MAHCET MOCK-3

TOTAL QUESTIONS : 100

SECTION A : MATHS / QUANT

1. The number of ways in which 12 blue balls, 12 green balls and one black ball can be arranged in a row with the black ball in the middle and arrangements of the colours of balls being symmetrical about the black ball, is

(a) $\frac{24!}{2(2)!(12)!}$ (b) $\frac{12!}{(6)!(6)!}$

(c) $\frac{2(24)!}{(12)!(12)}$ (d) $\frac{12!}{2(6)!(6)!}$

2. $x \in \mathbf{R}$, The solution set of the inequality $|x - 4| + |x - 6| + |x - 8| \le 15$, is
(a) [1, 11] (**b**) [2, 12] (**c**) [0, 10] (**d**) [3, 10]

3. $x \in R$. The solution set of the inequality $10[x]^2 - 17[x] - 6 \le 0$ (where [x] denotes the greatest integer less than or equal to x) is
(a) [0, 3) (**b**) [-1, 2) – (**c**) (0, 3] (**d**) [-1, 3)

4. P, Q are 3 × 3 matrices. X is 3 × 1 matrix. PX = 0 has infinitely many solutions, QX = 0 has a unique solution. T be the solution set of P(QX) = 0. S be the solution set of Q(PX) = 0. Then
(a) both T and S are infinite sets.
(b) only T is an infinite[1] set.
(c) only S is infinite set.
(d) both T and S are finite sets.

5. p, q, r, $\in$ R. $f(x) = px^2 + qx + r$. $f(12) = f(22) = f(42) = 10$. $\int_{12}^{42} f'(x)\,dx$ is equals
(a) 300 (**b**) 200 (**c**) 100 (**d**) 100/3

6. $\int_{\frac{\pi}{2}}^{2\pi} \sqrt{1+\cos\theta}\,d\theta$ equals
(a) $\sqrt{2}$ (b) $2\sqrt{2}$ (c) $3\sqrt{2}$ (d) $4\sqrt{2}$

7. $\lim_{x\to 0} \frac{\frac{\pi}{2} - \cos^{-1} x}{x} - \lim_{x\to\sqrt{3}} \frac{\tan^{-1} x - \frac{\pi}{3}}{x - \sqrt{3}}$ is
(a) 1/4 (b) 2/4 (c) 3/4 (d) 1

8. The solution of the differential equation $y(2x + y^2)dx + x(x + 3y^2)dy = 0$, is
(a) $x^2y + 2xy^3 = c$ (b) $2x^2y\ xy^3 = c$
(c) $xy + xy^3 = c$ (d) $x^2y + xy^3 = c$.

9. $\int_{-2}^{2} \left(\log_e \left(\frac{1-x+x2}{1+x+x2} \right) + e^{\log_e (x-[x])} \right) dx$ equals
(a) 0 (b) 1 (c) 2 (d) 3

10. p, q, r are mutually perpendicular unit vectors. d is also a unit vector. If $d = u_1p + v_1q + w_1r$ and $d = u_2(q \times r) + v_2(r \times p) + w_2(p \times q)$, then the maximum value of $(u_1 - u_2)^2 + (v_1 - v_2)^2 + (w_1 - w_2)^2$ equals
(a) 0 (b) 1 (c) 2 (d) 3

11. The sum $\sum_{0\le k\le 12} \frac{1}{k!(25-k)!}$ equals
(a) $\frac{2^{24}}{25!}$ (b) $\frac{2^{25}}{25!}$ (c) $\frac{2^{26}}{25!}$ (d) $\frac{2^{25}}{24!}$

12. All the matrices in this equation are of order 3 × 3. $A_1 = P^{-1}BP$, $A_2 = P^{-1}B^2P$, $|B| = 3$. The value of $|A_1^2 + A_2|$ is
(a) 36 (b) 48 (c) 60 (d) 72

13. If P, Q, R, S are four distinct collinear points such that $\frac{PR}{RQ} = -\frac{PS}{SQ} = k$, then, the value of $\frac{RP}{PS}.\frac{RQ}{QS}$ is
(a) $-\left(\frac{1+k}{1-l}\right)^2$ (b) $-\left(\frac{1-k}{1-k}\right)^2$
(c) $\left(\frac{1-k}{1+k}\right)$ (d) $\left(\frac{1+k}{1-k}\right)^2$

14. A contractor hires k people for a job and they complete the job in x days. A month later he gets a contract for an identical job. At this time he has with him k + m + n people for the job, the number of days it will require for them to complete it, is
(a) x + m + n (b) $(k+m+n)\frac{x}{k}$
(c) $\frac{x}{k+m+n}$ (d) $\frac{kx}{k+m+n}$

15. In an election 10 per cent of the voters on the voters' list did not cast their votes and 50 voters cast their ballot papers blank. There were exactly two candidates. The winner was supported by 47 per cent of all the voters in the list and he got 306 more than his rival. The number of voters in the list was
(a) 6400 (b) 6603 (c) 7263 (d) 8900

16. Value of $(243)^{0.08}\ (81)^{0.13}$ is
(a) 1 (**b**) 3 (**c**) 9 (**d**) None

17. Let $y_1, y_2, \ldots, y_{71}$ be positive integers such that $y_1 + y_{-1} = s$ for all i, where s is constant. **If** $y_{12} = 1$, then the value of y_1 is
(a) 1 (**b**) s – 1 (**c**) s (**d**) s + 1

18. The coefficient of x^6 in the expansion of $(1 + x^2)^3 (2 + x^4)^{10}$ is
(a) 2^{14} (b) 31
(c) $\binom{3}{3}+\binom{10}{1}$ (d) $\binom{3}{3}+2\binom{10}{1}$

19. **If** q > 0, and $\int_3^q (x-3)\,dx = \int_3^q (x-3)^2\,dx$ then the area of the region bounded by $(3 < x < q) \wedge (y > (x - 3)) \wedge (y < (x - 3)^2)$ is
(a) 0 (**b**) 1/3 (**c**) 1/4 (**d**) 1/6

20. Only one of the following statements given below regarding elements and subsets of the set {2, 3, {1, 2, 3}} is correct. Which one is it?
(a) $\{2, 3\} \in \{2, 3, \{1; 2, 3\}\}$
(b) $1 \in (2, 3, \{1, 2, 3\}\}$
(c) $\{2, 3\} \subseteq (2, 3, \{1, 2, 3\}\}$
(d) $\{1, 2, 3,\} \subseteq \{2, 3, \{1, 2, 3\}\}$

21. $7^{6n} - 6^{6n}$, where n is an integer > 0, is divisible by
(a) 13 (b) 127 (c) 559 (d) None of these

22. Let S be the set of integers x such that
I. $100 \le x \le 200$, II. x is odd,
III. x is divisible by 3 but not by 7.
How many elements does S contain?
(a) 16 (b) 12 (c) 11 (d) 13

Directions for Questions 3 and 4: Answer the questions on the basis of the information given below.
In an examination, there are 100 questions divided into three groups A, B and C such that each group

contains at least one question. Each question in group A carries 1 mark, each question in group B carries 2 marks and each question in group C carries 3 marks. It is known that the questions in group A together carry at least 60% of the total marks.

