — — p — — — p  
(C) p p — — — — p p  
(D) p — p — — — p — p

58. If  $n = 9$  and only seven people sit on the chairs, then what is the maximum distance between the 3<sup>rd</sup> person and 5<sup>th</sup> person who entered the room?  
(A) 0      (B) 2      (C) 4      (D) 6

**DIRECTIONS** for questions 59 and 60: The sentences given in each of the following questions, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. From among the four choices given below each question, choose the most logical order of sentences that constructs a coherent paragraph.

59. (1) The fact is that the entire thrust of the future carries away from standardization – away from uniform goods, away from homogenised art, mass produced education and “mass” culture.

(2) Technology, far from restricting our individuality, will multiply our choices and our freedom exponentially.

(3) Because primitive mass production imposed certain uniformities, does not mean that super-industrial machines will do the same.

(4) We have reached a dialectical turning point in the technological development of society.

(5) It is obstinate nonsense to insist, in the face of all this, that the machines of tomorrow will turn us into robots, steal our individuality, eliminate cultural variety etc.

(A) 42135 (B) 51324 (C) 53142 (D) 35214

60. (1) Inferring is now just a matter of drawing out what is, in some sense, already there; thinking a thought essentially involves thinking everything else that the truth of the thought entails.



**DIRECTIONS** for questions 61 and 62: Four alternative summaries are given below each text. Choose the option that best captures the essence of the text.

- 61.** Since the late 1960s, the study and exploitation of developments in the recombinant DNA has fused into an emerging biotechnology community consisting of a wide variety of firms from traditional industries such as pharmaceuticals, chemicals, agricultural and energy. Well known startups like Genentech, for instance, rely on multiple relationships with other firms that supply equipment, fund research, disseminate information and regulate genetic manipulation. Development and commercialization of therapeutic products from biotechnology requires active cooperation by many firms and they rely on extensive networks of contracts, joint ventures and other alliances to cope with the financial, legal, technical and social impediments to innovation that they face.

(A) The emerging innovative biotechnology community is a network of mutually dependent firms which have basically come together to jointly cope with impediments in the path of developmental and commercial aspects of therapeutic products.

(B) Start-ups typically depend on the bigger companies for funds and equipment. They engage in limited activities in house.

(C) Biotechnology being a capital intensive and new field, there are numerous legal and contractual hurdles, which only big firms can address.

(D) The study and exploitation of recombinant DNA in the late 1980s led to the need for development and commercialization of therapeutic products.

**62.** All mythologies share a universal, inbuilt logic. Any corpus of mythological tales contain a recurrent harping on elementary themes – incest, fratricide, patricide, cannibalism. Myth was a kind of collective dream, an instrument of darkness capable of being decoded. In all, in what became four volumes, Levi-

Strauss, examined 813 stories with an extraordinary ingenuity that many, especially his Anglo-Saxon critics such as Edmund Leach, have refused to accept. He observes, for instance, that across the world, where figures from myth are born of the earth rather than from woman, they are given either very unusual names or some deformity such as clubfoot to signify the fact. At other times, myths concern themselves with 'overrated' kin relationships (incest) or underrated relationships (fratricide/ patricide).

- (A) Levi-Strauss was a reputed compiler of myths who had many critics, ready to veto his findings.
- (B) There is a strong underlying logic in myths, though they may present the darker side of humanity. Levi-Strauss managed to identify the logical themes in 813 stories.
- (C) The inbuilt logic of myths lead them to use different types of symbols to differentiate between origins of various mythical figures.
- (D) Edmund Leach debunked Levi-Strauss's theory about logic in myths and use of symbols.

**DIRECTIONS for question 63:** There are two blanks in the following question. From the pair of words given below the sentence, choose the pair that fills the blanks most appropriately.

63. That the nature versus nurture \_\_\_\_\_ is inherent in the debate as to whether body language signals and their meanings are culturally determined or whether such cues are innate is false; one does not \_\_\_\_\_ the other's influence.
- (A) divaricato . . . anticipate
  - (B) argument . . . forestall
  - (C) choice . . . exacerbate
  - (D) dichotomy . . . preclude

**DIRECTIONS for questions 64 to 67:** Answer the questions on the basis of the information given below.

In a group of ten friends – A through J – each of the friends has exactly one specialisation among Marketing, Finance, Operations and HR. The number of friends having each of the specialisations is distinct and at least one. Each of these ten friends got a job in exactly one of the four sectors – Banking, IT, FMCG and Insurance. The number of friends who got a job in each of the sectors is distinct and is at least one in each sector.

Further, it is known that,

- (i) Except B and G, no two persons with the same specialisation got jobs in the same sector. Both B and G have Finance as their specialisation and got jobs in the Insurance sector.
- (ii) Maximum number of persons got jobs in the IT sector and maximum number of persons had Marketing as their specialisation.
- (iii) D, whose specialisation is HR, got a job in the FMCG sector.
- (iv) C and E have the same specialisation while A and J got jobs in the same sector.
- (v) H and I neither have the same specialisation nor did they get a job in the same sector. H got a job in the Banking sector and F has HR as his specialisation.
- (vi) B had the same specialisation as J and got a job in the same sector as E.

64. How many of the friends have Finance as their specialisation?

- (A) 1
- (B) 2
- (C) 3
- (D) Cannot be determined

65. Who among the following has Marketing as his/her specialisation and a job in the FMCG sector?

- (A) E
- (B) C
- (C) I
- (D) None of these

66. Which of the following represents the group of friends who got jobs in the IT sector?

- (A) A, C, J and F
- (B) A, E, F and C
- (C) A, F, I and J
- (D) A, C, E and I

67. The person who has Operations as his/her specialisation is

- (A) J
- (B) A
- (C) I
- (D) H

**DIRECTIONS for question 68:** The following question has a set of 4 independent sentences which may have errors in grammar, spelling, punctuation or logical structure. Identify the sentence that is free from errors and mark the appropriate option.

68. (A) Today, hunger is the beast rampaging around the world and particularly in Africa, where shortage of food threatens to undo recent economic and political gains – there have been food riots in Egypt, Cameroon, Senegal, Burkina Faso and Madagascar.
- (B) To transform African agriculture is the goal of the Alliance for a Green Revolution in Africa, which hopes to engage all stakeholders – including the public and private sectors, civil society, farmer groups, donors, scientists and entrepreneurs – to the task.
- (C) Systemic problems in distribution, infrastructure and trade also need to be addressed to strengthen local and regional markets – major roads all lead to the coast when what is needed is roads that connect countries, especially landlocked ones now burdened by outrageous transport costs.
- (D) An African Green Revolution that doubles or triples productivity of smallholder farmers, preserves biodiversity, and creates rural income will be crucial in ending widespread poverty and hunger, and freeing Africa from its dependence on food imports and food aid.

**DIRECTIONS for question 69:** The question has a set of four sequentially ordered statements. Classify the statements into Facts, Inferences and Judgements based on the following criteria and then choose the most appropriate option.

- Facts, which deal with pieces of information that one has seen, heard or read; which are known matters of direct observation or existing reality; which are open to discovery or verification (the answer option indicates such a statement with an 'F')
- Inferences, which are logical conclusions or deductions drawn about the unknown, on the basis of the known i.e. based on the knowledge of facts (the answer option indicates such a statement with an 'I')

- Judgements, which are opinions, or estimates or anticipations of common sense or intention that imply approval or disapproval of persons, objects, situations and occurrences in the past, the present or the future (the answer option indicates such a statement with an 'J')
- 69.** (1) The judgement was in favour of The Black Mouse Ltd, the largest infrastructure company in the country.  
 (2) But the court's ruling was biased towards the ones represented by unscrupulous corporate lawyers.  
 (3) In the long run, it is the common man who will have to pay the price in case of negligence by the company.  
 (4) The compensation offered in case of any eventuality is not even sufficient for basic medical treatment.  
 (A) FJFJ (B) FJJJ (C) JIJI (D) IFIF

**DIRECTIONS** for question 70: Provided below are six statements that form the content of a single paragraph. Each of the statements contains a blank followed by two words in bold print, labelled **(a)** and **(b)**. One of these words is the word better suited to fill the blank. Also check the sentences for grammatical correctness and then mark the correct answer option.

- 70.** (a) There are so many ghosts about, and their silent \_\_\_\_\_ **whispers** **(a)**/ **sighs** **(b)** make us feel so sad.  
 (b) In the sunlight – in the daytime, when Nature is alive and busy all around us, we are like the open hill-sides and the deep woods well enough: but in the night, when our Mother Earth

has gone to sleep, and left us \_\_\_\_\_ **wakeful** **(a)**/ **waking** **(b)**, the world seems so lonesome, and we get frightened, like children in a silent house.

- (c) Then we sit and sob, and long for the gas-lit streets, the sounds of human voices, and the answering \_\_\_\_\_ **throb** **(a)**/ **pulse** **(b)** of human life.  
 (d) We are creatures of the sun, we men and women. We love light and life. That is why we \_\_\_\_\_ **press** **(a)**/ **gravitate** **(b)** into the towns and cities, and the country grows more and more deserted every year.  
 (e) Let us \_\_\_\_\_ **gather** **(a)**/ **crowd** **(b)** together at the great cities, and light huge bonfires of a million gas-jets, and shout and sing together and feel brave.  
 (f) We feel so helpless and as little in the great stillness, when the dark trees \_\_\_\_\_ **rustle** **(a)**/ **vibrate** **(b)** in the night-wind.

Which of the following choices has the correct inferences?

- (A) The grammatically incorrect sentences are b, c, e, f; the correct sequence of the appropriate words from (a) to (f) is "baaaaa".  
 (B) The grammatically incorrect sentences are a, d, e, f; the sequence of the appropriate words from (a) to (f) is "ababaa".  
 (C) The grammatically incorrect sentences are c, d, e, f; the sequence of the appropriate words from (a) to (f) is "baaabbb".  
 (D) The grammatically incorrect sentences are a, b, c, d; the sequence of the appropriate words from (a) to (f) is "babaaa".

**DIRECTIONS** for questions 71 and 72: Answer the questions on the basis of the information given below.

Three friends, Shilpa, Shraddha and Shruti, bet in a race in which six of their pets – Nestor, Snowland, Napolean, Squealer, Major and Boxer – participate. It is known that the first four positions in the race are attained by four of the six above-mentioned pets. The three friends speculated on the pets that may finish in each of the first four positions of the race. Their speculations are listed in the table below.

Name	Position			
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>
<b>Shilpa</b>	Nestor	Boxer	Napolean	Snowland
<b>Shraddha</b>	Boxer	Major	Nestor	Squealer
<b>Shruti</b>	Snowland	Napolean	Boxer	Squealer

The following additional information is known.

- (i) No pet finished the race in the same position as speculated by Shilpa but exactly two of the four pets speculated by her finished the race within the first four positions.
- (ii) Exactly two pets finished the race in the same positions as speculated by Shraddha, while only one pet speculated by her failed to finish within the first four positions.
- (iii) Exactly two pets speculated by Shruti finished the race with the first four positions, while only one pet finished the race in the position as she speculated.

- 71.** Which pet finished the race in the third position?

- (A) Napolean  
 (B) Major  
 (C) Nestor  
 (D) Squealer

- 72.** Which of the following is the correct order of the pets which finished the race in the first, second, third and fourth positions respectively?

- (A) Nestor, Boxer, Squealer, Major  
 (B) Major, Snowland, Nestor, Squealer  
 (C) Major, Napolean, Nestor, Squealer  
 (D) Boxer, Squealer, Nestor, Snowland.

**DIRECTIONS** for questions 73 to 76: Read the following passage and answer the questions that follow it.

**G**enes and culture are often thought of as opposite ends of the nature–nurture spectrum, but there can be possible interactions. Genetic association studies suggest that variation within the genes of central neurotransmitter systems, particularly the serotonin (5-HTTLPR, MAOA-uVNTR) are associated with individual differences in social sensitivity, which reflects the degree of emotional responsiveness to social events and experiences.

Over the last 30 years, social psychologists have documented an impressive array of psychocultural differences. For example, in East Asian cultures the self tends to be defined in relationship to the group, or collective, whereas in Western cultures (e.g. Europe and the nations of the former British Commonwealth) there is a greater proclivity for the self to be viewed as unique, stable and independent of the social group. A critical question raised by such findings is how do such cultural differences arise?

Answering this complex question will require integrating many levels of analysis including ecological, sociological, demographic, economic, psychological and biological. A helpful means of integrating these diverse influences is to adopt a cultural neuroscience perspective, because the brain is the central hub where each of these influences converge. Accordingly, genes affecting brain function are likely to influence the adoption and formation of cultural norms and, conversely, culture may also shape the expression and selection of genes. Although the study of psychological genetics is in its infancy and much is still to be learned, in this article, we present data suggesting that variation in several genes known to affect brain function appear to influence the degree to which one is emotionally responsive to the social environment.

We begin our discussion of genetics with a focus on variation in the serotonin transporter gene (*SLC6A4*) and, in particular, a polymorphism within this gene that is probably the most studied polymorphism in psychiatry. The serotonin transporter is best known as the site of action for the drug Prozac and related antidepressants (Wong et al., 1995). Within a portion of the serotonin transporter gene, there is a segment of DNA that is longer in some individuals than others (Lesch et al., 1994). In straightforward fashion, the short version is called the short allele, whereas the long version is called the long allele. An individual can then have one of three possible genotypes at this location in the DNA (which is identified by the acronym 5-HTTLPR): short/short, short/long, or long/long.

