Talent Search Exam. 2017

TEST CODE **1000**

for X

BOOKLET **D**

Duration : 2 Hours **Max. Marks : 360**

Please read the instructions carefully. You are alloted 5 minutes specifically for this purpose.

INSTRUCTIONS

A. General :

1. This booklet is your question paper containing **90 questions**. The booklet has **10 pages**.

2. The question paper contains blank space on back for your rough work. No additional sheets will be provided for rough work.

3. It is mandatory to use **Blue or Black Ball Point Pen** to darken to appropriate circle in the answer sheet.

4. Blank papers, clipboards, log tables, slide rules, calculators, cellular phones, pagers and electronic gadgets in any form are not allowed to be carried inside the examination hall.

5. Fill in the boxes provided below on this page and also write your Name and Roll Number in the space provided.

6. Do not use white-fluid or any other rubbing material on answer sheet. Before handing over the answer sheet to the invigilator, candidate should check that **Roll No, Test code and Book Code** have been filled and marked correctly. Immediately after the prescribed examination time is over, the **Answer sheet is to be returned to the invigilator.**

B. Filling the Answer Sheet :

7. On **Side-1** of Answer Sheet write your name, Enrollment Number and Name of the centre in the respective boxes. **Do not write anything on Side-2.**

8. Put your signature space provided on the Answer Sheet affirming that you have verifed this.

9. All question carry **+4 Marks** for Right Answer and **-1** for Wrong Answer.

PROCEDURE OF FILLING UP THE ANSWERS IN ANSWER SHEET

Wrong Filling	Right Filling
A ✓ B C D Tick mark	● B C D Fully darken with Pen
✗ B C D Cross mark	● B C D Fully darken with Pen
◔ B C D Half filled or semi dark	● B C D Fully darken with Pen
(A) B C D Light filled	● B C D Fully darken with Pen

Name of the candidate (In Capital Letters)

Enrollment Number

I have read all the instruction and shall abide by them.

.....

(Signature of the candidate)

I have verified all the information filled in by the candidate.

.....

(Signature of the Invigilator)

PART-I (MATHEMATICS)

1. The sum of LCM & HCF of two number is 1260. If their LCM is 900 more than their HCF find the product of two numbers

   (a) 203400 (b) 194400

   (c) 198400 (d) 205400

2. Four bells toll at intervals of 10 seconds, 15 seconds, 20 seconds & 30 seconds respectively if they toll together at 10 am. at what time will they toll together for the first time after 10 am.

   (a) 10:05 am (b) 10:01 am

   (c) 10:00:30 am (d) 10:00:45 am

3. $\frac{1}{\sqrt{9}\ \sqrt{10}}\ \frac{1}{\sqrt{10}\ \sqrt{11}}\ \frac{1}{\sqrt{11}\ \sqrt{12}}$ ..... upto 91 terms is

   (a) 7 (b) 8

   (c) 6 (d) 9

4. Simplfy $\frac{x\ 1}{x\ 1}\ \frac{x\ 1}{x\ 1}\ \frac{2x^2\ 2}{x^2\ 1}$

   (a) $\frac{4x^4\ 2}{x^4\ 1}$ (b) $\frac{4x^4}{x^4\ 1}$

   (c) $\frac{8x^2}{x^4\ 1}$ (d) none of these

5. What should be added to $\frac{1}{x\ 2}\ \frac{1}{x\ 2}$ to get $\frac{4x^3}{x^4\ 16}$?

   (a) $\frac{2x^2}{x^2\ 4}$ (b) $\frac{2x}{x^2\ 4}$

   (c) $\frac{2x^2}{x^2\ 4}$ (d) $\frac{2}{x^2\ 4}$

6. If 173 x + 197 y = 149 & 197 x + 173y = 221, then find (x, y)

   (a) (3, 2) (b) (2, + 1)

   (c) (1, -2) (d) (2, -1)

7. The ratio of monthly income of Mr X & Mr. Y is 3 : 4 and the ratio of their monthly expenditure is 5 : 7 if the ratio of their monthly savings is 3 : 2 & Mr. X saves Rs. 500 more than Mr. Y per month the find the monthly income of Mr. Y.