23. If group B contains 23 questions, then how many questions are there in group C?
(a) 1 (b) 2
(c) 3 (d) Cannot be determined

24. If group C contains 8 questions and group B carries at least 20% of the total marks, which of the following best describes the number of questions in group B?
(a) 11 or 12 (b) 12 or 13
(c) 13 or 14 (d) 14 or 15

25. A person who has a certain amount with him goes to the market. He can buy 50 oranges or 40 mangoes. He retains 10% of the amount for taxi fare and buys 20 mangoes, and of the balance he purchases oranges. The number of oranges he can purchase is:
(a) 36 (b) 40 (c) 15 (d) 20

26. The owner of an art shop conducts his business in the following manner: Every once in a while he raises his prices by X%, then a while later he reduces all the new prices by X%. After one such up-down cycle, the price of a painting decreased by Rs 441. After a second up- down cycle the painting was sold for Rs 1944.81. What was the original price of the painting?
(a) 275625 (b) 225625
(c) 2500 (d) 2000

27. I sold two watches for Rs. 300 each, one at the loss of 105 and the other at the profit of 10%. What is the percentage of loss (-) or profit (+) that resulted from the transaction?
(a) (+) 10 (b) (-) 1 (c) (+) 1 (d) (-) 10

28. Two liquids A and B are in the ratio 5 : 1 in container 1 and 1 : 3 in container 2. In what ratio should the contents of the two containers be mixed so as to obtain a mixture of A and B in the ratio 1 : 1?
(a) 2 : 3 (b) 4 : 3 (c) 3 : 2 (d) 3 : 4
(e) None of these

29. A square, whose side is 2 m, has its corners cut away so as to form an octagon with all sides equal. Then, the length of each side of the octagon, in metres is
(a) $\frac{\sqrt{2}}{\sqrt{2}+1}$ (b) $\frac{2}{\sqrt{2}+1}$
(c) $\frac{2}{\sqrt{2}-1}$ (d) $\frac{\sqrt{2}}{\sqrt{2}-1}$

30. In a chess competition involving some boys and girls of a school, every student had to play exactly one game with every other student. It was found that in 45 games both the players were girls and in 190 games both were boys. The number of games in which one player was a boy and the other was a girl is
(a) 200 (b) 216 (c) 235 (d) 256 (e) N.O.T

REASONING

Directions (Q Nos. 31-33): In each of the following questions, five words are given. Which of them will come in the middle of all if arranged alphabetically as in a dictionary?

31. (a) Cruise (b) Crupper
(c) Crusade (d) Crumb

32. (a) Minisulate (b) Minimalis
(c) Minority (d) Ministerial

33. (a) Sentinel (b) Sentimentally
(c) Sententious (d) Sentence

34. 'A' walks 10 m towards East and then 10 m to his right. Then every time turning to his left, he walks 5, 15 and 15 m, respectively. How far is he now from his starting point?
(a) 5 m (b) 10 m (c) 15 m (d) 20 m

Directions (Q. Nos. 35-36): Three/four statements are given in each of the following questions, followed by two conclusions by three / four numbered I, II, III and IV,. You have to take the given statements to be true even, if they seem to be at variance from common known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statement disregarding commonly known facts.

35. Statements All books are leaves. Some leaves are jungles. No jungle is box.
Conclusions
I. Some jungles are books.
II. No book is box.
III. Some leaves are boxes.
(a) None follows (b) Only I follows
(c) Only II follows (d) Only III follows
(e) I and II follow

36. Statements
All dogs are rats.
All rats are crows.
All crows are parrots.
Conclusions
I. All dogs are parrots.
II. Some parrots are dogs.
III. Some crows are dogs.
IV. All rats are dogs.
(a) I and II follow
(b) I, II and III follow
(c) either II or IV follows
(d) Either I or II or III follows

Directions (Q. Nos. 37-41): Study the following information to answer the given questions.
(i) Eight persons E, F, G, H, I, J, K and L are seated around a square table-two on each side.
(ii) There are three lady members and they are not seated next to each other.
(iii) J is between L and F.
(iv) G is between I and F.
(v) H, a lady member, is second to the left of J.
(vi) F, a male member, is seated opposite to E, a lady member.
(vii) There is a lady member between F and I.

37. Who among the following are the three lady members?
(a) E, H and J (b) E, G and J
(c) G, H and J (d) H, E and G

38. Which of the following is true about J?
(a) J is a male member
(b) J is a female member
(c) Sex of J cannot be determined

(d) Position of J cannot be determined
(e) All of the above

39. Who among the following is seated between E and H?
(a) I (b) J (c) F (d) K

40. Who among the following is to the immediate left of F?
(a) G (b) J (c) I (d) K

41. How many persons are seated between K and F?
(a) One (b) Two
(c) Three (d) Cannot be determined

Directions (Q. Nos. 42-44): Each of the questions given below consists of a question and three statements numbered I, II and III. You have to decide whether the data provided in the statements are sufficient to answer the question.

Give answer
(a) if the data in Statement I and II are sufficient to answer the question while the data in Statement III are not required to answer the question
(b) If the data in Statements I and III are sufficient to answer the question, while the data in statement II are not required to answer the question.
(c) if the data in Statement II and III are Statement are sufficient to answer the question, while the data in Statement I are not required to answer the question.
(d) if the data in either statement I alone or Statement II alone or Statement III alone are sufficient to answer the question
(e) if the data in both the statements I, II and III together are necessary to answer the question

42. Among six people P, Q, R, S, T and V each lives on a different floor of a six storey building having six floors numbered one to six (the ground floor is numbered 1, the floor above it, number 2 and so on and the topmost floor is numbered 6). Who lives on the topmost floor?
I. There is only one floor between the floors on which R and Q live, P lives on an even number floor.
II. T does not live on an even numbered floor. Q lives on an even numbered floor. Q does not live on the topmost floor.
III. S lives on an odd numbered floor. There are two floors between the floors on which S and P live. T lives on a floor immediately above R's floor.

43. There are six letters W, A, R, S, N and E. Is 'ANSWER' the word formed after performing the following operations using these six letters only?
I. E is placed fourth to the right of A. S is not placed immediately next to either A or E.
II. R is placed immediately next (either left or right) to E. W is placed immediately next (either left or right) to S.
III. Both N and W are placed immediately next to S. The word does not begin with R. A is not placed immediately next to W.

44. Point D is in which direction with respect to Point B?
I. Point A is to the West of Point B. Point C is to the North of Point B. Point D is to the South of Point C.
II. Point G is to the South of Point D. Point G is 4 m from Point B. Point D is 9 m from Point B.
III. Point A is to the West of Point B. Point B is exactly midway between Points A and E. Point F is to the South of Point E. Point D is to the West of Point F.