An initial clue to the psychological role of the 5-HTTLPR comes from seminal work examining the interaction of the 5-HTTLPR with stressful life events (Caspi et al., 2003). This study found that individuals with the short allele (particularly those with the short/short genotype) were at greater risk for depression when exposed to life stressors such as divorce or the death of a loved one than were long/long individuals. An adverse social environment during childhood had similar effects. In other words, short/short individuals were more sensitive to the depression-inducing effects of social stress than were long/long individuals. This interaction between the 5-HTTLPR and stress extends to other phenotypes associated with the serotonin system as well, including post-traumatic stress disorder (Xie et al., 2009), antisocial behavior (Li and Lee, in press), substance use (Brody et al., 2009a), suicidality (Roy et al., 2007), sleep quality (Brummett et al., 2007) and anxiety sensitivity (Stein et al., 2007). The multiple phenotypes affected by this interaction attests to the robustness of the effect. According to reviews of the role of the 5-HTTLPR in moderating the effects of stress upon depression, the effect is most reproducible when objective measures of stress are used (Uher and McGuffin, 2010), rather than subjective measures, for which the interaction has not universally replicated (Risch et al., 2009). Clearly, further research is needed to identify the molecular, and particularly psychological, moderators of this interaction effect.

One important variable potentially influencing the relationship between the 5-HTTLPR, stress and psychological state may be the positivity of the social environment. Thus, the association of the short allele with sensitivity to negative events appears to be only half the story. In a study of depressive symptomatology, when short/short individuals had experienced more positive than negative events over the last 6 months, they had the lowest levels of depressive symptomatology in the sample (Taylor et al., 2006), indicating that short/short individuals are more sensitive to positive life events as well as negative ones. Subsequent research has shown that this relationship between life events and affect for individuals with the short/short genotype was primarily driven by the social events, as the nonsocial events were not significantly related to affect (Way and Taylor, 2010). Other groups have found heightened sensitivity to positive social influences amongst short allele carriers as well, which has even been documented using neurochemical measures (Manuck et al., 2004). Thus, these results suggest that the 5-HTTLPR moderates sensitivity to social influence regardless of its valence.

Because short/short individuals are more sensitive to the social realm, social support appears to be more important for maintaining their well-being. In support of this claim, short/short individuals exposed to a natural disaster (a hurricane) were at no higher risk for depression than long/long individuals provided they perceived that they had good social support (Kilpatrick et al., 2007). However, if short/short individuals exposed to this disaster perceived that they did not have good social support they had a 4.5 times greater risk for depression. Similarly, a randomized control trial designed to improve nurturance and involved parenting reduced adolescent risky behaviour, but only amongst those with the short allele (Brody et al., 2009b). A similar differential sensitivity was seen among adolescents in foster care. If the short/short individuals had a reliable mentor present in their life they were at no higher risk for depression than adolescents with the other genotypes. However, if they did not have such support they were at a high risk for depression (Kaufman et al., 2004). Thus, being embedded in a richly interconnected social network, as is present in collectivistic cultures, might be particularly important for maintaining the well-being of short/short individuals.

**DIRECTIONS** for questions 77 and 78: Answer the questions on the basis of the information given below.

Five executives of a company, namely A, B, C, D and E are to be seated around a circular table for a meeting. Two of them are from Delhi and the remaining three are from Mumbai. They must be seated under the following constraints:

- (i) Both the persons from Delhi cannot be seated together.
  - (ii) The persons adjacent to E must be either both A and C or neither of A and C.
  - (iii) E must have a person from Delhi to his immediate right.

Any additional information provided in a particular question pertains to that individual question only.

Which of the following is definitely true if Maslow's theory is held to be correct?

**DIRECTIONS** for questions 84 to 87: Read the following passage and answer the questions that follow it.

A novel that I regard as nearly talismanic in its ability to speak in a voice that is uniquely its own is Upamanyu Chatterjee's *English, August*. No one could accuse it of translating India for the West. And yet: On the one hand it represents a successful attempt at conveying small-town Indian realities in an English that was somehow familiar and yet new; on the other hand, however, its own narration casts doubt on any easy transportation of English into small-town India. A character in *English, August* is talking to the narrator in his office at a publishing company in Delhi, and says, about a manuscript on his table: "Dr Prem Krishen holds a PhD on Jane Austen from Meerut University. Have you ever been to Meerut? A vile place, but comfortably Indian. What is Jane Austen doing in Meerut?" He goes on to ask: "Why is some Jat teenager in Meerut reading Jane Austen? Why does a place like Meerut have a course in English at all?" Why, indeed. And hasn't the relevance of these questions weakened today?

Chatterjee's novel was published in 1988. The questions it still hold true but much has also changed. A decade after the book's publication, in a landmark essay titled 'Edmund Wilson in Benares,' critic and novelist Pankaj Mishra went to considerable lengths to answer the question about Jane Austen in Meerut. Mishra's essay described four months from the same year that *English, August* came out; it painted a portrait of ruin in decaying towns like Varanasi and Allahabad, their decline redeemed by the burgeoning literary consciousness in the minds of provincial youth. Mishra's thuggish friend Rajesh, who was introduced to us in the essay, had a past mired in poverty and childhood labour in a carpet factory. But on reading Flaubert's *Sentimental Education* and Wilson's essay about the book, Rajesh told Mishra, "It is

the story of my world. I know these people well. Your hero, Edmund Wilson, he also knows them." For someone like Rajesh, *Sentimental Education* held a mirror to the "grimy underside of middle-class society." Flaubert's fiction wasn't so much about distant France; it was a report on the corruption common in Allahabad.

'Edmund Wilson in Benares' first appeared in the *New York Review of Books* in April 1998. I bought that issue at a subway stop near Columbia University in New York City. Upon reading Mishra's essay in its pages, I forgot that this wasn't the first time an Indian writer had offered an account of the influence a Western writer exercised on him or her. Instead, I was moved by the portrait that Mishra painted because the small room in which Rajesh lived was familiar to me, as was his mother's house in the village. I had known intimately the landscape of thwarted hopes. But, more than anything else, I was ready to celebrate the gesture through which Edmund Wilson and Flaubert had been made Indian. These figures no longer appeared alien to me; equally crucial, they didn't look larger than the small people and small lives that I had once known in Bihar's small towns and villages.

A few more years passed. Watching Vishal Bhardwaj's epic film *Maqbool*, a marvellous adaptation of Macbeth, I once again remembered *English, August*. In the novel, our narrator was given sleeping pills "called Somnorax ... made in Ulhasnagar, near Bombay" and there was "a supine king on each packet, with hands beneath his head and eyes wide as chasms." Below the king, this quote:

— the innocent sleep,  
Sleep that knits up the ravell'd sleeve of care,  
The death of each day's life, sore labour's bath,  
Balm of hurt minds, great nature's second course,  
Chief nourisher in life's feast. —

Shakespeare, *Macbeth*

In *English, August* the narrator read these words on the packets of Somnorax and found himself moved by this attempt to find "some use for English Literature's most famous insomniac." But I, on watching *Maqbool*, thought, "Such glory!" Bollywood has long borrowed from Hollywood, but this wasn't like that at all. Neither was it like a writer explaining the Indian joint-family system, or caste, to someone in London or New York. Instead, *Maqbool* was an example of a new kind of translation: it took what was essential about the context in which the original story was told and let it speak to what is essential and specific, and therefore eloquent, about the context in which the new art was being made. In this way, Macbeth came to Mumbai as an underworld don.

**DIRECTIONS** for question 88: The following question has a paragraph from which the last sentence has been deleted. From the given options, choose the sentence that completes the paragraph in the most appropriate way.

88. Economics operates legitimately and usefully within a 'given' framework which lies altogether outside the economic calculus. We might say that economics does not stand on its own feet, or that it is a 'derived' body of thought – derived from meta-economics. If the economist fails to study meta-economics, or, even worse, if he remains unaware of the fact that there are boundaries to the applicability of the economic calculus, he is likely to fall into a similar

kind of error as that of certain medieval theologians who tried to settle questions of physics by means of biblical quotations.

- (A) Every science is beneficial within its proper limits, but becomes evil as soon as it transgresses them.
- (B) Hence, a proper – if not complete – study of meta-economics is critical to the economist.
- (C) An economist, therefore, would require to be scrupulous enough to keep away from religious influence.
- (D) Being aware of the boundaries of economic calculus may prove to be beneficial for an economist.

**DIRECTIONS** for questions 89 to 92: Read the following passage and answer the questions that follow it.

Just-released findings of the Accenture 2014 College Graduate Employment Survey offer good news and bad news for employers of entry-level talent. First the bad news: most of those employers aren't doing much to provide their new hires with the training and support they need to get their careers off to a strong start. More than half (52 percent) of respondents who graduated in 2012 and 2013 and managed to find jobs tell us they did not receive any formal training in those positions.

The good news is that, as young employees increasingly value career-relevant skills, and as awareness spreads more quickly of which employers provide good development training, there is a new opportunity for some employers to shine. By building a distinctive program for training new hires, and getting the word out about it, an organization today can gain an edge in the competition for top talent.

Why would it be that so many employers fail to provide formal training? There are all kinds of reasons. Training can be expensive and, as with many investments in highly mobile workers, the 'return on investment' (ROI) is not always clear. In a time of high unemployment, it might be tempting to place the whole burden on employees to gain the skills they need, and quickly replace those who don't. Some managers might even believe the best test of talent is to put people into unfamiliar settings and see if they can figure things out for themselves.

Graduates themselves are increasingly attuned to the value of work-relevant training. For example, compared with past years of the survey, we find the percentage of students choosing majors based on work prospects rising substantially (75 percent of 2014 graduates say they took into account the availability of jobs in their field before deciding their major, compared to 70 percent of 2013 graduates and 65 percent of 2012 graduates). Expect the best of them to also consider the availability of training as they choose among competing job offers. Indeed, eight out of 10 graduating seniors told us that they expect formal training from their employers.

By improving the processes for cultivating your newest and least experienced workers, you can remove much of the risk in your talent pipeline. Currently, nearly half of those who graduated within the last two years (46 percent) say they consider themselves "underemployed" and working in jobs that do not require their college degree, and more than half (56 percent) report they do not expect to stay at their first job more than two years – or that they have already left their first job. Such attrition represents an unnecessary setback for the employers who will have to go through the expensive process of finding and attracting promising young talent again. To "future proof" your business, you need to fill and maintain a pipeline of people steadily gaining experience and advancing toward leadership roles.

Finally, if you do invest to make your training of new hires better than average, be sure to figure that into your discussions with candidates. For top candidates, a company offering a strong talent development program and showing real dedication to new hires' career advancement is very positively differentiated. Emphasize your commitment to training in your corporate social media activity, too – and pay attention to how it is being talked about. If leaving new employees to sink or swim was ever a good option, it surely isn't now in an age when new grads communicate their experience so richly and transparently to their networks. Neglect the training they need and want, and the word will get around quickly.

89. Given below are a set of statements. Identify from among these statements the main conclusion that the author supports. Also identify the statements which are assumptions made by prospective employers and which the author calls into question. Some statements might neither be assumptions nor conclusions.
- (a) New employees are overwhelmed by the professional demands of the real world; there are certain skills that college graduates don't already have when they walk through the corporate door.

- (b) Employers can leave an entry-level employee untrained at their own peril.
- (c) Employees need to be coached on what the company expects of them as its brand ambassadors and not to run afoul of social media communications policies.
- (d) Some of the new hires who are brought on would always leave.
- (e) The sink or swim approach to retaining young graduates separates the wheat from the chaff.

**DIRECTIONS** for questions 97 to 100: Read the following passage and answer the questions that follow it.

**A** vitally important issue that has altogether fallen off India's economic-political discourse is growing economic inequality. In part, this is because of the continuing hangover of the euphoria generated by economic liberalisation, and the growth of social-Darwinist ideas and moral indifference towards the poor within our burgeoning middle class. In part, this also reflects India's Rightward political drift, and the declining ideological-political influence of the Left and its own retreat from egalitarianism. The deplorably mindless neo-liberal consensus that exists within the bulk of our political class, duly reflected in the media, inures us to growing disparities.

So the Organisation for Economic Cooperation and Development (the rich nations' club) and the International Monetary Fund (of all institutions!) have to remind us of the explosive growth of income and wealth inequalities since neo-liberal policies were launched 23 years ago. The OECD recently said: "Inequality in earnings has doubled in India over the last two decades, making it the worst performer on this count of all emerging economies. The top 10 per cent of India's wage earners now make 12 times more than the bottom 10 per cent, up from a ratio of six in the early 1990s."

And the IMF's Christiane Lagarde has just said: "In India, the net worth of the billionaire community increased 12-fold in 15 years, enough to eliminate absolute poverty in this country twice over".