   (a) Rs. 35,000 (b) Rs. 32,000

   (c) Rs. 26,000 (d) Rs. 22,000

8. If the roots of equation $2x^2 + 7x + 4 = 0$ are p & q then find the value of $\sqrt{\frac{p}{q}}\ \sqrt{\frac{q}{p}}$.

   (a) $\frac{7}{\sqrt{2}}$ (b) $7\sqrt{2}$

   (c) $\frac{7\sqrt{2}}{16}$ (d) $\frac{7\sqrt{2}}{4}$

9. The difference of the roots of $2y^2 - ky + 16 = 0$ is $\frac{1}{3}$. Find K.

   (a) $\frac{32}{3}$ (b) $\frac{34}{3}$

   (c) $\frac{38}{3}$ (d) $\frac{40}{3}$

10. Find the value of

    $\sqrt{30\ \sqrt{30\ \sqrt{30\ \sqrt{30}}}}$.....

    (a) 6 (b) -5

    (c) either (a) or (b) (d) neither (a) or (b)

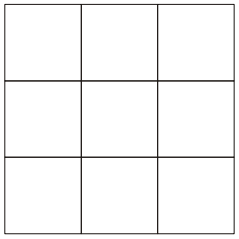
For Rough Work

11. Three alternate terms of an A.P. are x + y, x - y & 2x + 3y, then x =

(a) - y (b) - 2y

(c) - 4y (d) - 6y

12. Number of rectangles in the following figure is :



(a) 9 (b) 10

(c) 24 (d) 36

13. If S_1 = 3, 7, 11, 15,.....upto 125 terms and S_2 = 4, 7, 10, 13, 16.....upto 125 terms, then how many terms are there in S_1 that are there in S_2?

(a) 29 (b) 30

(c) 31 (d) 32

14. If a = secθ - tanθ & b = secθ + tanθ, then

(a) a = b (b) $\frac{1}{a}$ $\frac{1}{b}$

(c) a $\frac{1}{b}$ (d) a b 1

15. If $\sin^4\theta - \cos^4\theta = k^4$ then $\sin^2\theta - \cos^2\theta$ is

(a) k^4 (b) k^3

(c) k^2 (d) k

16. Which of the following is not possible?

(a) sin $\frac{3}{5}$ (b) sec 100

(c) cosecθ = 0.14 (d) None of these

17. The angle of elevation of a tower from a point A due to south of it is x and from a point B due to east of A is Y. If AB = ℓ, the height h of the tower is

(a) $\frac{\ell}{\sqrt{\cot^2 y \quad \cot^2 x}}$ (b) $\frac{\ell}{\sqrt{\tan^2 y \quad \tan^2 x}}$

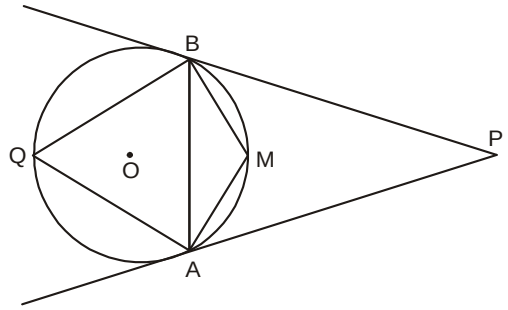
(c) $\sqrt{\cot^2 y \quad \cot^2 x}$ (d) $\sqrt{\tan^2 y \quad \tan^2 x}$

18. If the sun ray's inclination changes from 45° to 60°, the length of the shadow of a tower decreases by 50 m. Find the height of the tower (in m)

(a) $50(\sqrt{3} \quad 1)$ (b) $25(3 \quad \sqrt{3})$

(c) $100(\sqrt{3} \quad 1)$ (d) $25(3 \quad \sqrt{3})$

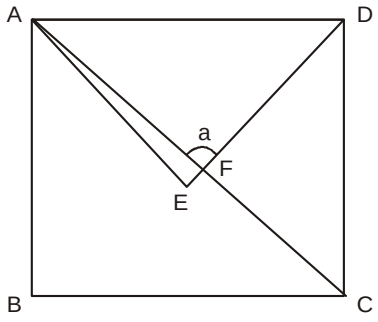
19. In the adjoining fig, O is the centre of the circle and AMB 120 . Find the angle between two tangents AP and BP



(a) 30° (b) 45°

(c) 70° (d) 60°

20. In the following fig., ABCD is a square and AED is an equilateral triangle. Find the value of a



For Rough Work

(a) 30° (b) 45°

(c) 60° (d) 75°

21. A purse contains four fifty paise coins, three two rupees coins and three five ruppes coins. If three coins are selected at random, then what is the probability of getting minimum amount.