45. If each vowel in the word 'SURROUNDED' is changed to be previous letter of the English alphabet and each consonant is changed to the next letter in the English alphabet, which of the following will be the second from the right end in the new arrangement?
(a) N (b) T (c) S (d) O

46. The positions of how many alphabets will remain unchanged if each of the alphabets in the word 'FORGET' is arranged in alphabetical order from left to right?
(a) None (b) One (c) Two (d) Three

Directions (Q. 47-51): Study the following information carefully to answer these questions.
(i) 'P * Q' means 'P is father of Q'.
(ii) 'P # Q' means 'P is sister of Q'.
(iii) 'P + Q' means 'P is brother of Q'.
(iv) 'P – Q' means 'P is mother of Q'.
(v) 'P/Q' means 'P is son of Q'.
(vi) 'P = Q' means 'P is daughter of Q'.

47. If Z * X – Y is given, then which of the following is true?
(a) Z is maternal uncle of Y
(b) Z is grandfather of Y
(c) X is nephew of Z
(d) Z is grandmother of Y

48. Which of the following means 'Z has two children'?
(a) Z + Y + X (b) Z * Y # X
(c) Z # Y – X (d) Z + X/Y

49. Which of the following means 'X is the grandfather of Y'?
(a) X * Z * Y (b) Y * Z/X
(c) Z # X = Y (d) X + Y/Z

50. Which of the following means 'X is the grandfather of Z'?
(a) X * Y * Z (b) Z # X – Y
(c) Y – Z = X (d) X – Y – Z

51. Which of the following means 'Y is the mother of X and Z'?
(a) X + Y – Z (b) Y – X/Z
(c) Y – X + Z (d) Y + X * Z

52. Anita drives from point A towards North and travels 30 km. She then turn to her right and travels 4 km and then again turns to the right and drives straight for 30 m. How much distance she has to cover to go straight to the starting point?
(a) 26 km (b) 8 km (c) 22 km (d) 4 km

Directions (Q. Nos. 53-54): Three/four statements are given in each of the following questions, followed by two conclusions by three / four numbered I, II, III and IV,. You have to take the given statements to be true even, if they seem to be at variance from common known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statement disregarding commonly known facts

53. Statements
All peacocks are lions.
Some tigers are peacocks.
Conclusions

I. Some lions are not tigers.
II. All tigers are lions.
III. Some tigers are lions.
IV. All peacocks are tigers.
(a) Only conclusion I follows
(b) Only conclusion II follows
(c) Only conclusion III follows
(d) Only conclusion IV follows

54. Statements All rings are fingers. Some ears are fingers. All ears are necklace.
Conclusions
I. Some necklaces are fingers.
II. Some necklaces are rings.
(a) None follows (b) Only I follows
(c) Only II follows (d) Both I and II follow
(e) None of the above

Directions (Q. Nos. 55-56) These questions are based on the information given below:
A group of seven singers, facing the audience, are standing in a line on the stage as follows
(i) D is to the right of C.
(ii) F is standing beside G.
(iii) B is to the left of F.
(iv) E is to the left of A.
(v) C and B have one person between them.
(vi) A and D have one person between them.

55. Who is on the extreme right?
(a) D (b) F (c) G (d) E
56. If we start counting from the left, on which number is C?
(a) 1st (b) 2nd (c) 3rd (d) 5th

Directions (Q. Nos. 57-58) Read the following information carefully and answer the questions that follow:
(i) Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U.
(ii) Q gets a North facing flat and is not next to S.
(iii) S and U get diagonally opposite flats.
(iv) R next to U, gets a South facing flat and T gets a North facing flat.

57. Whose flat is between Q and S?
(a) T (b) U (c) R (d) P
58. The flats of which of the other pair than SU, is diagonally opposite to each other?
(a) PT (b) QP (c) QR (d) TS
59. Smt. Indira Gandhi died on 31st October, 1984. The day of the week was :
(a) Monday (b) Tuesday
(c) Wednesday (d) Friday
60. P.V. Narsimha Rao was elected party leader on 29th May, 1991. What was the day of the week?
(a) Tuesday (b) Friday
(c) Wednesday (d) Sunday

SECTION C: COMPUTERS

61. An S R flip flop cannot accept the following input entry
(a) both inputs zero (b) zero at R and one at S
(c) zero at S and one at R (d) both inputs one
62. Which of the following IC has only one input line?
(a) multiplexer (b) demultiplexer
(c) AND gate (d) BCD to decimal decoder
63. Which of the following unit will choose to transport decimal number to binary code?
(a) encoder (b) decoder
(c) multiplexer (d) demultiplexer
64. Which of the following circuit is called latch?
(a) AND circuit (b) NAND circuit
(c) flip-flop (d) ROM circuit
65. If the input J is connected through K input of J-K, the flip-flop will behave as a
(a) D type flip-flop (b) T-Type flip-flop
(c) S R flip-flop (d) toggle switch
66. Which of the frequency flip-flop is free from race-around problem?
(a) Q flip-flop (b) T flip-flop
(c) SR flip-flop (d) Master-slave JK flip-flop
67. A multiplexer with a 4 bit data select input is a
(a) 4 : 1 multiplexor (b) 2 : 1 multiplexor
(c) 16 : 1 multiplexor (d) 8 : 1 multiplexor
68. A flip-flop can store
(a) one bit of data (b) two bits of data
(c) three bits of data (d) any number of bits of data
69. How many flip-flops are needed to divide the input frequency by 64?
(a) 4 (b) 5 (c) 6 (d) 8
70. Which of the following flip-flops is free from race around problem?
(a) T flip-flop (b) SR flip-flop
(c) Master slave JK flip-flop (d) all of the above
71. Control unit of a computer is designed to go through an instruction cycle in which phase
(a) Fetch the instruction from memory
(b) Decode the instruction
(c) Execute the instruction
(d) All of these
72. Which is the output of the following program fragment in C?
int x, y = 2, z, a;
x = (y* = 2) + (z = a = y);
print f("%d", x);
(a) 7 (b) 8
(c) Garbage value (d) Error
73. If $(123)_5 = (x_3)_y$, the number of possible value of x is
(a) 4 (b) 1 (c) 3 (d) 2
74. The value of x and y, if $(X567)_8 + (2YX_5)_8 = (71YX)_8$ is
(a) 4, 3 (b) 3, 3 (c) 4, 4 (d) 4, 5
75. FFFF will be the last memory location in a memory size
(a) 1K (b) 16K (c) 32K (d) 64K
76. How many transistor in LSI
(a) more than 100 (b) more than 1000
(c) more than 10,000 (d) more than 10
77. Which of the following is volatile?
(a) Bubble Memory (b) RAM
(c) ROM (d) Magnetic disk
78. Which of the following is functionally complete set?
(a) AND, OR (b) AND, XOR
(c) NOT, OR (d) AND, OR, NOT
79. How many 1's present in the binary representation of $5 \times 1024 + 7 \times 128 + 7 \times 16 + 3$?
(a) 8 (b) 9 (c) 10 (d) 11
80. Which is / are in built with motherboard?
(a) Printer (b) RAM (c) ROM (d) Both (a) and (b)

SECTION D : ENGLISH

SET-1

Read the following passage and answer the questions given below it. Certain words are italicised to help you answer some of the questions.