These reports should deeply shame us. India's own National Sample Survey figures on disparities in per-capita consumption expenditure also tell a sordid story through the Gini coefficient. (This ranges from zero to one: zero represents perfect equality and one total inequality.) Between 2004-05 and 2011-12, the coefficient rose in urban areas from 0.35 to an all-time high of 0.37. And in rural areas, it increased from 0.26 to 0.28 – the first rise in almost 35 years.

Regional disparities have also skyrocketed. The per-capita expenditure gap between rural and urban areas jumped from 63 per cent in 1993-94 to 84 per cent in 2011-12. The gap between villages in the richest and poorest states increased from 35 to 68 per cent, and that between their urban citizens rose from 36 to 45 per cent.

These obscene class and regional inequalities result from a severely skewed distribution of assets, including land and capital, access to education, coupled with growth imbalances, painfully slow job creation and worsening income distribution which favours the rich. The top 10 per cent of India's wage-earners make almost five times more than the median 10 per cent but this median makes just 40 per cent more than the bottom tenth.

India is becoming an increasingly inequitable, "rich-take-all", pathological, society marked by exclusion and immobility, where an individual's circumstances of birth, and class and caste privileges, matter more than his/her effort. This has grave consequences for democracy. Without inclusiveness and a degree of social cohesion – or at least the prospect of cohesion – democracy becomes merely procedural, formal and hollow. It's only when all citizens acquire an equal sense of ownership in a collective national project that a substantive, healthy democracy flourishes.

An economy of exclusion criminally wastes precious human potential. Rising inequalities eventually harm the quality, pace and sustainability of growth itself. If India is to achieve genuine progress rather than growth, it will have to radically redistribute assets, institute land reforms, and provide good-quality health care, education, food security and social protection to all. We must raise wages, further tax the rich, and impose ceilings on profits and executive incomes. This means embracing a new anti-neoliberal policy paradigm.

97. The primary purpose of the passage is to
- (A) discuss how rising inequality threatens our democracy.
  - (B) point out that regional disparities have skyrocketed in India.
  - (C) recommend steps to address the expenditure gap between the rich and poor states in India.
  - (D) condemn the government apathy towards the ones left behind in the economy race.
98. All of the following statements can be understood from the passage EXCEPT?
- (A) The author attributes growing economic inequality in India to the hype surrounding economic liberalization, a survival of the fittest syndrome, middle-class disdain towards the poor, capitalistic political mentality, reduced communist influence and free market ideas trumping socialist discourse.
  - (B) The top 10 percent of India's wage earners made 6 times more money than the bottom 10 percent when neo-liberal policies were launched.
  - (C) The median 10 percent wage-earners earn only marginally more than the bottom 10 percent.
  - (D) The networth of the billionaire community in India as of today is enough to eliminate absolute poverty in the country twice over.
99. Which of the following statements can be inferred from the passage?
- (A) To address the issue of rising inequalities, the author recommends economic inclusion and social mobility.
  - (B) Wealth redistribution and promoting better quality of life are recommended by the author to address the issue of rising inequalities.
  - (C) To address the issue of rising inequalities, the author recommends the prospect of a degree of social cohesion and higher wages.
  - (D) All of the above.
100. The author mentions Christiane Lagarde's observation to probably support the contention that
- (A) "the apathy towards the poor" should deeply shame us.
  - (B) corporate philanthropy is practically an unheard of concept in India.
  - (C) it took a foreign hand to expose what we have till now ignored as an inconvenient truth.
  - (D) the OECD and the IMF should not meddle with the internal affairs of our nation.

**(Key and Solutions for AIMCAT1503N)**

**Key**

**SECTION – I**

1. D	6. A	11. B	16. B	21. C	26. B	31. C	36. B	41. D	46. C
2. B	7. B	12. C	17. D	22. A	27. B	32. A	37. C	42. D	47. B
3. D	8. B	13. B	18. B	23. A	28. D	33. D	38. B	43. B	48. A
4. D	9. B	14. D	19. A	24. A	29. A	34. C	39. D	44. B	49. B
5. C	10. C	15. D	20. A	25. D	30. D	35. D	40. D	45. A	50. D

**SECTION – II**

51. B	56. B	61. A	66. C	71. C	76. B	81. C	86. D	91. B	96. A
52. D	57. D	62. C	67. C	72. B	77. D	82. D	87. D	92. C	97. A
53. C	58. D	63. D	68. A	73. B	78. B	83. A	88. B	93. C	98. C
54. B	59. C	64. C	69. B	74. D	79. B	84. C	89. C	94. A	99. D
55. A	60. D	65. B	70. A	75. D	80. A	85. A	90. A	95. C	100. A

**Solutions**

**SECTION – I**

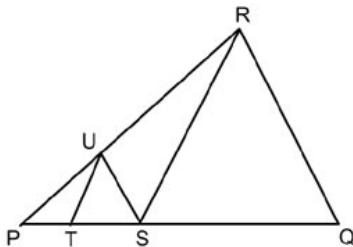
**Solutions for questions 1 to 5:**

1. Total quantity of mixture initially = 120 litres.  
Quantity of mixture remaining after one fifth of it was sold =  
 $120 - \frac{1}{5}(120) = 96$  litres.

Quantity of water added = 24 litres.  
Ratio of water and milk in the mixture now

$$= \frac{1}{6}(96) + 24 : \frac{5}{6}(96) = 1 : 2 \quad \text{Choice (D)}$$

2.



In  $\triangle PQR$ ,  $UT$  and  $RS$  are parallel.  $\therefore PT/PS = PU/PR$ .  
In  $\triangle PQR$ ,  $US$  and  $RQ$  are parallel.  
 $\therefore PS/PQ = PU/PR = 2/3$  (given)  
 $\therefore (PT + TS) : SQ = 2 : 3 = 10 : 15$   
and  $PT : TS = 2 : 3 = 4 : 6$   
 $\therefore (PT : TS) : SQ = 4 : 6 : 15$  and  $TS : SQ = 2 : 5$   
Choice (B)

3. There are three possible cases here :-

case (i)  $- \underline{\quad} \underline{5} \underline{6}$

case (ii)  $- \underline{5} \underline{\quad} \underline{6} \underline{\quad}$

case (iii)  $- \underline{5} \underline{6} \underline{\quad} \underline{\quad}$

case (i) The digits to the left of 56 have to form a number that is less than 56. So the numbers will range from 10 to 55. So, number of ways this can be done  $\rightarrow 46$ .

Case (ii) The thousands place can be filled up in 9 ways i.e., numbers from 1 to 9. The units place can be filled up with numbers from 0 to 9 i.e., in 10 ways.

So number of ways  $= 9 \times 10 = 90$ .

Case (iii) The numbers in the last two places can be filled with any number ranging from 0 to 99. This can be done in 100 ways. But the number 5656 must not be included.

$\therefore$  Possibilities in case (iii) are  $100 - 1 = 99$   
Hence the total number of ways  $= 46 + 90 + 99 = 235$   
Choice (D)

4.  $|x + 3| = 4 \Rightarrow x = 1$  or  $x = -7$   
 $\therefore y = 7 - |1 - 2| = 6$  or  $7 - |-7 - 2| = -2$   
 $\therefore xy$  can be 1(6) or (-7)(-2). The greatest value is 14.  
Choice (D)
5. Any number when divided by 9 may leave 9 distinct remainders 0, 1, 2, .....8.  
But squares of natural numbers will leave only 4 distinct remainders which can be obtained by finding the remainders of the squares  $0^2, 1^2, 2^2, \dots, 8^2$ .  
The four distinct remainders are 0, 1, 4 and 7.  
Hence if 303 squares are present  
Even if all the remainders are evenly distributed, (75, 76, 76, 76), we see that at least one remainder has to occur at least 76 times, i.e., the maximum number of occurrences of a remainder M is at least 76.  
In other words one can always find 76 elements of P which leave the same remainder when divided by 9.  
Choice (C)

**Solutions for questions 6 and 7:**

The difference between the three-digit number and the number formed by reversing the digits is always a multiple of 99, which lies the interval [0, 891]. Given that N  $\times$  (the difference of M and its reverse)  $= 22770 = 99 \times 5 \times 46$

$\therefore$  The difference between M and its reverse is 495 and N = 46

6. When both N and M are inverted the product will be  $(N + \Delta N)(M + \Delta M)$  where  $N + \Delta N$  = reverse of N = 64, and  $\Delta M$  is known as 495  
Now difference between N ( $M + \Delta M$ ) i.e., the first product that Ritu calculated, and  $(N + \Delta N)(M + \Delta M)$  is given as 12816.  $\Rightarrow \Delta N(M + \Delta M) = 12816$   
 $\Rightarrow M + 495 = \frac{12816}{18} = 712$

Therefore we can calculate M to be 217. Hence correct product  $= 46 \times 217 = 9982$

**Alternative Solution:**

Once, we know that N = 46, we can check the options for divisibility by 46. Only option (A) and C are divisible by 46.

However, in case of choice (C),  $32752 = 46 \times 712$ , i.e., if 217 was used instead of 712, then the product would be less and not more. Hence choice (A). Choice (A)

7. Since it is known that  $\Delta M = 495$ , the minimum possible sum of the digits of M is possible when  
 $\therefore M = 106$   
 $\therefore \text{Sum of the digits of } M = 1 + 0 + 6 = 7$  Choice (B)

#### Solutions for questions 8 to 11:

8. Share of 'X' by value =  $66^2/3\%$  of 6600 = 4400  
 $\Rightarrow$  Share of "others" = ₹2,200 thousands.  
Now the number of units of widgets sold by  
 $X = \frac{4400}{4} = 1100$  thousand units since this is 50%.  
 $\therefore$  Average selling price of widgets other manufactures  
 $= \frac{2200}{1100} = ₹2$  Choice (B)

9. Calculating total sales revenue and profits.

Year	Sales revenue of X ₹'000	Profit = profit% × sales revenue (₹ '000)
2006	2930	244
2007	4400↑	220↓
2008	2550↓	255↑
2009	3675↑	551↑
2010	4800↑	960↑
2011	4350↓	725↓
2012	4150↓	620↓
2013	3760↓	940↑

Hence in 2009 to 2012 (four years). The sales revenue and profit moved in tandem. Choice (B)

10. Using the second column from earlier solution we get

Year	Total market sales	Sales revenue of X
2006	5860	2930
2007	6600↑	4400↑
2008	8500↑	2550↓
2009	10200↑	3675↑
2010	12000↑	4800↑
2011	14500↑	4350↓
2012	16600↑	4150↓
2013	18800↑	3760↓

$\therefore$  Only in 2007, 2009 and 2010 did the sales revenue of X move in tandem with total market sales of widget. Choice (C)

- 11.

Year	Profit = profit % × sales revenue (₹'000)
2006	244
2007	220
2008	255
2009	551
2010	960
2011	725
2012	620
2013	940

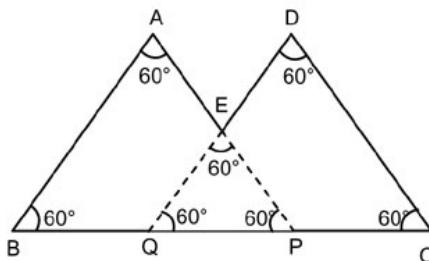
By observation only in the year 2009 the percentage increase in the profit of company X was more than 100%.  
 $\therefore$  The percentage increase in the profit of company X was highest in the year 2009. Choice (B)

#### Solutions for questions 12 to 16:

12. Since the students get 15 marks, they answered 5 questions. We can select any 5 questions out.

Out of 8 questions, this can be done in  ${}^8C_5$  ways. Each of the remaining three countries are incorrectly matched. This can happen in 2 ways.  
 $\therefore$  The total number of ways in which students can get 15 marks is  ${}^8C_5 (2) = 112$  Choice (C)

- 13.



Given  $\angle B = 60^\circ$ ,  $AB = 12$  cm  $\angle E = 300^\circ$   
As ABCDE is symmetric about the line  $\ell$  and the sum of the interior angles in a pentagon is  $540^\circ$ ,  $\angle A = \angle B = \angle C = \angle D = 60^\circ$

Produce AE to meet BC at P.  
Produce DE to meet BC at Q.

And also given that, area of ABCDE =  $56\sqrt{3}$  sq.cm

$$2 [\text{Area} (\Delta ABP)] - \text{Area} (\text{EQP}) = 56\sqrt{3}$$

$$2 \left[ \frac{\sqrt{3}(12)^2}{4} \right] - \frac{\sqrt{3}(PQ)^2}{4} = 56\sqrt{3}$$

$$\Rightarrow \frac{\sqrt{3}(PQ)^2}{4} = 16\sqrt{3} \Rightarrow PQ = 8$$

$$\therefore BC = BP + QC - PQ = 12 + 12 - 8 = 16 \text{ cm.}$$

Choice (B)

14. Counting the final number of terms,

$$P + 240 + P + 17 = 473$$

$\Rightarrow P = 108 \Rightarrow 47^{\text{th}}$  term of the old series becomes  $155^{\text{th}}$  term (from the start) of the new series, while the  $211^{\text{th}}$  term becomes the  $319^{\text{th}}$  term, i.e., the  $155^{\text{th}}$  term from the end.

$$S_{473} = \frac{473 \times \text{middle term}}{2} = 473 \times [t_{237}]$$

$$\frac{473 \times [t_{155} + t_{319}]}{2} = \frac{473}{2} \times \left[ 23 \frac{3}{43} + 177 \frac{13}{43} \right]$$

$$= 473 \times [100 \frac{8}{43}] = 47388 \quad \text{Choice (D)}$$

15. We get the highest power of  $p$  in  $p!$  as 5, when  $p = 5k$ , where  $k$  is a prime greater than 5, as  $k$  repeats for only 5 times and 5 repeats for more than 5 times.