(a) $\frac{1}{15}$ (b) $\frac{1}{10}$

(c) $\frac{1}{30}$ (d) $\frac{1}{5}$

22. A box contains 30 balls. Among them 10 are black 12 are blue & rest are orange. What is the probability that a ball drawn from the box will not be blue?

(a) $\frac{1}{3}$ (b) $\frac{3}{5}$

(c) $\frac{5}{6}$ (d) $\frac{1}{6}$

23. A rectangular sump has an inner length and breadth of 24 m & 20 m respectively. Water flows from an inlet pipe at 180 m/min. The cross sectional area of the pipe is 0.5 m^2. The tank takes half an hour to get filled. Find the depth of the sump in (m)

(a) 4.625 (b) 6.125

(c) 5.625 (d) 5.125

24. An ink pen with a cylindrical barrel of diameter 2 cm and height 10.5 cm and completely filled with ink, can be used to write 4950 words. How many words can be written using 400 ml. of ink.

(Take 1 l = 1000 cm^3)

(a) 40,000 (b) 60,000

(c) 45,000 (d) 80,000

25. Each of height and side of the base of a regular hexagonal pyramid is eqaul to x cm. Find its lateral surface area in terms of x (in cm^2).

(a) $\frac{9\sqrt{7}}{2}x^2$ (b) $\frac{7\sqrt{7}}{2}x^2$

(c) $\frac{5\sqrt{7}}{2}x^2$ (d) $\frac{3\sqrt{7}}{2}x^2$

PART-II (SCIENCE)

26. The electric field inside a spherical shell of uniform surface charge density is :

(a) zero (b) constant

(c) proportional to the distance from the centre

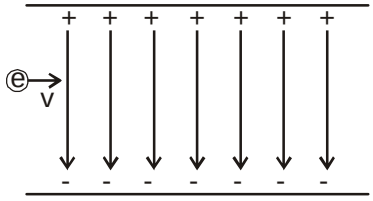
(d) none of these

27. A body in rest has specific charge S. When it moves it has specific charge S^1 then

(a) $S = S^1$ (b) $S < S^1$

(c) $S > S^1$ (d) none of these

28. An electron is projected in uniform electricfield with constant velocity as shown in fig. The path followed by electron is



(a) circular (b) straight line

(c) parabolic (d) none of these

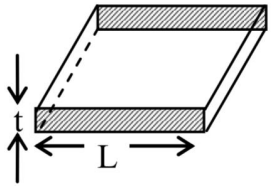
29. Incandescent bulbs are designed by keeping in mind that the resistance of their filament increases with the increase in temperature. If at room temperature, 100 W, 60 W and 40 W bulbs have filament resistances R_{100}, R_{60} and R_{40}, respectively, the relation between these resistances is

For Rough Work

(a) $\frac{1}{R_{100}} \quad \frac{1}{R_{40}} \quad \frac{1}{R_{60}}$ (b) $R_{100} = R_{40} + R_{60}$

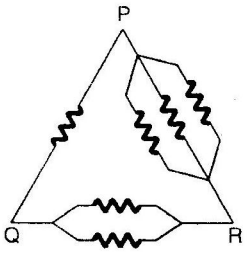
(c) $R_{100} > R_{60} > R_{40}$ (d) $\frac{1}{R_{100}} \quad \frac{1}{R_{60}} \quad \frac{1}{R_{40}}$

30. Consider a thin square sheet of side L and thickness t, made of a material of resistivity ρ. The resistance between two opposite faces, shown by the shaded areas in the figure is