Several suggestions have been advanced to remove obstacles in the way of fast agricultural growth. One such suggested policy measure is to accord industry status to agriculture on the premise that it would lead to eradication

of rural poverty through the fuller utilisation of the vast potential of agriculture to generate additional production, jobs and income. To what extent would such a step serve the desired aim and what would be its implications?

Agriculture and industry differ significantly in some very important aspects. These references are with regard to processes and techniques of production and nature, marketing pattern and pricing of products.

All farm products are good media for bacteria and are, therefore, perishable. The life of industrial products, on the other hand, is relatively much longer as they are less perishable.

Most farm crops come to maturity during a relatively short and specific period and are consumed throughout the year. Industrial production, on the contrary, takes place throughout the year and is hence less seasonal. This and other special features of agriculture subject it to the problems of storage and transportation.

In agriculture, supply of commodities is less controllable than in the industrial sector. Industry attempts to gauge demand continuously and match the supply accordingly. In agriculture, the position is just the reverse.

The relationship between price and output is strikingly different in two sectors. Industrial output is directly related to price. In agriculture, the price is inversely related to production. Also, industrial prices are generally more stable than agricultural prices.

Some apprehensions have also been expressed that agriculture has not been treated on par with industry in terms of prices. The main objective of the agriculture price policy in India is to provide an inducement to the producer for adopting improved technology and for maximum production and income. The minimum support/procurement prices for major agricultural commodities numbering about 20 are fixed each year on the basis of recommendations of the Commission for Agricultural Costs and Prices (CACP). They are meant to enable the farmer to pursue his activities with the assurance that the price of his produce would not be allowed to fall below the minimum.

The aim of the price policy in the industrial sector is not to support but control prices. The industrial prices of certain selected products, particularly basic consumer goods and important industrial and agricultural inputs, are controlled and regulated on the recommendations of an expert body like the Bureau of Industrial Costs and Prices (BICP) or inter ministerial committees or groups in the case of certain public enterprises. The factors taken into account in recommending the prices include the cost of more efficient firms accounting for a high percentage of total output, the optimum norms of consumption of raw materials and energy as well as capacity utilisation and a fair rate of return on net worth generally ranging between 10 to 14% depending on risks, priorities, growth prospects etc.

81. Which of the following is true according to the passage?
    (a) The agricultural sector involves more non-skilled workers
    (b) Agriculture is a priority sector
    (c) There is no definite market policy adopted by agricultural sector
    (d) The industrial sector is more organised than the agricultural sector
82. According to the passage, which of the following is the main purpose to give an industry status to agriculture?
    (a) To improve conditions of rural poor.
    (b) To produce more food.
    (c) To create more jobs for rural population.
    (d) To make the rural population economically sound
83. According to the passage, which of the following is the most important hurdle in giving an industry status to agriculture?
    (a) Less durability of agricultural products.
    (b) Difficult mode of transportation.
    (c) High production costs.
    (d) Involvement of comparatively large number of laborers.
84. Which of the following, according to the passage, was the main factor of industrial price policy set up by the Government?
    (a) Supporting the industry to attain an optimum price for its products.
    (b) Consumption of more raw material and higher return.
    (c) Controlling of new industrial units.
    (d) Providing a favoured status to industry.
85. Which of the following words has the same meaning as the word 'gauge' as used in the passage?
    (a) obtain (b) quality (c) assess (d) match

Set-2

Doctors have cautioned people to be careful about the indiscriminate and prolonged use of common pain-killers such as aspirin and paracetamol, as they can cause peptic ulcers and stop blood clot formation.

Instead, a variety of therapies that target and block or destroy a specific nerve responsible for chronic pain are now available according to participants at an International Conference on Pain that opened here yesterday.

They said pain therapy now includes special electro - stimulation methods, ratio frequency waves, laser beams, and blocking the offending nerve with an injection of alcohol and phenol.

Also on the horizon are two new analgesic drugs, *etorolac* and *tramadol*, that are reported to be safe. The former, introduced in India a year back, is a non opium derivative with high pain-killing potential and no reports of adverse side-reactions in medical literature, Dr. H Kaul, Head of the Anesthesia Department of the All India Institute of Medical Sciences, New Delhi, told PTI.

Tramadol is expected to be launched in India shortly. Clinical trials in India on use of tramadol to control pain after operations, labour pain and burn cases indicated that the analgesic effect was good in 85% cases, according to report by Ahmedabad doctors.

Classically, opium and its derivatives, such as morphine, were used to control pain but their use has two dangerous side effects—addiction and reduced respiration—and so they have to be administered under controlled conditions.

Aspirin was one of the first non-opium type analgesic to be used. But, cautioned Dr. Kaul, prolonged use of common analgesics such as aspirin, novalgin and paracetamol can be harmful and they should not be used for long without proper prescription, and care after use.

"The dose should be restricted as they can be dangerous and life threatening", he added.

Other avenues in pain management include blocking the nerve causing pain with an injection of absolute alcohol and six per cent phenol. The therapy, introduced in the seventies, however, blocks the entire nerve. Doctors can now localise the exact region of the pain-causing nerve by focusing radio frequency waves that can heat an area as small as 0.1—0.5 mm in size.

But use of radio frequency waves is capital and technology intensive and it is simpler for doctors to use laser beams to penetrate deep into the tissue to the exact spot generating pain and destroy it. Dr. Kaul said.

Besides using the standard drug therapies for pain management, the AIIMS anesthesia department uses an electrical stimulation method called transcutaneous

electrical nerve stimulation (TENS) to control some case of chronic pain.

86. Prolonged use of common pain-killers are:
(a) dangerous (b) safe
(c) results are not known (d) neutral in effect

87. Which is true in the context of the passage.
(a) Etorolac is a non-opium pain-killer with side effects
(b) Etorolac is a pain-killer with high pain-killer with high pain-killing potential with no reported side reactions
(c) Etorolac is a new analgesic drug with adverse effects
(d) Etorolac is a classical pain-killer

88. Which pain-killers or devices have the side effects of addiction and reduced respiration?
(a) Aspirin and paracetamols
(b) Etorolac and tramadol
(c) Opium and its derivative, morphine
(d) Electro-stimulation

89. What is the present situation in the situation in the use of pain-killers?
(a) it has made break through
(b) it has deteriorated
(c) it has become chaotic
(d) it has become unsafe

90. Which pain-killing device is most expensive?
(a)Classical opium derivatives
(b) Aspirin and paracetamol
(c) Etorolac and tramadol
(d) Ratio frequency waves.