$\therefore$  Here  $p$  has 12 possibilities (i.e., up to 5(47)).

If  $k$  is a composite number, then the highest power of  $p$  in  $p!$  is always greater than 5.

If  $p = 2^a \times 3^b$ , then for  $a = 2$  and  $b = 1$ , the highest power of  $p$  in  $p!$  is 5.

$\therefore$  There are at least 13 possibilities.

#### Alternative solution:

Let  $k$  be the greatest prime factor of  $p$ . (Let  $k > 5$ ). The highest power of  $p$  in  $p!$  is given to be 5. We need (at least) 5 ' $k$ 's among all the numbers upto  $p$ .

$\therefore p \geq 5k$ . Also  $p < 6k$  (if  $p = 6k$  or more,  $k$  occurs at least 6 times in  $p!$  and the other prime factors would occur more times and hence  $p^6$  would also be a factor of  $p!$ ).

But as  $p$  itself is a multiple of  $k$ ,  $p = 5k$ .

There are 12 numbers of this kind which are less than or equal to 250, namely 5(7), 5(11), 5(13), ..., 5(47)

$$\therefore N \geq 12$$

Choice (D)

16. If  $z$  is negative  $xz < yz$ .

(When both sides of an inequality are multiplied by a negative quantity the sign of the inequality is reversed.)

Choice (B)

**Solutions for questions 17 to 20:**

17. Given in MS

$$2N = D(k) + 10 \quad (1)$$

(where  $k$  is a natural number)  
 $\Rightarrow D > 10 \quad (a)$

Consider statement I:

$$N = 2D(p) + 26 \quad (2)$$

(where  $p$  is a natural number)  
 $\Rightarrow 2D > 26, i.e., D > 13 \quad (b)$

Now (1) —  $2 \times (2)$

$$\Rightarrow D(k - 4p) = 42$$

$$\Rightarrow D \times (\text{some natural number}) = 42$$

$$\Rightarrow D = 42 \text{ or a factor of } 42 \quad (c)$$

Now, considering the conclusions (a), (b) and (c) together, there is a set of possible values of  $D$ , where  $D = 42$  or  $21$  or  $14$ .

$\therefore$  There is no contradiction.

$\therefore$  MS is not inconsistent with I.

Consider statement II:

$$N = D(m) + 17 \quad (3)$$

(where  $m$  is a natural number)

$$\Rightarrow D > 17 \quad (d)$$

Now, (1) —  $2 \times (3)$

$$\Rightarrow D(k - 2m) = 24 \Rightarrow D \times (\text{some natural number}) = 24$$

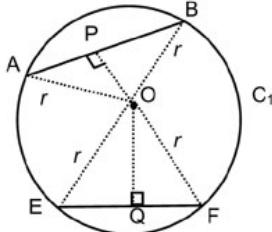
$$\Rightarrow D = 24 \text{ or a factor of } 24 \quad (e)$$

Now, considering conclusions (a), (d) and (e) together, there is a possible values for  $D$ , where  $D = 24$ .

$\therefore$  There is no contradiction.  $\therefore$  MS is not inconsistent with II. Hence MS is inconsistent with neither I nor II.

Choice (D)

18.



$$AP = PB \text{ and } EQ = QF$$

The basic situation given in the MS is shown in the diagram above. Now, if  $AB$  and  $EF$  are chords of the same circle  $C_1$  of which  $O$  is the centre, then

$$AO = BO = EO = FO = r \text{ (radius of circle)} \quad (a)$$

Also given,  $EF = 6$  cm and  $AB = 14$  cm

Consider statement I:

Given  $OQ = 11$  cm and  $OP = 9$  cm

$$\Rightarrow OA = \sqrt{AP^2 + OP^2} = \sqrt{\left(\frac{14}{2}\right)^2 + 9^2} = \sqrt{130} \text{ cm}$$

Similarly, we get  $OA = OB = OE = OF = \sqrt{130}$  cm — (b)

Since the conclusions (a) and (b) are not contradicting each other, MS is not inconsistent with I.

Consider statement II:

Given  $OQ = 7$  cm and  $OP = 6$  cm

Now  $OA = OB = \sqrt{AP^2 + CP^2}$

$$= \sqrt{\left(\frac{14}{2}\right)^2 + 6^2} = \sqrt{85} \text{ cm}$$

$$\text{But } OE = OF = \sqrt{EQ^2 + OQ^2} = \sqrt{\left(\frac{6}{2}\right)^2 + 7^2} = \sqrt{58} \text{ cm}$$

$$\text{Hence, } OA = OB \neq OE = OF \quad (c)$$

Since the conclusions (a) and (c) contradict each other, MS and II are inconsistent with each other.

Hence, MS is inconsistent with II but not inconsistent with I.

Choice (B)

19. Consider statement I:

Since Bunty attempted a total of 49 questions, his maximum possible net score =  $49 \times 4 = 196$  marks. Now, for each question (out of the 49) that he answered incorrectly his net score will go down by 5 marks. Hence his score must be of the form  $196 - 5w$ , where  $w = 0, 1, 2, 3, \dots$

But according to the information given in the MS, the net score of Bunty was 124, which is not of the form  $196 - 500$ . Hence MS is inconsistent with I.

Consider statement II:

For twenty mistakes Bunty would earn a penalty of 20 marks. Hence if he attempted 'a' question in total, then his net score will be  $(a - 20)4 - 20$  marks

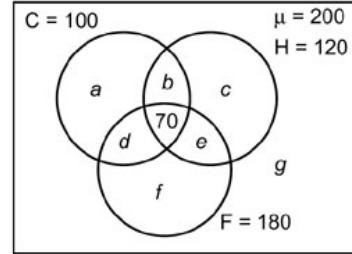
$$\Rightarrow 4a - 100 \text{ marks.}$$

$\Rightarrow$  He attempted 20 or more question and his final score is of the form  $(4a - 100)$ , where  $a \geq 20$ .

According to the MS, his net score is 124, which can be of the form  $4a - 100$ , for  $a \geq 20$ . Hence there is no contradiction and MS is not inconsistent with II.

Choice (A)

20. The following diagram represents the information given in the MS.



$$\Rightarrow a + b + c + d + 70 + e + f + g = 200 \quad (1)$$

Where each of  $a, b, c, d, e, f$  and  $g \geq 0$ .

Consider statement I:

If 180 students play football, then clearly, at most  $200 - 180 = 20$  students can play none of the three games (i.e.,  $g \leq 20$ ). But statement I mentions that 26 children play none of the three games (i.e.,  $g = 26$ ). Hence, MS is inconsistent with I.

Consider statement II:

Given  $e = 36$

$$\Rightarrow a + b + c + d + f + g = 200 - 70 - 36 = 94$$

which is possible, i.e., there is no contradiction.

Hence, MS is not inconsistent with II.

Choice (A)

**Solutions for questions 21 to 23:**

21. If the roots of a quadratic equation are of opposite sign, then constant term must be less than 0.

$$\therefore a^2 - 5a + 4 < 0$$

$$(a-1)(a-4) < 0 \Rightarrow a \in (1, 4)$$

Choice (C)

22. In Rahuian degrees the minutes hand travels a full circle in 1 hour, i.e., 120 minutes

i.e.  $720^\circ$  in 120 minutes, i.e.,  $6^\circ$  per min and the hours hand travels  $720/36 = 20^\circ$  per hour and  $20^\circ/120 = 1/6^\circ$  minutes

At 9 : 48, the hours hand will be at a position  $9 \times 20 + 48/6 = 188^\circ$  and minutes hand at  $48 \times 6 = 288^\circ$

$$\therefore \text{Angle between them} = 288 - 188 = 100 \text{ Rahuian degrees.}$$

Choice (A)

23. Consider the Rhombus ABCD, in right triangle PAD AP

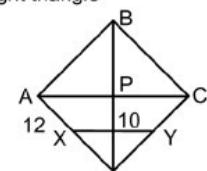
$$= \frac{1}{2} AC = \sqrt{12^2 - 10^2} = \sqrt{44}$$

$$\text{and also } XY = \frac{1}{2} AC$$

(since XY is joining the midpoints of AD and CD in  $\triangle ACD$ )

$$\therefore XY = \frac{1}{2} AC = \frac{1}{2} \times 2\sqrt{44} = 2\sqrt{11}$$

Choice (A)



### Solutions for questions 24 to 27:

On day 1, even though the supply is only 72.5 kilolitres, normally available water in the tank was 76.2 kilolitres. It means that there was  $76.2 - 72.5 = 3.7$  kilolitres of water (other than the emergency stock) present before the supply of water in the tank. On day 2 though the supply is only 68.6 kilolitres, there was 72.5 kilolitres of water available, which means there was  $72.5 - 68.6 = 3.9$  kilolitres of water present before the supply of water into the tank on Day 2 i.e., only  $76.2 - 3.9 = 72.3$  kilolitres of water was used up on day 1. As supply, through main tap B, to the Afzal colony was 46.2 kilolitres and no water is drawn through the emergency tap,  $72.3 - 46.2 = 26.1$  kilolitres of water was supplied to the Sagar colony through main tap A. This supply can be represented in the form of a table as follows.

Day	Excess/shortage, of water, over the emergency stock	Water supply	Normally available water in the tank	The total quantity of water drawn through the two main taps	Water drawn by Afzal colony through the main tap B	Water drawn by Sagar colony through the main tap A	Water drawn through the emergency tap
1	3.7	72.5	76.2	72.3	46.2	26.1	0
2	3.9	68.6	72.5	72.5	43.2	29.3	0.8
3	-0.8	82.2	81.4	79.5	50.6	28.9	0
4	1.9	72.5	74.4	74.4	48.5	25.9	3.3
5	-3.3	75.2	71.9	71.9	51.2	20.7	4.6
6	-4.6	85.2	80.6	79.8	47.3	32.5	0
7	0.8	79.4	80.2	80.2	45.3	34.9	1.3
8	-1.3	82.2	80.9	78.2	42.5	35.7	0
9	2.7	76.2	78.9	78.9	45.3	33.6	3.6
10	-3.6	80.2	76.6	N.A.	44.4	N.A.	N.A.

24. The supply of water to the Sagar colony, through the main tap A, on day 4 was 25.9 kilolitres. Choice (A)
25. As on day 5, 4.6 kilolitres of water was used through the emergency tap, the emergency stock was at least 4.6 kilolitres. Choice (D)
26. Water was drawn from the emergency tap on days 2, 4, 5, 7 and 9. Choice (B)
27. The supply, through the main tap A, to the Sagar colony was more than 30 kilolitres on days 6, 7, 8 and 9. Choice (B)
28. The SI and CI for the first 3 years are tabulated below. We take  $P = 1$  and rate =  $r$  p.a. =  $100r\%$  p.a.

### Solutions for questions 28 to 33:

28. We need to check for possible values of  $n$  ( $n \geq 5$ ) for which the answers given are feasible.  
 $(3)_5 + (4)_5 = (12)_5 \rightarrow$  Chandu  
 $(3)_7 + (4)_7 = (10)_7 \rightarrow$  Dinesh.  
but  $(3)_n + (4)_n \neq (14)_n$  or  $(21)_n$ , for any  $n \in \mathbb{N}$ .  
This is because  $n \geq 5$ , and  $(14)_5 = 9$ , which is greater than  $(3)_5 + (4)_5$ .  
Similarly,  $(21)_5 = 11$ .  
∴ Amar and Bhanu gave unacceptable answers. Choice (D)

Year	Principal	Interest for $n^{\text{th}}$ year	Interest upto $n$ years	Amount	Principal	Interest for $n^{\text{th}}$ year	Interest upto $n$ years	Amount
1	1	$r$	$r$	$1+r$	1	$r$	$r$	$1+r$
2	1	$r$	$2r$	$1+2r$	$1+r$	$r+r^2$	$2r+r^2$	$(1+r)^2$
3	1	$r$	$3r$	$1+3r$	$(1+r)^2$	$r+2r^2+r^3$	$3r+3r^2+r^3$	$(1+r)^3$

The difference between CI and SI for the second year is 3600.

$$\therefore P[(r+r^2)-r] = Pr^2 = 3600 \dots \dots \dots (1)$$

The difference between CI and SI for the third year is 7740

$$\therefore P(2r^2+r^3) = 7740 \dots \dots \dots (2)$$

$$(2) \div (1) \Rightarrow 2+r = \frac{774}{360}$$

$$\Rightarrow r = \frac{54}{360} = \frac{3}{20} = \frac{3}{20} (100\%) = 15\%$$

$$(1) \Rightarrow P = 3600 \left( \frac{100}{15} \right) \left( \frac{100}{15} \right) = ₹1,60,000.$$

#### Alternative Solution:

The difference is SI and CI for third year

= (difference in second year) + (difference in second year and the interest on this difference)

$$\Rightarrow 3600 + 3600 + 3600 \times \frac{r}{100} = 77440$$

i.e.,  $r = 15\%$

$$\text{Hence, sum} = \frac{100 \times 100 \times 3600}{15 \times 15} = 160000$$

Choice (A)

30. The second worker (i.e.,  $i = 2$ ) joined the first worker after  $2^{2-2}x = x$  days, i.e., 1 worker worked for  $x$  days.