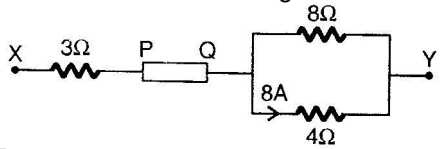
(a) directly proportional to L
(b) directly proportional to t
(c) independent of L
(d) independent of t

31. Six equal resistances are connected between points P, Q and R as shown in Fig. Then the net resistance will be maximum between :



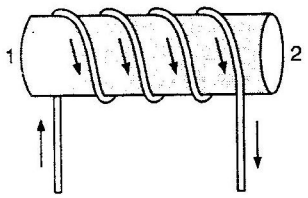
(a) P and Q
(b) Q and R
(c) P and R
(d) any two points

32. In this fig., shows a section XY of a circuit and potential difference between X and Y, $V_X - V_Y = 50$ V. There is a device between P and Q that either absorbs or provides energy to the circuit at some rate. Which of the following is correct?



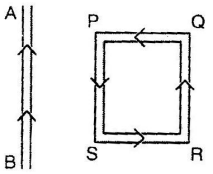
(a) The device between P and Q absorbs energy at a rate 320 W
(b) The device between P and Q absorbs energy at a rate 218 W
(c) The device between P and Q provides energy at a rate 320 W
(d) The device between P and Q provides energy at a arate 216 W

33. A stream of electrons is flowing in a solenodial conductor as indicated below :



(a) the entire solenoid behaves like the north pole of magnet
(b) the entire solenoid behaves like the south pole of a magnet
(c) face-1 behaves like the north pole and face-2 like the south pole
(d) face-1 behaves like the south pole and face-2 like the north pole

34. A rectangular loop carrying a current I is situated near a long straight wire such that the wire is parallel to one of the sides of the loop and is in the plane of the loop. If a steady current is established in the wire as shown in Fig., the loop will :



(a) rotate about an axis parallel to the wire
(b) move away from the wire
(c) move towards the wire
(d) remain stationary

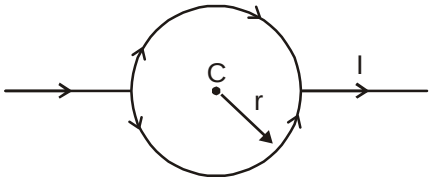
35. Speed c of e.m. waves through vacuum is given by:

For Rough Work

(a) $c\sqrt{\quad_0\ _0}$ (b) $c\ \frac{1}{\sqrt{\quad_0\ _0}}$

(c) $c\sqrt{\frac{\ _0}{\ _0}}$ (d) $c\sqrt{\frac{\ _0}{\ _0}}$

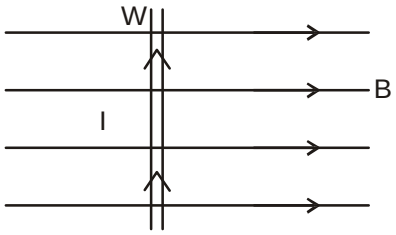
36. The magnetic field at the centre of a loop of radius R due to the current of I amphere in the loop as shown in Fig. will be :



(a) zero (b) $\frac{_0}{4}\frac{2\ I}{R}$

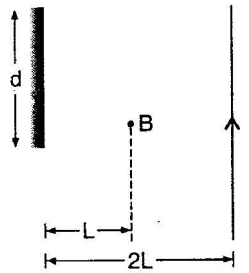
(c) $\frac{_0}{4}\frac{2\ I}{R}$ (d) $\frac{_0}{4}\frac{2I}{R}[\quad 1]$

37. A long current-carrying wire W is free to move when placed in a magnetic field B at right angles to the field as shown in fig.