91. She slipped and _____ her ankle.
(a) broken (b) sprained
(c) massaged (d) hurted

92. Mussoorie, the Queen of hills in India, offers many _____.
(a) entertainments (b) sights
(c) attractions (d) tourists

93. The boys _____ whom I was playing are all my good friends.
(a) with (b) to (c) of (d) by

94. Parveen and Neelima could not enroll in the college _____ they had already managed to get a passing score in the official exam.
(a) therefore (b) even though
(c) hence (d) moreover

95. The gypsies do not live _____ at a particular place.
(a) broadly (b) willingly
(c) permanently (d) voluntarily

Directions : In these questions, choose the word opposite in meaning to the given word:

96. Nourish
(a) starve (b) foster (c) sustain (d) strengthen

97. Alight
(a) disembark (b) embark (c) embalm (d) align

Directions : In these questions out of the four alternatives, choose the one which best expresses the meaning of the given word:

98. Transient
(a) Temporary (b) Durable
(c) timely (d) Transparent

99. Compensate
(a) Compile (b) Make up for
(c) Result in (d) Complete

100. 1. The children's Film Society
P. in 1955
Q. the objective of promotion
R. India (CFSI0 was established
S. as an autonomous body
6. And encouraging children film movement in the country
(a) SRQP (b) RPSQ (c) PRQS (d) SPQR

MAHCET MOCK-3

1. **Ans. (b)** After putting black ball in middle for symmetric arrangement on its either sides there will be 6 balls of each colour on either side and the other side will have balls in similar fashion. So, required number of ways will be

$${}^{12}C_6 \times {}^{6}C_6 = \frac{12!}{(6)!(6)!}$$

2. **Ans. (a)**

x ∈ R,

|x - 4| + |x - 6| + |x - 8| ≤ 15,

Case I When, 0 ≤ x ≤ 4,

-(x – 4) – (x – 6) – (x – 8) ≤ 15

⇒ - 3x + 18 ≤ 15 ⇒ - 3x ≤ - 3

⇒ x ≥ 1

∴ x ∈ [1, 4]

Case II When, 4 ≤ x ≤ 16

(x – 4) – (x – 6) (x – 8) ≤ 15

⇒ x – 4 – x + 6 – x + 8 ≤ 15

⇒ - x + 10 ≤15

⇒ - x ≤ 5 ⇒ x ≥ - 5

∴ x ∈ [4, 6]

Case III When, 6 ≤ x ≤8

(x – 4) + (x – 6) – (x – 8) ≤ 15

⇒ 2x – 10 – x + 8 ≤ 15

⇒ x ≤ 17

∴ x ∈ [6, 8]

Case IV When 8 ≥ x

(x – 4) + (x – 6) + (x – 8) ≤ 15

⇒ 3x – 18 ≤ 16

⇒ 3x ≤ 33

⇒ 3x ≤11

∴ x ∈ [8, 11]

So, from Cases 1st, IInd, IIIrd and IVth gives x ∈ [1, 1, 1].

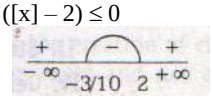
3. **Ans. (a)**

$10[x]^2 - 17[x] - 6 \le 0$

$10[x]^2 - 20[x] + 3[x] - 6 \le 0$

$10[x]([x] - 2) + 3([x] - 2) \le 0$

$\Rightarrow (10[x] + 3)([x] - 2) \le 0$



$$\Rightarrow \frac{-3}{10} \le [x] \le 2$$

$$\Rightarrow [x] = 0, 1, 2$$

$$\Rightarrow x \in [0, 3)$$

4. **Ans. (a)**

PX = O has infinite solution, so |P| = 0

QX = O has unique solution, so |Q| ≠ 0

Now, for P(QX) = 0, we have |PQ| = |P'||Q| = 0

Also, for Q(PX) = 0, we have |QP| = |Q||P| = 0

So, both T and S are infinite sets.

5. **Ans. (d)**

$$I = \int_{12}^{42} f'(x)\,dx = \left[f(x) \right]_{12}^{42} = f(42) - f(12)$$

= 10 – 10 = 0

6. **Ans. (c)**

$$I = \int_{\frac{\pi}{2}}^{2\pi} \sqrt{1 + \cos 2\theta}\, d\theta = \int_{\frac{\pi}{2}}^{2\pi} |\cos\theta| d\theta$$

$$= \sqrt{2}\left[\int_{\frac{\pi}{2}}^{2\pi/2} -\cos\theta d\theta + \int_{2\pi/2}^{2\pi} \cos\theta d\theta \right]$$

$$= \sqrt{2}\left[(-\sin\theta)_{\frac{\pi}{2}}^{\frac{2\pi}{2}} + (\sin\theta)_{\frac{2\pi}{2}}^{2\pi} \right]$$

$$= \sqrt{2}\left[(1+1) + 0 - (-1) \right] = 3\sqrt{2}$$

7. **Ans. (c)**

$$L = \lim_{x \to 0} \frac{\frac{\pi}{2} - \cos^{-1} x}{x} - \lim_{x \to \sqrt{3}} \frac{\tan^{-1} x - \frac{\pi}{3}}{x - \sqrt{3}}$$

Both are $\frac{0}{0}$ case, so by L' Hospital's rule we have

$$L = \lim_{x \to 0} \frac{\frac{1}{\sqrt{1-x^2}}}{1} - \lim_{x \to \sqrt{3}} \frac{\frac{1}{1+x^2}}{1} = 1 - \frac{1}{4} = \frac{3}{4}$$

8. **Ans. (d)**

$y(2x + y^2)dx + x(x + 3y^2)\,dy = 0$

$\Rightarrow (2xy\,dx + x^2\,dy) + (y^3 dx + 3xy^2 dy) = 0$

$\Rightarrow d(x^2y) + d(xy^3) = 0$

$$\int d\left(x^2 y\right) + \int d\left(xy^3\right) = 0$$

$$\Rightarrow x^2 y + xy^3 = C$$

9. **Ans. (c)** $I = \int_{-2}^{2} \left(\log_e \left(\frac{1 - x + x^2}{1 + x + x^2} \right) + e^{\log_e (x - [x])} \right) dx$

$$= \int_{-2}^{2} \log \left(\frac{1 - x + x^2}{1 + x + x^2} \right) dx + \int_{-2}^{2} x - [x]\, dx$$

$$= 0 + \int_{-2}^{2} x\,dx - \int_{-2}^{2} [x]\,dx$$

$$\left(as \log_e \left(\frac{1 - x + x^2}{1 + x + x^2} \right) \text{is an odd function} \right)$$

$$\Rightarrow I = -\int_{-2}^{2} [x]\,dx \qquad \text{(as x is an odd function)}$$

$$= -\int_{-2}^{-1} -2\,dx - \int_{-1}^{0} -1\,dx - \int_{0}^{1} 0\,dx - \int_{1}^{2} 1\,dx$$

$$= 2[x]_{-2}^{-1} + [x]_{-1}^{0} - [x]_{1}^{2}$$

= 2(-1 + 2) + (0 + 1) – (2 – 1) = 0

10. **Ans. (a)** $d = u_1 p + v_1 q + w_1 r$ and …(i)

$d = u_2(q \times r) + v_2(r \times p) + w_2(p \times q)$ …(ii)

Taking dot product of both the equations, we get

$d.d = u_1 u_2 + v_1 v_2 + w_1 w_2$ (∵ [pqr] = 1)