The third worker joined the team after  $2x$  days i.e., 2 workers worked for  $2x$  days.

The fourth worker joined the team after  $4x$  days, i.e. 3 workers worked for  $4x$  days and so on.

The  $n^{\text{th}}$  worker joined  $(2^{n-2})x$  days after the  $(n-1)^{\text{th}}$  worker joined, i.e.  $(n-1)$  workers worked for  $2^{n-2}x$  days

The  $(n + 1)^{\text{th}}$  worker would have joined  $(2^{n-1})x$  days after the  $n^{\text{th}}$  worker joined. But just before, the work was completed, and  $n$  workers worked for  $2^{n-1}x$  days.

The first worker worked for

$$x + 2x + 4x + \dots + 2^{n-2}x + 2^{n-1}x = (2^n - 1)x \text{ days. ....(i)}$$

The entire work ( $W$ ) is given by

$$\begin{aligned} W &= 1(x) + 2(2x) + 3(4x) + \dots + n(2^{n-1})x \\ &\Rightarrow 2W = (2x) + \dots + (n-1)(2^{n-1})x + n(2^n)x \\ \therefore W &= (n2^n - 1)x - (2x + \dots + 2^{n-1}x) \\ &= (n2^n - 1)x - (2^n - 2)x \dots \text{....(ii)} \end{aligned}$$

The first workers share = ₹4094

The total wage = ₹40962

$\therefore$  From (i) and (ii)

$$\frac{2^n - 1}{n2^n + 1 - 2^n} = \frac{2^n - 1}{(n-1)2^n + 1} = \frac{4094}{40962}$$

$$= \frac{2047}{20481} = \frac{2^{11}-1}{10(2^{11})+1}$$

$$\text{i.e., } \frac{2^n - 1}{(n-1)2^n + 1} = \frac{2^{11}-1}{10(2^{11})+1}$$

Comparing the two sides, we conclude that  $n = 11$

Choice (D)

31. The distance travelled by Jayesh and Mohan (in km) in one minute is

$$\frac{(130 + 122)}{60} = \frac{252}{60} = 4.2 \quad \text{Choice (C)}$$

32. The combination of apples and oranges can be (1, 4), (2, 3), (3, 2) and (4, 1).

The number of ways in which 1 apple and 4 oranges be selected =  ${}^6C_1$  (1) = 6 (Any number of oranges can be selected in only 1 way).

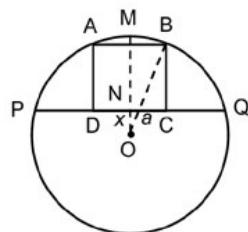
Similarly 2 apples and 3 oranges can be selected in  ${}^6C_2$  (1) = 15 ways

3 apples and 2 oranges can be selected in  ${}^6C_3$  (1) = 20 ways and 4 apples and 1 orange can be selected in  ${}^6C_4$  (1) = 15 ways

$\therefore$  Total number of ways = 6 + 15 + 20 + 15 = 56 ways.

Choice (A)

- 33.



Let M be the midpoint of AB and let OM intersect PQ at N.

Let NC = a.  $\therefore$  BC = 2NC = 2a

Let ON = x (given x = 2) and OB = r (given r = 6)

In  $\triangle OMB$ ,  $OM^2 + MB^2 = OB^2$

i.e.,  $(x + 2a)^2 + a^2 = r^2$

$$\Rightarrow x^2 + 4ax + 4a^2 + a^2 = r^2$$

Given  $x = 2$  and  $r = 6$

$$\therefore 5a^2 + 8a - 32 = 0$$

$$\frac{-8 \pm \sqrt{64 - 4(5)(-32)}}{10}$$

$$= \frac{-8 \pm \sqrt{11}}{10}$$

$$= \frac{-8 \pm \sqrt{11}}{10}$$

But a is positive.

$$\therefore a = \frac{8[\sqrt{11} - 1]}{10} = 1.85 \text{ and } 2a \approx 3.7$$

Choice (D)

#### Solutions for questions 34 and 35:

34. From the above solution, take  $a_{40} = 0$ , i.e., there are 39 terms in the sum.

Now, among the remaining 36 terms, 18 must be positive and 18 must be negative.

To have product of four numbers (i.e., one term in the sum) to be negative, at least one of the four numbers must be positive.

$\therefore$  Every four numbers terms have at least one term as +1.

To maximise number of -1,

Suppose first 18 terms are negative, then each term has three -1s and one 1.

If  $a_4, a_8, a_{12}$  and  $a_{16}$  are equal to 1, then we will get the first 16 terms as negative.

And 20 terms are positive

So take  $a_{36} = 0$ , then 16 terms become -1 and 16 terms become +1 and 7 terms become 0.

$\therefore$  Except  $a_4, a_8, a_{12}, a_{16}, a_{36}$  and  $a_{40}$  all other numbers can be -1. i.e., at most 34 numbers can be equal to -1.

Choice (C)

35. Given ten of the  $p$  numbers equal to 1.

Now, as the sum to be zero and these ten 1s constitute 9 terms, at least two other terms must present.

If  $a_4 = -1$  and  $a_{12} = 0$ , and all the remaining numbers are equal to 1, then we get four terms whose value is -1, four terms whose value is 1 and three terms [last three terms] whose value is 0.

$\therefore$  The sum will be zero.

$\therefore$  The least possible value of  $p$  is 12.

Choice (D)

#### Solutions for questions 36 to 39:

As the total number of goals scored and the total number of goals conceded by all the teams together are equal.

Let GF  $\rightarrow$  Goals for and GA  $\rightarrow$  Goals Against.

$\therefore$  The number of goals conceded by F =  $(11 - 5) + (9 - 9) + (5 - 7) + (1 - 4) + (7 - 7) + 4 = 5$ ,

As F got 3 points and with GF and GA as 4 and 5, the team would not have drawn all the three matches.

$\therefore$  F won a match and lost two matches.

As E got 4 points it won one, drew one and lost one match. As D scored only one goal, and won a match, it lost the other two matches as in each match at least one goal is scored by at least one team.

$\therefore$  D won a match with 1 - 0 and lost two matches with 0 - 2 each.

As C won in the third round, C scored 3 goals and conceded 7 goals in the other two matches.

$\therefore$  C lost the other two matches with 1 - 3 and 2 - 4.

As the difference between GF and GA is at most two, A must have won all the three matches with 4 - 2, 4 - 2 and 3 - 1. Hence D cannot meet A.

As none of A, C, D, F drew a match, B must have drawn the match against E.

From (i) and (iii), B played against A and C in the first and the second round respectively.

$\therefore$  B played against E in the third round.

As C won in the third round, A must have played against F in the third round.

$\therefore$  D have played against C in the third round and lost with 0 - 2.

From (iii) and the above results, A played against E in the second round.

From (i) and the above results, D played against E in the first round.

$\therefore$  C played against F in the first round.

$\therefore$  F lost against A with 1 - 3 and won against C with 3 - 1.

$\therefore$  A won against B and E with 4 - 2 each.

$\therefore$  C lost against B with 2 - 4.

$\therefore$  B and E drawn their match with 3 - 3.

$\therefore$  E won against D with 2 - 0 and D won against F with 1 - 0.

$\therefore$  The final result is as follows:

I round	II round	III round
A - B (4) - (2)	A - E (4) - (2)	A - F (3) - (1)
C - F (1) - (3)	B - C (4) - (2)	B - E (3) - (3)
D - E (0) - (2)	D - F (1) - (0)	C - D (2) - (0)

36. Choice (B)  
 37. Choice (C)  
 38. Choice (B)  
 39. Choice (D)

**Solutions for questions 40 to 42:**

40. Let the contestant mentally decide upon two of the three boxes but choose only one of the two in his first chance. If he fails to win the prize in the first chance, he then chooses the second box he had decided upon earlier. On the whole, the contestant has a choice of two boxes out of the three.

$$\therefore \text{The required probability} = \frac{2}{3}$$

**Alternative solution:**

The contestant can win the prize in two ways.

Case 1: He wins in the first guess.

$$\text{For this to happen, the probability is } \frac{1}{3}.$$

Case 2: He fails in the first guess and wins in the second guess.

$$\text{For this to happen, the probability is } \frac{2}{3} \times \frac{1}{2}$$

$$\text{i.e., } \frac{1}{3}.$$

$$\therefore \text{The required probability} = \frac{1}{3} + \frac{1}{3} = \frac{2}{3} \quad \text{Choice (D)}$$

41. The amounts spent on apples, mangoes and custard apples have to be multiples of 5, 6, and 4 respectively. These amounts (in ₹) are P, 2P and 3P.  
 $\therefore P$  has to be a multiple of 5 and 3 and 4, i.e. at least 60. The total amount is 6P or at least 6(60) = 360.

Choice (D)

42.  $2x + 8 - 3x = 6x - 4 - 2x - 8$

$$8 - x = 4x - 12$$

$$x = 4$$

$$\text{Sum of 10 terms} = 10 (2 \times 12 + 9 \times 4)/2 = 300$$

Choice (D)

**Solutions for questions 43 to 46:**

43. Let the initial number of boxes be  $n$  and the initial number of cakes be  $m$  per box.  
 $\therefore m \times n = (m-1)(n+1) + 1$   
 $\therefore m = n \therefore m < n+1$

$$\therefore II > I$$

Choice (B)

44.  $18^{49} + 18^{50} + 18^{51} = 18^{49} (1 + 18 + 324) = 18^{49} (343)$   
 $19^{51} - 19^{50} - 19^{49} = 19^{49} (19^2 - 19 - 1) = 19^{49} (341)$

Dividing II by I, we get

$$\left(\frac{19}{18}\right)^{49} \left(\frac{341}{343}\right) = \left(1 + \frac{1}{18}\right)^{49} \left(\frac{341}{343}\right)$$

$$\text{Now } \left(1 + \frac{1}{18}\right)^{49} = (1 + 49 \times \frac{1}{18} + \dots) > 2$$

$$\text{Clearly, } \left(1 + \frac{1}{18}\right)^{49} \left(\frac{341}{343}\right) > 1$$

Hence quantity II is greater.

Choice (B)

45. The second piece of work takes 6 man days  $\times 3 \times 3 = 54$  women days.

Now, since  $10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 = 54$ , the work takes 9 days to complete.

The first piece of work = 6 man days =  $1 + 2 + 3 = 6$

$$\therefore 3 \text{ days.}$$

$$\therefore I > II$$

Choice (A)

46. In  $\triangle ABC$ ,  $180^\circ - \angle b = \angle a + \angle f + \angle e$  — (1)  
 However, in  $\triangle CBD$ ,  $180^\circ - \angle b = \angle g + \angle c$  — (2)  
 From (1) and (2),  $\angle a + \angle f + \angle e = \angle g + \angle c$   
 $\Rightarrow \angle g + \angle c - \angle e = \angle a + \angle f$   
 Hence I = II. Choice (C)

**Solutions for questions 47 to 50:**

47. Since there is cumulative growth rate for the given companies, the production level, individually, should be the highest during the last year.

For companies A and C it is very much evident.

For company B, there is a decrease in production in 2012 and no increase in 2013, while for company D there is a decrease in 2012, which is again (by observation) adequately compensated for by the increase in 2013. However, the total increase in the production levels of A and C in 2013 is greater than the decrease of the production for company B in magnitude. Hence, the total production would be highest in 2013. Choice (B)

48. The production of B and D was in the ratio of 5% : 20%, i.e., 1 : 4. From 2005 to 2006, the total production would have increased, since B remained at the same level while D increased by 2%. Now, the decrease of 2% in D in 2007 is more than offset by an increase of 10% (i.e., five times in percentage terms) in B, which is slightly less than one fourth of D. After 2007, the cumulative production continually increased till 2011. Again, in 2012 the small decrease in the production of both B and D could not have brought the level to lower than that in 2007. And finally, it only increased from 2012 to 2013. Hence, the total production of B and D together was the least in the year 2005. Choice (A)

49. From the year 2005 to 2014, the increase in the production of A =  $100(1.04)(1.02)(1.06)(1.1) = 123.6$   
 B =  $50(1.1)(1.05)(1.05) = 60.6$   
 C =  $150(1.02)(1.01)(1.04)(1.03) = 165.5$   
 D =  $200(1.02)(0.98)(1.04) = 207.9$   
 Total in 2005 =  $100 + 50 + 150 + 200 = 500$   
 Total in 2009 =  $123.6 + 60.6 + 165.5 + 207.9 = 557.6$   
 Percentage increase from 2000 to 2004  
 $= 57.6/500 \times 100 = 11.5\%$  or 12% Choice (B)

50. The total value of production for these four companies in 2005 =  $10 + 5 + 15 + 20 = 50$  units. As found in the above solution, the percentage increase in the production of cement for these companies from 2005 to 2009  $\approx 12\%$

Total production of these companies in 2004

$$= 50 \times 1.12 = 56 \text{ units}$$

As given in the question, if the total production of all cement companies in 2005 = 100, total production in 2009

$$= 100 + 25 \text{ (i.e., 25% increase)} = 125 \text{ units}$$

Production by other companies in 2009 =  $125 - 56 = 69$  units

Production of other companies in 2005 = 50 units

$$\text{Percentage increase} = 19/50 \times 100 = 38\%$$

**Alternative solution:**

Since the production of the given four companies in 2005 (i.e., that of the other companies) is 50 units, and they increased by approximately 12% from 2005 to 2009.