(a) It will move along the magnetic field to the right
(b) it will move upwards towards you
(c) it will move downwards away from you
(d) it will not move at all

38. A point source of light B is placed at a distance L in front of the centre of a mirror of width d hung vertically on a wall. A man walks in front of the mirror at a distance 2 L from it as shown. The greatest distance over which he can see the image of the light source in the mirror is :



(a) $\frac{d}{2}$ (b) d

(c) 2d (d) 3d

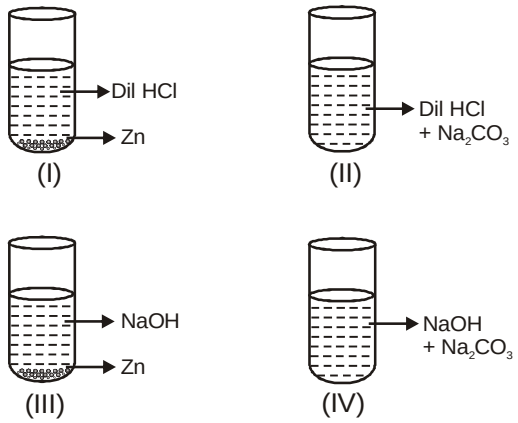
39. A plane mirror rotating at an angular velocity of 3 radian/s reflects a light beam. The angular velocity of the reflected beam is :

(a) 3 rad/s (b) 6 rad/s
(c) 9 rad/s (d) 12 rad/s

40 When a light wave suffers reflection at the interface from air to glass, the change in phase of the reflected wave is equal to :

(a) zero (b) $\pi/2$
(c) π (d) 2π

41. A student performed an experiment using zinc granules and sodium carbonate with sodium hydroxide and hydrochloric acid under different conditions as shown below-



For Rough Work

In which setup, no gas is evolved?

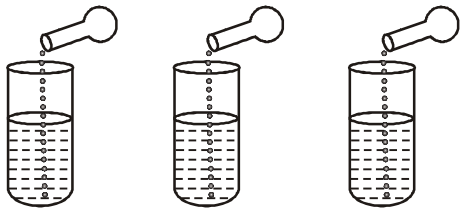
(a) Only I (b) Only II
(c) Only III (d) Only IV

42. A student after observing the reaction between dil HCl and Zn granules, noted the properties of hydrogen gas evolved. Correct observation would be that hydrogen is-
(a) Colourless
(b) Odourless
(c) Buring with pop sound
(d) All of the above

43. A drop of liquid sample was put on the pH paper. It was observed that the colour of pH paper turned blue. The liquid sample is-
(a) Lemon juice
(b) Sodium bicarbonate solution
(c) Distilled water
(d) Hydrochloric acid

44. The following pair of substances are available in lab-
I. Zinc and dil HCl
II. Zinc and dil NaOH
III. NO_2CO_3 and dil HCl
Which of these can be used to produce a colourless and odourless gas, which gives a pop sound on burning?
(a) Only I (b) Only II
(c) Both I and II (d) Both I and III

45. On adding a few drops of universal indicator to 3 unknown colourless solutions P, Q and R taken separately in 3 test tubes shown in following diagrams, a student observed the changes in colour as green in P, red in Q and violet in R.



Decreasing order of pH of solution is-
(a) P > Q > R (b) P > R > Q
(c) Q > P > R (d) R > P > Q

46. The carbonate of metal X is a white solid. If decomposes when heated to form CO_2 and a yellow solid oxide. What is X-
(a) Tin (b) Mercury
(c) Barium (d) Lead

47. A reaction given

$x\ Pb_3O_4(s) + y\ HCl \longrightarrow z\ PbCl_2 + Cl_2 + 4H_2O$

What are values for x, y, z respectively?
(a) 3, 1, 8 (b) 8, 1, 3
(c) 1, 8, 3 (d) 1, 8, 1

48. On heating, blue coloured powder of $Cu(NO_3)_2$ in a boiling tube, copper oxide, oxygen gas and brown gas X is formed. What is pH range of aqueous solution of gas X?
(a) pH < 7 (b) pH = 7
(c) pH > 7 (d) pH = 0

49. In lab, Rohan add silver nitrate solution to sodium bromide, a yellow ppt. is formed. The compound is_____.
(a) Silver bromide (b) Sodium nitrate
(c) Silver chloride (d) Both (a) and (b)

50. Which antioxidant is used to avoid problem of rancidity in packets of potato wafers?
(a) BHT
(b) BHA
(c) Nitrogen gas
(d) Both (a) and (b)