$\Rightarrow d^2 = u_1 u_2 + v_1 v_2 + w_1 w_2$ [p.p = q.q = r.r = 1]

Also, $d^2 = u_1^2 + v_1^2 + w_1^2$

[p, q, r are unit vectors mutually perpendicular to each other]

and $d^2 = u_2^2 + v_2^2 + w_2^2$

$[\because q \times r = p : r \times p = q \text{ and } p \times q = r]$

So, $(u_1 - u_2)^2 + (v_1 - v_2)^2 + (w_1 - w_2)^2$

$$= \left(u_1^2 + v_1^2 + w_1^2\right) + \left(u_2^2 + v_2^2 + w_2^2\right) - 2\left(u_1 u_2 + v_1 v_2 + w_1 w_2\right)$$

$$= d^2 + d^2 - 2d^2 = 0$$

11. **Ans. (a)** $S = \sum_{0 \le k \le 12} \frac{1}{k!(25-k)!}$

$$= \frac{1}{25!} \sum_{k=0}^{12} \frac{25!}{k!(25-k)!} \qquad \left(\because {}^{n}C_r = \frac{n!}{r!(n-r)!} \right)$$

$$= \frac{1}{25!} \sum_{k=0}^{12} {}^{25}C_k$$

$$= \frac{1}{25!} \left({}^{25}C_0 + {}^{25}C_1 + \ldots + {}^{25}C_{12} \right)$$

$$= \frac{1}{25!} \left[\left({}^{25}C_0 + \ldots + {}^{25}C_{12} \right) + \left({}^{25}C_0 + \ldots + {}^{25}C_{12} \right) \right] \times \frac{1}{2}$$

$$= \frac{1}{2} \times \frac{1}{25!}[({}^{25}C_0 + {}^{25}C_1 + ... + {}^{25}C_{12}) + ({}^{25}C_{25} + {}^{25}C_{24} + {}^{25}C_{13})]$$

$$= \frac{1}{25!} \times \frac{1}{2}({}^{25}C_0 + {}^{25}C_1 + ... + {}^{25}C_{25})$$

$$({}^{n}C_r = {}^{n}C_{n-r} \Rightarrow {}^{25}C_{12} = {}^{25}C_{13} ... {}^{25}C_0 = {}^{25}C_{25})$$

$$= \frac{1}{25!} \times \frac{1}{2}\left(2^{25}\right) = \frac{2^{24}}{25!}$$

12. **Ans. (d)** $A_1 = P^{-1}BP$

$$\Rightarrow A_1^2 = A_1 A_1 = \left(P^{-1}BP\right)\left(P^{-1}BP\right)$$

$$= \left(P^{-1}B^2P\right)\left(P^{-1}P\right)$$

$$\Rightarrow A_1^2 = P^{-1}B^2P = A_2$$

$$\Rightarrow A_1^2 + A_2 = 2A_2$$

Hence, $\left|A_1^2 + A_2\right| = \left|2A_2\right| = 2^3\left|A_2\right|$

$$= 8\left|P^{-1}B^2P\right| = 8\left|P^{-1}\right|\left|B^2\right|\left|P\right| = 8\left|B\right|^2 = 72$$

13. **Ans. (a)** $\frac{PR}{RQ} = k, -\frac{PS}{SQ} = k$

Using componendo and dividendo, we get

$$\frac{PR+RQ}{PR-RQ} = \frac{k+1}{k-1}, \frac{-PS+SQ}{-PS-SQ} = \frac{k+1}{k-1}$$

$$\Rightarrow \frac{PR+RQ}{PQ} = \frac{k+1}{k-1}, \frac{PQ}{-(PS+QS)} = \frac{1+k}{1-k}$$

$$\Rightarrow \frac{PR+RQ}{PQ} \times \frac{PQ}{-(PS+QS)} = \left(\frac{1+k}{1-k}\right)^2$$

14. **Ans. (d)** k people can do work in x days.
1 people can do work in kx days.

k + m + n people can do work in $\frac{kx}{k+m+n}$ days.

15. **Ans. (a)** Total (100 – 10) = 90%. Votes were given, out of which 50 were blank.
It x voters were there, then

Winner got $\frac{43x}{100} - 50$ votes

$$\Rightarrow \frac{47x}{100} - \left(\frac{43x}{100} - 50\right) = 306$$

$$\Rightarrow \frac{4x}{100} + 50 = 306$$

$$\Rightarrow \frac{x}{25} = 256$$

$\Rightarrow$ x = 6400

16. **Ans. (d)** $(243)^{0.08}\,(81)^{0.13} = (3)^{0.4}\,(3)^{0.52} = (3)^{0.92} < 3$

17. **Ans. (b)** $y_i + y_{i-1} = s$ and $y_{12} = 1$
$\Rightarrow y_{12} + y_{11} = s \Rightarrow y_{11} = s - 1$
$\Rightarrow y_{11} + y_{10} = s \Rightarrow y_{10} = 1$
$\Rightarrow y_{12} = y_{10} = \ldots y_2 = 1$ and
$y_{11} = y_{12} = \ldots y_1 = s - 1$

18. **Ans. (a)** $(1 + x^2)^3\,(2 + x^4)^{10}$
$= (1 + {}^3C_1x^2 + {}^3C_2x^4 + {}^3C_3x^6)\,(2^{10} + {}^{10}C_1 2^9 x^4 + \ldots)$
So, coefficient of x^6 is
${}^3C_1.{}^{10}C_1.2^9 + {}^3C_3 2^{10} = 30 \times 2^9 + 2^{10} = 32 \times 2^9 = 2^{14}$

19. **Ans. (d)** Given, $\int_3^a (x-3)\,dx = \int_3^a (x-3)^2\,dx$.

Differentiating w.r.t. x, we get

$$\Rightarrow \left[x-3\right]_3^a = \left[(x-3)^2\right]_3^a$$

$\Rightarrow$ (q – 3) = $(q - 3)^2$
$\Rightarrow$ (q – 3) (q – 4) = 0
$\Rightarrow$ q = 3, 4
Required area

$$= \int_3^4 \left\{(x-3) - (x-3)^2\right\} dx$$

$$= \left[\frac{(x-3)^2}{2} - \frac{(x-3)^3}{3}\right]_3^4 = \frac{1}{2} - \frac{1}{3} = \frac{1}{6}$$

20. **Ans. (c)** $\{2, 3\} \subseteq \{2, 3\{1, 2, 3\}\}$
is correct as elements 2 and 3 are also elements of the given set.

21. **Ans. (b)** For n = 1, $7^6 - 6^6 = (7^3)^2 - (6^3)^2$
$= (7^3 - 6^3)\,(7^3 + 6^3) = (343 - 216)\,(343 + 216)$
$= 127 \times 559$. Clearly it is divisible by 127.

22. **Ans. (d)**
Number between 100 to 200, which are divisible by 3 are 102, 106, 109, ….., 198. 198 = 102 + (n – 1) × 3 $\Rightarrow$ n = 33.
Out of these 33 numbers 17 are even and 16 are odd. Out of these 16 odd numbers there are three numbers (= 105, 147, 189), which are divided by the LCM of (7, 3) ie, 21.
Hence, in all (16 – 3) = 13 numbers are contained is S.