Average increase =  $\frac{12+x}{2} = 25$  (where  $x$  is the percentage increase in the production by other companies)  
 $\Rightarrow x = 38\%$  Choice (D)

<b>Difficulty level wise summary - Section I</b>	
Level of Difficulty	Questions
Very Easy	—
Easy	1, 4, 14, 16, 21, 31, 41, 42, 43
Medium	2, 3, 6, 7, 8, 9, 10, 11, 12, 20, 22, 23, 24, 25, 26, 27, 28, 29, 32, 33, 40, 44, 45, 46, 47, 48, 49, 50
Difficult	5, 13, 15, 17, 18, 19, 30, 34, 35, 36, 37, 38, 39
Very Difficult	—

## SECTION – II

### Solutions for questions 51 to 54:

#### Number of words and Explanatory notes for RC:

Number of words : 1023

51. "Allowing each other to live her life to the full" supports (a). (b) is stated several times in the first para. Liberty and private property are intimately related. (c) is implied in "unless they are free to run enterprises when they have obtained the capital". Refer to the last two sentences of para 1. (d) is implied in Hayek's argument "There can be no freedom of press if the instruments of printing are under government control....." as given in the last sentence of para 2.

Choice (B)

52. "a significant role to the state" in Choice (A) is less specific though the choice is correct at large. So (A) is not true. (D) is most specific. The first part of Choice (D) is substantiated in para 1. The second part of Choice (D) is true from "private property is the only effective means for the protection of liberty" as given in the second sentence of para 2 and "the most fundamental property rights.....led to a less than equal liberty for the working class." (B) sounds charitable. (C) is not substantiated and is untrue from the views mentioned in the last paragraph. The basic structure of society is to be arranged such that no social group advances at the cost of another.

Choice (D)

53. Refer to the third paragraph where the factors that help explain the rise of "revisionist liberalism" are explained. (a) is suspect. Refer to the third and fourth sentences of para 3. The ability of a **free market to sustain** what Lord Beveridge called a '**prosperous equilibrium**' was being questioned. Believing that a private property based market tended to be unstable, or could, as Keynes argued, get stuck in an equilibrium with high unemployment, new liberals **came to doubt** that it was an adequate foundation for a stable, free society. So "losing faith in the market" as mentioned in the next sentence makes (a) incorrect and supports (b). "their faith in government as a means of supervising economic life was increasing" as given (as the second factor for the rise of "revisionist liberalism") in the fifth and sixth sentences of para 3 denies (c) and supports (d). For statements (e) and (f) refer to the opening sentences of para 4 where the third factor for the rise of "new liberalism" is discussed. (e) is supported by "property rights generated an unjust inequality of power that led to a less-than-equal liberty (typically, 'positive liberty') for the working class." (f) is supported by "strong endorsement of civil and personal liberties."

Choice (C)

54. While the passage does indicate that Keynes looked at government participation as something that could have a positive impact on high unemployment, it would be a distortion to say that he expected it would 'fix' the problem. Hence, (a) is not true. (b) is not true. Richie had socialist leanings. Refer to the last parts of para 3 – "where the government is entirely or mainly in the hands of a ruling class or caste, exercising wisely or unwisely a paternal or grandmotherly authority" (representatives of the community). "arguments used against government.....lose their force", "justifications of personal and economic liberty were distinct (different) and "an open question whether personal liberty can flourish without private property" as given in the last few sentences of the penultimate paragraph supports (c). "mirage of social justice.....freedom depends on a decentralised market" as given in the penultimate sentence of the last paragraph supports (d). Statement (e) is nowhere discussed though only terms like "mirage of social-justice" or "just basic structure of society" have been mentioned.

Choice (B)

### Solutions for questions 55 to 58:

As the value of n is not known to us, we consider two cases.

Case I: 'n' is an odd number

For easy understanding let us take n = 5 and the seats as S<sub>1</sub>, S<sub>2</sub>, S<sub>3</sub>, S<sub>4</sub> and S<sub>5</sub> from left to right respectively.

The first person can sit in any of the five places. He can sit in the following given ways.

- (a) He sits in the middle seat i.e., in S<sub>3</sub>.

It first person sits in S<sub>3</sub>, the second person who comes in has to sit at one of the either end (i.e., S<sub>1</sub> or S<sub>5</sub>) to have maximum distance. The third person has to then sit at the other extreme end for the sum of his distances to be maximum.

$$\frac{3}{S_1} \frac{5}{S_2} \frac{1}{S_3} \frac{4}{S_4} \frac{2}{S_5}$$

Now, the fourth person can sit on any of the two chairs. S<sub>2</sub>/S<sub>4</sub> as the sum of distances would remain same.

(Here we understand that for sum of distances to be maximum, a person has to sit at the extreme end or the farthest seat with respect to the person who entered before him. However, it may be noted that in the arrangement where people are equally distributed towards the extreme ends, the even numbered person then entering can sit in any of the available seats as the sum of distances would remain same.)

A possible arrangement can be

$$\frac{3}{S_1} \frac{5}{S_2} \frac{1}{S_3} \frac{4}{S_4} \frac{2}{S_5}$$

- (b) The first person sits at one of the extreme ends.

If the first person sits in S<sub>1</sub> (or) S<sub>5</sub>, the second person has to sit at the other extreme end i.e., S<sub>5</sub> or S<sub>1</sub> respectively.

$$\frac{1}{S_1} \frac{3}{S_2} \frac{5}{S_3} \frac{4}{S_4} \frac{2}{S_5}$$

Now, the third person can sit on any of the above empty chairs (S<sub>2</sub>/S<sub>3</sub>/S<sub>4</sub>) as the sum of distances will remain equal to 2.

From this we can conclude that when an odd numbered person P enters, and all the persons who entered before him sat at the extreme ends, the person P will have more than one choice and depending on his position, the person after him sits to the extreme end (or) the seat farthest to P. The persons entering after also have to sit on a seat which is farthest from the seat of the previous entered person.

The possible arrangements now could be

$$\frac{1}{S_1} \frac{3}{S_2} \frac{5}{S_3} \frac{4}{S_4} \frac{2}{S_5}$$

$$\frac{1}{S_1} \frac{4}{S_2} \frac{3}{S_3} \frac{5}{S_4} \frac{2}{S_5}$$

$$\frac{1}{S_1} \frac{4}{S_2} \frac{5}{S_3} \frac{3}{S_4} \frac{2}{S_5}$$

- (c) The first person sat on a seat other than the middle and the seats at extreme end.

If the first person sits in S<sub>2</sub>, then the second person has to sit on the extreme end which is farthest from S<sub>2</sub> i.e., S<sub>5</sub>.

$$\frac{1}{S_1} \frac{2}{S_2} \frac{3}{S_3} \frac{4}{S_4} \frac{5}{S_5}$$

The third person has to sit in S<sub>1</sub>.

The arrangement will be

$$\frac{3}{S_1} \frac{1}{S_2} \frac{5}{S_3} \frac{4}{S_4} \frac{2}{S_5}$$

If the first person sits in S<sub>4</sub>, the arrangement will be the mirror image of the above arrangement.

**Case II:**

'n' is an even number.

Here the conditions and observations will be same as the above case.

When 'n' is an even number, there is will no middle seat as in earlier case.

The possible ways in which the first person can sit is

- (a) At extreme end
- (b) In any seat other than the seats at extreme ends

The seating arrangements possible are

$$(a) \begin{array}{ccccccc} 1 & 3 & 5 & 6 & 4 & 2 \\ \hline S_1 & S_2 & S_3 & S_4 & S_5 & S_6 \end{array}$$

$$\begin{array}{ccccccc} 1 & 5 & 3 & 6 & 4 & 2 \\ \hline S_1 & S_2 & S_3 & S_4 & S_5 & S_6 \end{array}$$

$$(b) \begin{array}{ccccccc} 3 & 1 & 5 & 6 & 4 & 2 \\ \hline S_1 & S_2 & S_3 & S_4 & S_5 & S_6 \end{array}$$

$$\begin{array}{ccccccc} 3 & 5 & 1 & 6 & 4 & 2 \\ \hline S_1 & S_2 & S_3 & S_4 & S_5 & S_6 \end{array}$$

55. n = 17, i.e., case (I)

The standard arrangement could be

$$\begin{array}{ccccccc} 1 & 3 & 5 & 7 & \dots & 6 & 4 & 2 \\ \hline S_1 & S_2 & S_3 & S_4 & S_5 & S_{13} & S_{14} & S_{15} & S_{16} & S_{17} \end{array}$$

In this case, the sum of distances of the seventh person would be = 2 + 1 + 0 + 10 + 11 + 12 = 36.

This arrangement gives maximum sum for even numbered persons but for odd numbered persons, this not give the maximum sum.

The sum would be higher if the person sits at the extreme end (or) closer to extreme end.

When we consider case I i.e., first person is at the middle seat, we get the arrangement as

57. We need to check for possible sequences of seating:

(A)

$$\begin{array}{ccccccccc} p & & p & & & p & & p \\ \hline 3^{\text{rd}} \text{ person} & & 1^{\text{st}} \text{ person} & & & 4^{\text{th}} \text{ person} & & 2^{\text{nd}} \text{ person} \end{array} \text{ (possible)}$$

(B)

$$\begin{array}{ccccccccc} p & & p & & P & & & p \\ \hline 2^{\text{nd}} \text{ person} & & 4^{\text{th}} \text{ person} & & 1^{\text{st}} \text{ person} & & & 3^{\text{rd}} \text{ person} \end{array} \text{ (possible)}$$

(C)

$$\begin{array}{ccccccccc} p & & p & & p & & p \\ \hline 1^{\text{st}} \text{ person} & & 3^{\text{rd}} \text{ person} & & 4^{\text{th}} \text{ person} & & 2^{\text{nd}} \text{ person} \end{array} \text{ (possible)}$$

(D) Not possible.

Choice (A)

56. From the above solution and explanation, we realize that we get maximum sum of distances for a odd number person when a person is sitting in the middle seat.  
If n is even, the arrangement could be

$$\begin{array}{ccccccccc} 3 & 5 & 7 & 9 & & 1 & & 8 & 6 & 4 & 2 \\ \hline x & \text{seats} & & & \text{Middle seats} & & & x & \text{seats} \end{array}$$

Here total seats = 4 + x + 2 + x + 4 = 2x + 10 seats

The sum of distances of 9<sup>th</sup> person

$$= 2 + 1 + 0 + x + (2x + 2) + (2x + 3) + (2x + 4) + (2x + 5)$$

$$= 9x + 3 + 14 = 9x + 17$$

Given that 9x + 17 = 40

$$9x = 23 \Rightarrow x = \frac{23}{9}$$

x has to be an integer, so this case is not valid.

'n' is an odd number, the arrangement would be

$$\begin{array}{ccccccccc} 3 & 5 & 7 & 9 & & 1 & & 8 & 6 & 4 & 2 \\ \hline x & \text{seats} & & & \text{seats} & & & x & \text{seats} \end{array}$$

The total number of seats = 2x + 9

The sum of distances of 9<sup>th</sup> person

$$= 2 + 1 + 0 + x + (2x + 1) + (2x + 2) + (2x + 3) + (2x + 4)$$

$$= 9x + 3 + 10 = 9x + 13$$

Given that 9x + 13 = 40

$$\Rightarrow x = 3$$

∴ Total number of seats = 2(3) + 9 = 15 seats

Choice (B)

58. It is given that there are 9 chairs, the number of people sitting is not important for calculation.

The arrangement in which the required distance is maximum is

$$\begin{array}{ccccccc} 3 & 4 & & 1 & & 5 & 2 \\ \hline S_1 & S_2 & S_3 & S_4 & S_5 & S_6 & S_7 & S_8 & S_9 \end{array}$$

∴ The distance between 3<sup>rd</sup> person and 5<sup>th</sup> person = 6

Choice (D)

**Solutions for questions 59 and 60:**

59. On a careful reading of the paragraph, it can be noticed that there are two sentences (4) and (2) that speak about 'technology'. Also (2) explains the 'dialectical turning point' mentioned in (4). So sentences '4,2' form a mandatory pair. The main point which is reiterated in this paragraph is that new industrial machines of the future will move away from

standardization, away from uniformity. In this light, statement (4) cannot be an opening sentence as the main point is repeated through another argument – technological development. Statement (1) also cannot be an introduction sentence as it elaborates on something which should have come earlier – **The fact is that.....** So sentence (5) which is a general sentence begins the paragraph. It must be noted that this paragraph is taken from the middle of the text. Sentence 3 follows sentence 5. "turn us into robots, steal our **individuality, eliminate cultural variety**" in (5) is linked with "primitive mass production imposed certain **uniformities**" in (3). Also "obstinate nonsense...." in (5) is corrected and explained through ".....does not mean that super-industrial machines will do the same" in statement (3). The reality about the role of future industrial machines is then portrayed in statement (1) (away from uniformity, homogeneity and "mass" production). "The fact is that...." in sentence (1) seems to correct a wrong opinion or point of

view. So '531'. Statement (4) follows statement (1) by bringing in the term "technological development of society." "Dialectical" means "resolution of disagreement through rational discussion." As discussed above, sentences '4,2' are linked together. Statement (2) concludes the paragraph with an elaboration of 'dialectical' in sentence 4. So, 53142. The other choices disrupt the thoughtflow. 42315 makes an equally good sequence and is correct. A student might be drawn to choice (A) but that is incorrect. While '2, 3' is a possible sequence, 213 is not an appropriate sequence.