51. Which of the following is not a halide ore?
(a) Cryolite (b) Fluorspar
(c) Horn silver (d) Limonite

52. Which of the following does not contain copper?
(a) Brass (b) Bronze
(c) Azurite (d) Calamite

53. Which of the following conversions involves the calcination and carbon reduction?
(a) $ZnCO_3 \longrightarrow Zn$ (b) $PbSO_4 \longrightarrow PbO$
(c) $Cu_2S \longrightarrow Cu$ (d) $CaCO_3 \longrightarrow Ca$

For Rough Work

54. The process which is not required for the extraction of Cu from its non-sulphite ore?
    I. Forth floatation
    II. Calcination
    III. Roasting
    IV. Carbon reduction
    (a) I, II (b) I, III
    (c) II, IV (d) II only
55. Cuprite is a/an-
    (a) Oxide ore (b) Sulphide ore
    (c) Halide ore (d) Carbonate ore
56. Saliva has the enzyme?
    (a) pepsin (b) ptyalin
    (c) renin (d) trypsin
57. Which of the following cells of pancrease produce insulin.
    (a) α-cells (b) β-cells
    (c) B-cells (d) T-cells
58. The intial stage of water absorption by root cells is by
    (a) Absorption (b) Imbibition
    (c) osmosis (d) respiration
59. Which of the following process keeps plant cool?
    (a) Transpiration (b) Guttation
    (c) photosynthesis (d) Translocation
60. A heart murmuys indicates a defective
    (a) sinoatrial node (d) heart valve
    (c) AV node (d) Aorta
61. Haversian system is typically found in bones of
    (a) Fishes (b) Aves
    (c) reptiles (d) mammals
62. Function of glomerulus in mammalian kidney is
    (a) Reabsorption of salts
    (b) urine formation through blood filtration
    (c) urine collection
    (d) all of above
63. Which of following is responsible for apical dominance?
    (a) GA_3
    (b) IAA
    (c) ABA
    (d) Florigen
64. Photo periodism is
    (a) Recurrence of day & night
    (b) Effect of day length on flowering of a plant
    (c) Flowering plant
    (d) growth curvature in response to light
65. Movements of leaves of the sensitive plant mimosa pudica is due to
    (a) Thermonasty
    (b) seismonasty
    (c) photonasty (d) nyctinasty
66. Cochlea of mammalian internal ear is concerned with
    (a) balance of body posture
    (b) both balance and hearing
    (c) hearing
    (d) perception of atmospheric pressure
67. FSH is to Estrogen as LH is to
    (a) Vasopressin
    b) testosterone
    (c) Progesterone
    (d) LTH
68. Hormones of hypothalamus are called
    (a) Regulatory hormones
    (b) growth hormones
    (c) Trophic hormones
    (d) Angiotensin
69. Copper-T is a device that presents
    (a) fertilisation
    (b) implantation of blastocyst
    (c) egg maturation
    (d) ovulation
70. Genetic engineering is used in
    (a) Gene therapy
    (b) vaccine production
    (c) obtaining transgenic plants
    (d) all of these

For Rough Work

PART-III (REASONING)

71. 6, 15, 35, 77, 143, x
(a) 171 (b) 181
(c) 191 (d) 221

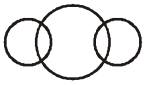
72. If in a certain code language
'col tip mot' means 'singing is appreciable;
'mot baj min' means 'dancing is good;
'tip nop baj' means 'singing and dancing;
which of the following means 'good' in that language
(a) not (b) min
(c) baj (d) CND

73. In morning sobhit cover 10 m and turn to his right and covers 4 m then the turn in his left and covers 4 mtr. At this time his shadow in his left. Then in which direction he started his journey?
(a) North East (b) North
(c) South (d) East

74. One morning mohan and gaurav were standing opposite to each other. Mohan's shadow fell exactly on his left. Toward which direction does gorav facing.
(a) south (b) north
(c) west (d) CND

75. At what time between 3 and 4'o clock is the minute hand 4 mins behind the hour hand?
(a) 3 : 10 (b) 3 : 12
(c) 3 : 15 (d) 3 : 30