23. **Ans. (a)** Let the number of questions in A, B and C be a, b and c respectively.
We have, a + b + c = 100.
Total marks would be a + 2b + 3c.
Given b = 23, total marks from section B = 46
Different possible values for c are 1, 2, 3, …..
$\therefore$ Corresponding values for a are 76, 75, 74, …..
(since total questions are 100).
When c = 1, a = 76, b = 23.
Total marks from sections A, B, C are 76, 46, 3 respectively.
Percentage marks from $A = \frac{76}{76+46+6} = \frac{75}{127} < 60\%$
For all other values, when c increases, a decreases and contribution of marks from A keeps decreasing.
$\therefore$ There is only 1 possible value for questions from group C.

24. **Ans. (c)** Marks from section C = 24
Since, B contributes at least 20% and A contributes at least 60% to the total contribution from C is maximum of the 20%.
$\therefore$ Total marks $\geq$ 120.
Total questions are 100. So a + b = 72.
Minimum number questions in A = 72 and in B = 12.

C	B	A	Total score (a + 2b + 3c)	% contri-bution of A	% contri-bution of B	Condition satisfies
8	12	80	128	$\frac{80}{128} < 20\%$	$\frac{24}{128} < 20\%$	×
8	13	79	129	> 60%	> 20%	√
8	14	78	130	> 60%	> 20%	√
8	15	77	131	< 60%	> 20%	×

Hence, only 2 possible values of b exist.

25. **Ans. (d)** Suppose the person has Rs. 100 with him.
$\therefore$ Price per orange is Rs. 2 and that of a mango is Rs. 2.50. After keeping Rs. 10 for taxi, he is left with Rs. 90.

Price of 20 mangoes = Rs. 40. Remaining money = (90 – 40) = Rs. 50.

So, he can buy $\frac{50}{2.5} = 20$ oranges for this amount.

26. **Ans. (a)** Let the initial price be Rs. A.

Then, $A - A\left(\frac{100-X}{100}\right)\left(\frac{100+X}{100}\right) = 441$

$$\Rightarrow \left(\frac{100^2 - X^2}{100^2}\right) = \frac{A-441}{A} \quad \ldots(i)$$

and $\left(\frac{100^2 - X^2}{100^2}\right) = 1944.81 \quad \ldots(ii)$

From Eqs. (i) and (ii),

$$A\left(\frac{A-441}{A}\right)^2 = 1944.81 \Rightarrow A = \text{Rs. } 2756.25$$

27. **Ans. (b)** In such case where SP of two items is same and loss % and profit % is also same, there is always a loss on such transaction and it is given by

Loss percentage $= \frac{(10)^2}{100} = 1\%$

28. **Ans. (d)** Let the ratio of contents of the two containers be x and y.

Then, quantity of a liquid A in the mixture $= \frac{5}{6}x + \frac{1}{4}y$

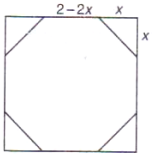
given

$$\frac{\frac{5x}{6} + \frac{y}{4}}{\frac{x}{6} + \frac{3y}{4}} = \frac{1}{1}$$

$$\Rightarrow \frac{5x}{6} - \frac{x}{6} = \frac{3y}{4} - \frac{y}{4}$$

or $\frac{4x}{6} = \frac{2y}{4} \Rightarrow \frac{x}{y} = \frac{3}{4}$

29. **Ans. (a)** Let the length of the edge cut away from the corners of the square be x.



Since, the resulting figure is a regular octagon,

$$\sqrt{x^2 + x^2} = 2 - 2x \Rightarrow \sqrt{2} = 2 - 2x$$

$$\Rightarrow \sqrt{2}x\left(1+\sqrt{2}\right) \Rightarrow x\sqrt{2} = 2 - 2x$$

$$\Rightarrow \sqrt{2}\left(1+\sqrt{2}\right) \Rightarrow x\sqrt{2} = 2 - 2x$$

$$\Rightarrow \sqrt{2}\left(1+\sqrt{2}\right) = 2$$

$$\Rightarrow x = \frac{\sqrt{2}}{\sqrt{2}+1}$$

30. **Ans. (a)**

Let there be m boys and n girls.

Then, ${}^{n}C_2 = 45 = \frac{n(n-1)}{2} \Rightarrow n(n-1) = 90 \Rightarrow n = 10$

${}^{m}C_2 = 190 = \frac{m(m-1)}{2} = 190$

$\Rightarrow$ m(m – 1) = 380 $\Rightarrow$ m = 20

Number of games between one boy and one girl

$= {}^{10}C_1 \times {}^{20}C_1 = 10 \times 20 = 200$

31. **Ans. (d)** Alphabetical order is

Crude, Cruise, Crumb, Crupper, Crusade

So, word 'Crumb' will come in middle.

32. **Ans. (d)** Alphabetical order is

Miniature, Minimalis, Ministerial, Minisulate, Minority

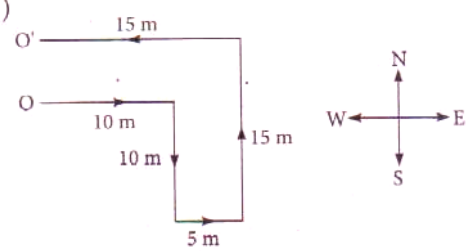
So, word 'Ministerial' will come in middle.

33. **Ans. (b)** Alphabetical order is

Sentence, Sententious, Sentimentally, Sentimentialize, Sentinel

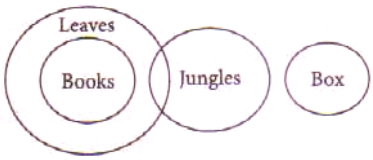
34. **Ans. (a)**

(1)



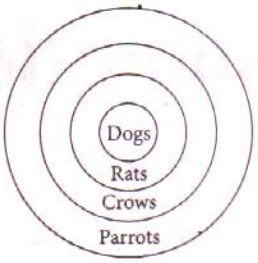
From above figure O' is the final point and is 5 m away from the starting point O.

35. **Ans.(a)**



Clearly, none follows.

36. **Ans.(b)**



Conclusions

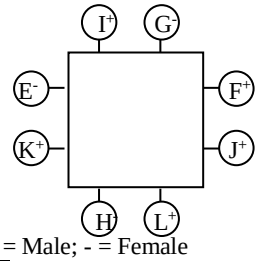
I. √

II. √

III. √

IV. ×

Solutions (Q. Nos. 37-41):



Note + = Male; - = Female

37. **Ans. (d)** It is clear from the figure that the three lady members are H, E and G.

38. **Ans. (a)** It is clear that J is a male member.

39. **Ans. (d)** K is sitting between E and H.

40. **Ans. (b)** J is sitting immediately left of F.

41. **Ans. (c)** There are three persons seated between K and F on either side.