Choice (C)

- 60.** On a close reading of the sentences, it can be inferred that only sentence (3) can be an introduction sentence. Sentence (2) (noted just now), sentence (4) (as this internal relation...), sentence (5) (Once this idealized conception of the sense), sentence (6) (... no **such** law....) need a precedent. Also sentence (1) cannot begin the paragraph as it can be placed only after sentence (4). "thinking everything else that the truth of the thought entails" as given in (1) follows after "all the logical entailments of a thought are conceived as already present in it" as mentioned in (4). So sentence (3) (we need a law in case of a causal inference) sets the background for the passage. Sentence (6) draws an analogy with the logical inference. "No such law is needed" in (6) links with "need a law" in (3). Also "connects one type of situation with another or infer the existence of one situation from the existence of another" in (3) finds a parallel in "move from one proposition to another" in (6). Sentences '6,4' form a mandatory pair. "**this internal relation**" in (4) links with "**internal relation**" in (6). "internal relation that holds between the propositions" in (6) is explained further as "the sense of one proposition containing the sense of the other" in (4). Sentences '4,1' form another mandatory pair. "**all the logical entailments of a thought** are conceived as **already present** in it" in (4) links with "drawing out .....**already** there; thinking a thought essentially involves thinking **everything** else that the **truth of the thought entails**." in (6). So '3641'. Sentence (5) follows – The "idealized conception" refers to "mythology" discussed earlier in sentence (4) and "derivation" refers to "inference can be drawn" in sentence (1). Sentence (2) then gives an opinion on the fact discussed in sentence (5) and concludes the paragraph. So, 364152. The other choices disrupt the thoughtflow and the required mandatory pairs.

Choice (D)

#### Solutions for questions 61 and 62:

- 61.** (B) and (C) are not implied in the passage. That The study of DNA led to the emergence of biotech is an exaggeration and the passage does not state anything like this. So (D), stretches the meaning of the passage. (A) is closest to the content of the passage which explains with reasons, the current nature and structure of the biotech community.

Choice (A)

- 62.** (A), (B) and (D) are not correct because while the passage mentions the details presented in these options, they are not reflective of the whole essence of the passage. (C) seems closest to the essence of the passage which is talking about how Levi-Strauss found a correlation between the symbols and the origin of the mythical figures.

The list of themes mentioned in the second sentence of the passage is not essential to the key idea. Choice (C)

#### Solution for question 63:

- 63.** Only dichotomy is correct since the sentence says that the division into two usually contradictory parts or opinions is wrong, not that the argument or choice per say is wrong. Divaricator means something that causes to spread apart, branch or diverge.

Choice (D)

#### Solutions for questions 64 to 67:

The number of friends having each of the specialisations is different and at least one, ∴ these numbers must be 1, 2, 3 and 4.

The number of friends who got a job in each of the sectors is different and at least one, ∴ these numbers must be 1, 2, 3, and 4. It is also given that no two persons except B and G have both the same specialisation and got a job in the same sector.

Now, maximum number of persons i.e. 4 have marketing as their specialisation, ∴ each of them must get a job in a different sector. One of these persons will get a job in the insurance sector along with both B and G.

∴ Three persons got jobs in the insurance sector.

Similarly, three persons have finance as their specialisation.

Specialisation		Sector	
	–		–
	–, –		–, –
Finance	B, G, –	Insurance	B, G, –
Marketing	–, –, –, –	IT	–, –, –, –

Each of the persons who specialised in marketing got jobs in different sectors, i.e., one of them got the job in the sector in which only one person got the job. Hence, D cannot be that person as he has specialised in HR.

∴ Two persons got jobs in the FMCG sector and one got a job in the Banking sector.

Similarly, two persons are specialised in HR and one person is specialised in operations. As C and E have the same specialisation, it must be marketing.

A and J got a job in same sector, ∴ it must be IT.

H got a job in the Banking sector and hence H is specialised in marketing and F has HR as specialisation.

The final distribution is as follows.

Specialisation		Sector	
Operations	I	Banking	H
HR	D, E	FMCG	D, C
Finance	B, G, J	Insurance	B, G, E
Marketing	C, E, H, A	IT	A, J, F, I

- 64.** Three persons have Finance as their specialisation.

Choice (C)

- 65.** C specialised in marketing and got a job in the FMCG sector.

Choice (B)

- 66.** A, J, F and I got jobs in the IT sector.

Choice (C)

- 67.** I specialised in operations.

Choice (C)

#### Solution for question 68:

- 68.** Sentence B has an error in the last phrase – it should be "engage all stakeholders..... in the task" and not 'to the task.....' Sentence C has an error in the placement of 'all' – it should be 'all major roads.....' and another error, of number, '.....what is needed are roads.....' (not is) since the idea is 'roads are needed.' Sentence D has an article missing – it should be '.....the productivity of smallholder farmers.....' since we are talking of the productivity of a definite group and not in general. Only sentence A is free from errors. One may think wrongly that the conjunction 'and' is not required and a comma after the word 'world' would suffice. But the conjunction 'and' is required as there are two separate ideas – Hunger is a beast rampaging around the world and there have been food riots in various places in Africa.

Choice (A)

#### Solution for question 69:

- 69.** Statement 1 is a verifiable fact or known matter. Statement 2 is the opinion of the author, thus it is a judgement.

Statement 3 is clearly an opinion, therefore judgement. Statement 4 is also opinionated as indicated by the phrase 'not even sufficient', so it is also a judgement.

Choice (B)

#### Solution for question 70:

70. Sentence (d) has no error. In sentence (b), we need 'at night' and not 'in the night'. There is also an error in the use of a colon. What follows this colon is not a breakdown of what precedes it, but an elaboration. A semicolon would be appropriate in place of the colon. The use of a dash before 'in the day time' requires a dash after 'around us'. There is also an error in the use of 'are' before 'like'. (c) has an error. (c) presents the situations preferred and not the specifics within situations. Thus we would need 'the sound of human voices' and not 'the sounds'. (f) has an error. We need 'so helpless and so little' and not 'so helpless and as little.' (a) has no error. (e) has an error. We would gather 'in' not 'at' the great cities.

Now coming to the confusable words. Since the sounds cause us to feel sad, sighs' is appropriate, not 'whispers' – b. 'Wakeful' meaning unable to sleep, is appropriate to the context. 'waking' does not indicate the sense of inability. - a. 'pulse' indicates a rhythm, whereas the context requires the sense of life, or something alive. Throb means a significant and rapid pounding and is more appropriate – a. We gravitate towards and press into – a. Since the author is recommending a common action for humans, the word 'gather' is more appropriate than 'crowd' – a. The trees make a sound when swayed by the wind, therefore 'rustle' – a. Thus baaaaaa.

Choice (A) has all the correct answers. Choice (A)

#### Solutions for questions 71 and 72:

For simplicity, let us label the pets as below.

Nestor – P <sub>1</sub>	Boxer – P <sub>2</sub>	Napolean – P <sub>3</sub>
Snowland – P <sub>4</sub>	Major – P <sub>5</sub>	Squealer – P <sub>6</sub>

	Positions correctly predicted	No.of positions correctly predicted	1	2	3	4
Shilpa	0	2	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
Shraddha	2	3	P <sub>2</sub>	P <sub>5</sub>	P <sub>1</sub>	P <sub>6</sub>
Shruti	1	2	P <sub>4</sub>	P <sub>3</sub>	P <sub>2</sub>	P <sub>6</sub>

Since Shilpa has only 2 of her 4 predictions right, and a total of 4 out of the 6 pets are in top four positions, the 2 remaining pets (which Shilpa didn't speculate on) must be definitely in top four positions.

∴ P<sub>5</sub> and P<sub>6</sub> are in the top 4 positions.

Shraddha has 1 prediction wrong

⇒ one pet out of P<sub>3</sub> and P<sub>4</sub> should be in the top 4 positions.

Shruti has 2 predictions wrong

⇒ The remaining 2 pets P<sub>1</sub> and P<sub>5</sub> must be in top 4 positions.

∴ Pets P<sub>1</sub>, P<sub>3</sub>, P<sub>4</sub>, P<sub>5</sub> and P<sub>6</sub> are in the top 4 positions.

∴ P<sub>2</sub> is definitely not in the top 4 positions.

Shraddha has correctly predicted the positions of 2 pets. The position of the remaining pet which is in the top 4 positions has been incorrectly predicted by Shraddha.

∴ The correct position of this pet must be 1<sup>st</sup> position.

Say, Shraddha correctly predicts positions of P<sub>5</sub> and P<sub>6</sub>.

⇒ P<sub>1</sub>, which was predicted to be in 3<sup>rd</sup> position, is actually in 1<sup>st</sup> position.

But if P<sub>1</sub> is in 1<sup>st</sup> position, then it would mean that Shilpa also got her prediction of P<sub>1</sub>'s position right. This is not possible since Shilpa got none of her prediction of positions right.

∴ Shraddha definitely predicted the position of P<sub>1</sub> as 3<sup>rd</sup> position correctly and only one of P<sub>5</sub>'s and P<sub>6</sub>'s position correctly.

#### Case 1:

Shraddha correctly predicted the position of P<sub>6</sub> as 4<sup>th</sup> position.

In this case, P<sub>5</sub> would occupy 1<sup>st</sup> position and 2<sup>nd</sup> position could be occupied by P<sub>3</sub> or P<sub>4</sub>. But since Shruti has predicted P<sub>3</sub> in 2<sup>nd</sup> position, P<sub>3</sub> cannot be in 2<sup>nd</sup> position ⇒ P<sub>4</sub> is in 2<sup>nd</sup> position.

∴ The correct order would be

1	2	3	4
P <sub>5</sub>	P <sub>4</sub>	P <sub>1</sub>	P <sub>6</sub>

For the above arrangement of pets, Shruti would get one prediction right – P<sub>6</sub> in 4<sup>th</sup> position, while Shilpa would get zero predictions right.

#### Case 2:

Shraddha correctly predicted the position of P<sub>5</sub> as 2<sup>nd</sup> position.

In this case, P<sub>6</sub> would occupy 1<sup>st</sup> position and P<sub>3</sub> would occupy 4<sup>th</sup> position. The final arrangement would be as below.

1	2	3	4
P <sub>6</sub>	P <sub>5</sub>	P <sub>1</sub>	P <sub>3</sub>

For the above arrangement, Shruti would get zero predictions right. This is a contradiction since it is given Shruti has got one prediction right.

∴ This arrangement is not possible.

71. Nestor (P<sub>3</sub>) finished third. Choice (C)

72. P<sub>5</sub>, P<sub>4</sub>, P<sub>1</sub>, P<sub>6</sub>, i.e., Major, Snowland, Nestor, Squealer is the correct order. Choice (B)

#### Solutions for questions 73 to 76:

##### Number of words and Explanatory notes for RC:

Number of words : 998

73. In Choice (A), 'solely' renders the option incorrect. Choice (C) is not the focus. The author focuses on an individual's response to adverse/ stressful events (Refer to para 5) even though a comparison is made in the sixth paragraph between the response to positive events and negative events. D is worded wrongly. Genotypes are responsible for the behaviour or the response elicited and not the reactions themselves. Choice (B) is the correct answer. Refer to the first paragraph - Genetic association studies suggest that variation within the genes.....

Choice (B)

74. In the middle of the third para, the author says 'The study of psychological genetics is in its infancy'. It means these studies are far from being conclusive. Hence Choices A and B are incorrect. The study has a long way to go to be conclusive. The first sentence of the last para talks about a **strong social support** for the short/ short genotype. So choice C is not precise. None of the choices A, B and C are true.

Choice (D)

75. Choice A wrongly mentions long/ long genotype. The passage only discusses the short/ short genotype in detail. The questions given in choices B and C have already been answered by the author in the course of the passage. The author has already mentioned that collectivism may have developed and persisted in populations with a high proportion of putative social sensitivity alleles because it was more compatible with such groups. So they would not be appropriate Interview the author questions. A question of interest could be – Is the relationship between allele frequency and depression partially mediated by individualism–collectivism, suggesting that reduced levels of depression in populations with a high proportion of social sensitivity alleles due to greater collectivism? Hence option D is the correct answer.