76. If 10 Jan 2004 is on saturday then what was the day on 20 march 2016.
(a) sunday (b) tuesday
(c) monday (d) thursday

77. Cats, Pets, Dogs
(a)  (b) 
(c)  (d) 

78. If BUG = 90, ALMS = 180. Then how will CADET is coded?
(a) 185 (b) 165
(c) 90 (d) 145

79. Pointing to a man, a woman says. His mother is the wife of grandfather of my son. How's man related to woman.
(a) Husband (b) Father
(c) Brother in law (d) Eiether (a) or (c)

Information (Q 80 - 81)

Eight persons U, V, W, X, Y, Z, G and J are sitting around a circular table in which some of them are facing the centre other are facing outside the centre. V is sitting third to the left of J. J is facing towards the centre. Z is sitting second to the right of V. Y is sitting second to the left of X. X is not an immediate neighbour of V or J. Both the immediate neighbour of W faces outside. U is not immediate neighbour of J. Both the immediate neighbour of U faces opposite directions. Both the immediate neighbours of X faces the same direction as that of Z. U faces the same direction as that of V.

80. How many persons are facing outside the centre as per above arrangement?
(a) 1 (b) 2
(c) 5 (d) 4

81. What is the position of U with respect to J?
(a) Third to the left (b) Third to the right
(c) second to the left (d) Fifth to the left

82. Statement :- Some A are B
No B is C
Conclusion :- (1) Some A are not C
(2) Some A are C.

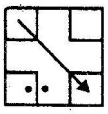
For Rough Work

(a) Only (1) follows
(b) Only (2) follows
(c) both (1) and (2) follows
(d) Niether (1) nor (2) follows

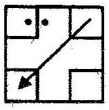
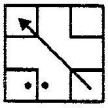
83. $I \leq J = K, N > M \leq L = K$
Conclusion : (i) $I > N$ (ii) $I \leq N$
(a) Only (i) follows
(b) Only (ii) follow
(c) Neither (i) nor (ii) follows
(d) Either (i) or (ii) follows

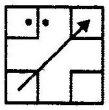
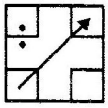
84. Choose the odd one out
(a) 14, 12 (b) 24, 7
(c) 37, 4 (d) 42, 4

85. Which of the following figure is correct water image of X.

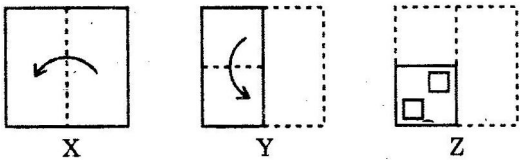


(X)

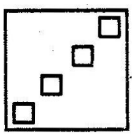
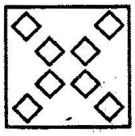
(a)  (b) 

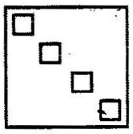
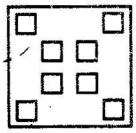
(c)  (d) 

86. Fold & Cut the figure according to given data.

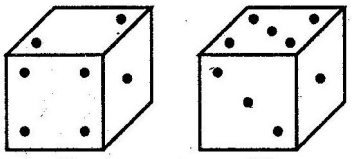


X Y Z

(a)  (b) 

(c)  (d) 

87. Two positions of a cube are shown below. When the number 4 will be at the bottom, then which number will be at the top?



(i) (ii)

(a) 3 (b) 5
(c) 6
(d) Cannot be determined

Directions : Q. 88 to Q. 90

88. B, M, T, R, K, H and D are travelling in a train compartment with III-tier sleeper berth. Each of them has a different profession of Engineer, Doctor, Architect, Pharmacist, Lawyer, Journalist and Pathologist. They occupied two lower berths, three middle berths and two upper berths. B, th Engineer, is not on the upper berth. The Architect is the only other person who occupies the same type of berth as that of B. M and H are not on the midddle berth and their professions are Pathologist and Lawyer respectively. T is a Pharmacist. D is neither a Journalist nor an Architect. K occupies the same type of berth as that of the Doctor.

88. Who is the Architect?
(a) D (b) H
(c) R (d) Data inadequate

89. What is D's profession?
(a) Pharmacist (b) Lawyer
(c) Doctor (d) Engineer

90. Which of the following pairs occupy the lower berth?
(a) BT (b) BD
(c) BK (d) None of these

❑ ❑ ❑

For Rough Work