42. Ans. (e) The data in Statements I, II and III together are necessary to answer the question.

43. Ans. (d) The data in either Statement I alone or Statement II alone or Statement III alone are sufficient to answer the question.

44. Ans. (b) The data in Statements I and III are sufficient to answer the question, while the data in Statement II are not required to answer the question.

45. (d)

S	U	R	R	O	U	N	D
↓	↓	↓	↓	↓	↓	↓	↓
T	T	S	S	N	T	O	E

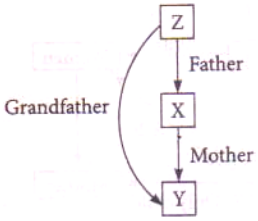
New formation = T T S S N T O E
Hence, second letter from the right end = O

46. (b)

	F	O	R	G	E	T
Alphabetical order→	E	F	G	O	R	T

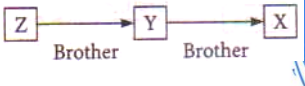
So, after arranged the letters alphabetically 'T' is the only one letter which takes same place.

47. (b) Z * X – Y

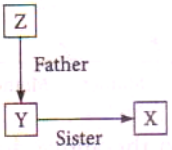


Hence, option (b) is true.

48. (b) (a) Z + Y + X

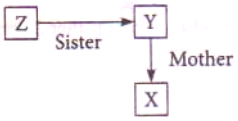


(b) Z * Y # X

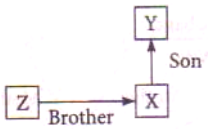


Clearly, Z has two children x and y.

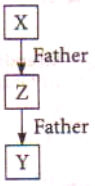
(c) Z # Y – X



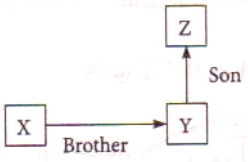
(d) Z + X/Y



49. (a) Option (b) is harsh as gender of X cannot be determined. Also, option (c) is harsh as gender of X is female here. Now, (a) X * Z * Y
(d) X + Y/Z

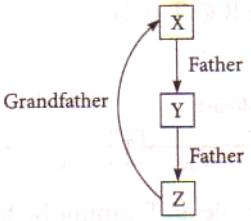


Hence, X is grandfather of Y

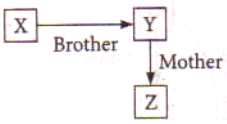


50. (a) Option (c) is harsh as gender of X cannot be determined. Also, option (b) and option (d) are harsh as, here gender of X is female but it should be male.
Now,

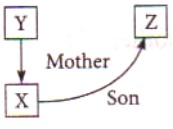
X * Y * Z



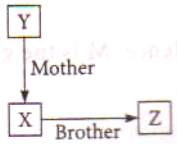
51. (c) Option (d) is harsh as here Y is male.
Now, (a) X + Y – Z



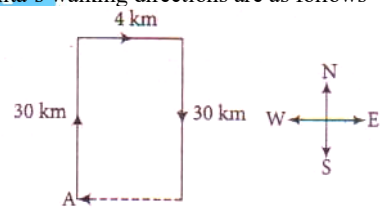
(b) Y – X/Z



(c) Y – X + Z

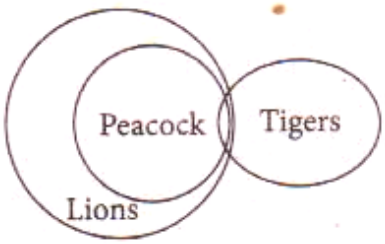


52. (d) Anita's walking directions are as follows



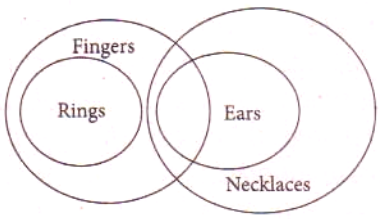
Hence, from figure Anita is 4 km away from her starting point.

53. (c)



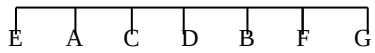
Conclusions
I. × II. × III.√ II. ×
Hence, only Conclusion III follows

54. (b)



Clearly, only Conclusion I follows

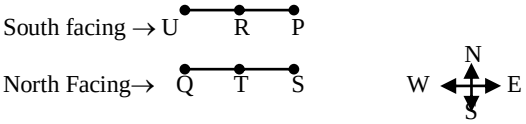
Solutions (Q. Nos. 55-56): Given figure shows the correct positions of singers in the line.



55. (c) It is clear from the diagram that singer G is at the extreme right of the line.

56. (c) It is clear from the diagram that C is the third from the left.

Solutions (Q. Nos. 57-58): Given figure shows the correct positions of persons.



57. (a) Clearly, T's flat is between Q and S.

58. (b) As given in statement (iii), S and U are diagonally opposite. Similarly, from the figures we can say P and Q are also diagonally opposite.

59. Ans.(c) 1600 years contains 0 odd day; 300 years contains 1 odd day. Also, 83 years contains 20 leap years and 63 ordinary years and therefore, (40 + 0) odd days i.e., 5 odd days.
∴ 1983 years contain (0 + 1 + 5) i.e., 6 odd days
Number of days from Jan. 1984 to 31st Oct 1984 = (31 + 29 + 31 + 30 + 31 + 30 + 31 + 31 + 30 + 31) = 305 days = 4 odd days
∴ Total number of odd days = 6 + 4 = 10 days = 3 odd days
So, 31st Oct 1984 was Wednesday.

60. Ans.(c) 1600 years contains 0 odd day; 300 years contains 1 odd day. Also, 90 years contains 22 leap years and 68 ordinary years and therefore, (44 + 68) odd days i.e., 0 odd days.
Number of days from Jan. 1991 to 29 may 1991 = (31 + 28 + 31 + 30 + 29) = 2 odd days
∴ Total number of odd days = 1 + 2 = 3 odd days
So, 29th May 1991 was Wednesday.

ANSWERS
MAHCET MOCK-3
SECTION A : MATHS / QUANT

1	2	3	4	5	6	7	8	9	10
B	A	A	A	D	C	C	D	C	A
11	12	13	14	15	16	17	18	19	20
A	D	A	D	A	D	B	A	D	C
21	22	23	24	25	26	27	28	29	30
B	D	A	C	D	A	B	D	A	A

REASONING ANSWERS

31	32	33	34	35	36	37	38	39	40
D	D	B	A	A	B	D	A	D	B
41	42	43	44	45	46	47	48	49	50
C	E	D	B	D	B	B	B	A	A
51	52	53	54	55	56	57	58	59	60
C	D	C	B	C	C	A	B	C	C

SECTION C : COMPUTERS

61	62	63	64	65	66	67	68	69	70
D	B	A	C	A	D	C	A	C	C
71	72	73	74	75	76	77	78	79	80
D	B	D	A	D	B	B	D	C	D

SECTION D: ENGLISH

81	82	83	84	85	86	87	88	89	90
B	D	D	A	C	A	B	C	D	D
91	92	93	94	95	96	97	98	99	100
B	C	A	B	C	A	B	A	B	B