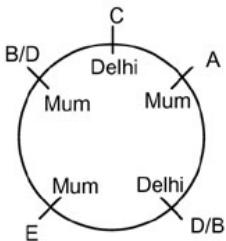
Choice (D)

76. Choice (A) can be ruled out because the author is not dogmatic here. Choice (C) can be ruled out as the author is neither appreciative nor emotional. Between choices B and D, Choice (B) is more suitable as the author is cautioning us by expressions like 'may', 'suggest'. He also accepts the fact that the studies are in their infancy and that "Clearly, further research is needed to identify the molecular, and particularly psychological, moderators of this interaction effect". Hence Choice (B) is to be preferred. His tone is scientific and factual (based on studies).

Choice (B)

### Solutions for questions 77 and 78:

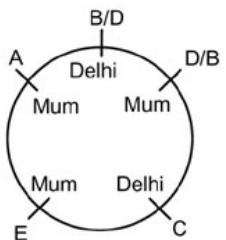
77. From (i), (iii) and the information given in the question, We can conclude that A and C cannot be adjacent to E. Hence, B and D must be adjacent to E.  
 ∴ The arrangement will be as follows.



Here, (i), (ii) and (iii) are true.

Choice (D)

78. Here A and C are adjacent to E. Hence, the arrangement is as follows.



C is definitely from Delhi.

Choice (B)

### Solutions for questions 79 to 82:

79. The given para says that there should be a correlation between the performance by the player and the salaries paid if there is no discrimination. The conclusion is that certain clubs have achieved much less than what they could have by not recruiting black players – a clear evidence of discrimination. Such an attitude is seen in Choice (B) – high wages paid to white players even though their performance is not as good as it should be to justify the wage. Option (C) can be ruled out since it is limited to 'the study period' and therefore the conclusion is specific, not general.  
 Choice (B)

80. The answer is Choice (A) as it brings out the hidden meaning in the passage that consensus is not a tool that produces positive social change and that it would take too long. B is implicitly mentioned in only the first line. C is true but the question is on social consensus, not on laws. D is not an inference but a suggestion of action to be taken. Hence A.  
 Choice (A)

81. The link between health and fitness equipment and absence of cardiac problems would be correct only if we show that the use of these equipments is sufficient to keep problems at bay. This link is provided in Choice (C). Choice (A) and D talk of awareness, the time spent with the equipment which is insufficient. Choice (B) talks of likelihood for future which is not relevant. Choice (C) strengthens the argument by saying that exercise has the greatest impact on one's cardiac health.  
 Choice (C)

82. Statement (a) is incorrect. It just states that women value well-being, care and love more than men. It does not speak anything about their needs for acceptance and self-esteem. Statement (b) is wrong because successful people turning to alcohol and drugs is a sign of considerably going down in life. Moreover, drugs and alcohol, unlike food and shelter, do not constitute basic needs. We cannot infer (c). There may be other people with qualifications who have a better understanding of human nature. It is not mentioned in the passage that the entire process needs to be repeated if one cannot fulfill any of the needs in the hierarchy. It is merely stated that people fulfill more than one need at once, since

the lower needs are more vital. So statement (d) is ruled out. Statement (e) is correct. It describes both the hierarchical nature of needs and their intertwining in a person's life. Acceptance, whether by colleagues or by the boss (by not getting fired) is higher in the pyramid of Maslow's hierarchy than physiological needs of being healthy. So the reason provided in statement (f) cannot undermine the logic of the example in the passage. A statement such as "The person diagnosed with cancer returns to work because he is very poor with a large family and has several mouths to feed" would weaken Maslow's theory as it points to the basic need of providing food and shelter to himself and his family as the reason for the person returning to work. Basic needs, being lowest in the hierarchy, in this case, would undermine the assertion that people continuously try pursuing higher level needs.

Choice (D)

### Solution for question 83:

83. Sentence A is incorrect. The idiom 'in the black' means to have money. The sentence should read 'in the red' meaning to be in debt. In sentence (b), 'black' means full of anger and hatred. In sentence C, 'black days' means days which are depressing and without hope. In sentence D, 'black humour' refers to something dealing with unpleasant or terrible things such as murder, in a humorous way.

Choice (A)

### Solutions for questions 84 to 87:

#### Number of words and Explanatory notes for RC:

Number of words : 753

84. The answer is indicated in the opening lines of the passage "The novel **speaks** in a voice that is **uniquely its own**" and "No one could accuse it of translating India for the West". So statement (c) is apt. Statements (a) and (f) talk about it being a translated work and are incorrect. Statement (e), through the words "cultural engineering", hints at translation again. Hence (e) is also incorrect. Statement (d) is incorrect because of "translated work" and there is no presentation as such. Statement (b) is beside the point. Choice (C)

85. Refer to the second and the third paragraphs. Dr. Prem reads Austen in Meerut, just as Rajesh reads Edmund Wilson in Benares. So there's a parallel drawn between Jane Austen and Edmund Wilson, another parallel between Meerut and Benares and yet another parallel between Prem Krishen and Rajesh in this passage. Also, "Distant France" is akin to "decaying towns." Hence statement (i) can be inferred. Statement (ii) is unlikely. Wilson can hardly be the hero. He is read by the protagonist of the essay. Statement (iii) is true – Wilson's essay about the book (Flaubert's Sentimental Education). Statement (iv) is irrelevant and out of scope.  
 Choice (A)

86. Refer primarily to the first paragraph. The important question is "Why does a place like Meerut have a course in English at all?". The answer is provided specifically in choice B. Choice A is the larger context of the passage. Choice C is irrelevant. So both A and B are correct.  
 Choice (D)

87. Choice (A) is not stated. Choice (B) is an observation, not a learning. Choice (D) is true - "I was ready to celebrate the gesture through which Edmund Wilson and Flaubert had been made Indian." Choice (C) is the opposite of what the author says.  
 Choice (D)

### Solution for question 88:

88. In the paragraph, the author deals with economics and not science. Choice (A) purely deals with science. The author gives an example or analogy where he uses the instance where people settled some questions related to physics with the help of religious knowledge but he never tends to

describe the credibility of science. Choice (C) can also be eliminated on the same grounds. The author here uses the analogy just to alert the economists to gain the knowledge of meta-physics but he does not focus on the idea of religious influence on economists. Between choices B and D, Choice (D) can be eliminated on the basis of two reasons, the first because being aware of economic calculus 'would prove' and not 'may prove' as this would mean that this knowledge is optional but as far as the para goes, it is necessary. Secondly the knowledge is necessary but the option says 'beneficial' which again goes against the word 'necessary'. Choice (B) correctly concludes the paragraph as the study of metaphysics is indeed important for an economist.

Choice (B)

#### Solutions for questions 89 to 92:

##### Number of words and Explanatory notes for RC:

Number of words : 598

89. The first part of (a) is an observation. The second part is lukewarm. (c) gets into details. (b) is the conclusion. Refer to the second sentence of the first paragraph - First the bad news: most of those employers aren't doing much to provide their new hires with the training and support they need to get their careers off to a strong start. The wrong assumptions of prospective employers that the author calls into question are statements (d), (e), (f) and (g). Statements (d) and (f) are true from the last two sentences of para 3. Statement (e) is true from the penultimate sentence of the last paragraph – If leaving new employees to sink or swim was ever a good option, it surely isn't now in an age when new grads communicate their experience so richly and transparently to their networks. Statement (g) is true from the third sentence of para 3 – Training can be expensive.....the ROI is not always clear. Choice (C)
90. Choice (A) weakens the conclusion that formal training needs to be provided. "aren't doing much to provide their new (green) hires with the training and support they need to get their careers off to a strong start" supports choice (B). Choice (C) strengthens the requirement of formal training. "Graduates themselves are increasingly attuned to the value of work-relevant training" is given in the first sentence of para 4 and "Expect the best of them also to consider the availability of training as they choose among competing job offers" is given in the penultimate sentence of para 4. Choice D also supports. "eight out of 10 graduating seniors told us that they expect formal training from their employers".
91. With reference to choice A, it has been mentioned that graduates themselves are increasingly attuned to the value of work-relevant training in the first sentence of para 4. Also "they consider themselves.....working in jobs that do not require their college degree" has been given in the second sentence of para 5. Choice A means that, having invested intellectual effort in corporate training, graduates are eager to see how this translates to beneficial performance at work. So choice A strengthens the conclusion. Choice C supports – "Expect the best of them also to consider the availability of training". Choice D strengthens "more than half.....report they do not expect to stay at their first job for more than two years – or they have already left their first job". Choice B adds no meat to the author's argument.
92. "cultivating your newest.....workers" to "people steadily gaining experience and advancing towards leadership roles" supports (c) explicitly.

Choice (B)

Choice (C)

#### Solutions for questions 93 to 96:

As Q was present when P entered and not present when he left, Q must have left before P left the bar.  
As S and R were present when P left, both of them must have left after P. As S left before T and V, P left before V and T. Thus R, S, T, V must have left after P left.

Thus P can be either the second or the third person to leave the bar.

As S was not present when P entered and present when he left, S must have entered after P entered. Thus P is not the last person to enter  $\Rightarrow$  He is not the third person to leave

$\Rightarrow$  He is the second person and Q is the first person to leave.

From above as T neither left before P nor was present when P left

$\Rightarrow$  T entered the bar after P left  $\Rightarrow$  T entered the bar after S.

Hence any of P, Q, R and S cannot be the last person to enter and as V entered after T, T also can't be the last to enter.

As Q and P are the first two to leave, V cannot be the third to leave, as he left immediately after S. Thus V also cannot be the last person to enter  $\Rightarrow$  U is the last person to enter and the third person to leave.

Now as S left before T and V left immediately after S, V left before T  $\Rightarrow$  S and V are not the last to leave. As R is also not the last person to leave, T must be the last person to leave.

Thus Q, P, U were the first three (in that order) and T must be the last person to leave. Thus S, V, R were the fourth, fifth and sixth persons to leave in any order. However as V left immediately after S, S must be either the fourth or the fifth person to leave.

Thus the order in which they left can be as follows.

Q	Q
P	P
U	U
S	R
V	S
R	V
T	T

From the above conclusions, U is the last person to enter, S entered when P was in the bar, T entered after P left and V entered after T. Thus Q and R are the first two to enter (As R is not the first, Q is the first person to enter), P is the third person, S, T, V, U are the 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> to enter respectively.

Thus the order in which they entered is

Q
R
P
S
T
V
U

93. In both the cases, T is the last person to leave the bar.

Choice (C)

94. S is the fourth person to enter the bar.

Choice (A)

95. R can either be the 4<sup>th</sup> or the 6<sup>th</sup> person to leave but not the 5<sup>th</sup> person to leave the bar.

Choice (C)

96. Considering either of the cases for entering, we get exactly two such persons, i.e., Q & S in case (i) and Q & V in case (ii).

Hence, 2 persons.

Choice (A)

#### Solutions for questions 97 to 100:

##### Number of words and Explanatory notes for RC:

Number of words : 587

97. The passage discusses economic inequalities at large and talks about their "grave consequences for democracy", so Choice (A) is apt. Choice (B) is true but it is not the focus of the passage. Choice (C) is out of scope. Choice (D) is just one of the concerns of the passage.

Choice (A)

98. The second sentence of the first paragraph "euphoria generated by the economic liberalization, growth of social-Darwinist ideas with indifference towards the poor"

supports the first three factors mentioned in choice A. The third sentence "India's Rightward political drift, and the declining ideological-political influence of the Left" supports "capitalistic political mentality, reduced communist influence" given in choice A. The last sentence of para 1 supports "free market ideas trumping socialist discourse." From the second paragraph, choice B can be inferred. Neo-liberal policies were launched 23 years ago and the early 1990s correspond to that period (liberalization). From the last sentence of the sixth paragraph, choice C cannot be inferred. It's subjective to say that 'just 40%' is the same as 'marginal'. Choice D is true. Para 3 states that the amount equivalent to the **increase** in the wages of the rich would have been more than enough to eliminate poverty. So if the difference in the wages would have been enough, then the gross net worth will also be enough. If the 12-fold increase is enough to eliminate ..twice over, then the total networth can certainly do the same.

Choice (C)

99. Choices A and C can be inferred from the last three paragraphs. Choice B is true from the last paragraph – If India is to achieve genuine progress rather than growth, it will have to radically redistribute assets, institute land reforms, and provide good-quality health care, education, food security and social protection to all. Hence A, B and C are true.

Choice (D)

100. Choice (A) is appropriate when we consider what precedes this reference (The deplorably mindless neo-liberal consensus that exists within the bulk of our political class, duly reflected in the media, inures us to growing disparities) and what succeeds it (These reports should deeply shame us). Choice (B) is out of scope. Choice (C) has been stated with reference to the role of the IMF, but is not presented as a contention. Choice (D) is out of focus.

Choice (A)

<b>Difficulty level wise summary - Section II</b>	
Level of Difficulty	Questions
Very Easy	—
Easy	77, 78, 88
Medium	51, 53, 54, 61, 63, 64, 65, 66, 67, 71, 72, 73, 74, 76, 79, 80, 82, 83, 86, 87, 90, 92, 93, 94, 95, 96, 97, 100
Difficult	52, 57, 58, 59, 62, 68, 75, 81, 84, 85, 89, 91, 98, 99
Very Difficult	55, 56, 60, 69, 70