



SAMPLE TEST PAPER
(FOR STUDENTS MOVING FROM CLASS 9th TO 10th)

Time : 2 Hours

Maximum Marks : 240

Please read the instructions carefully. You are allotted 5 minutes specially for this purpose.

INSTRUCTIONS

A. General :

1. This booklet is your Question paper containing 60 questions.
2. Blank papers, log tables, slide rules any electronic items like calculators, cellular phones, pagers, etc. are not allowed inside the examination hall.
3. A machine-readable Objective Response Sheet (ORS), is provided separately for answering the questions.
4. Write your **Name** and **Roll No.** in the boxes provided below on this page.

B. Question paper format

This paper consists of 3 Parts I, II & III.

- Part - I has 25 questions on Science
- Part - II has 20 questions on Mathematics
- Part - III has 15 questions on Logical Aptitude.

C. Marking scheme :

All are multiple choice questions with only one correct answer. **Each correct answer carries +4 marks and each wrong answer will get -1 mark.**

D. Filling the ORS:

1. Write all the information (Roll No., Test ID, Name, Mobile Nos., Center, Class, Set, Test date) given in the upper rectangle of the ORS, carefully using black/blue pen & do not write these anywhere else.
2. For each question, darken the correct choice in the ORS. Using **black/blue pen** for example, if the correct choice 'B' then marks as shown below.
A B C D
3. If more than one circles is darkened, it will be considered incorrect. Do not use white fluid, eraser etc. to change the answer.

E. For your rough work use the rough space provided inside this booklet.

F. Before handing over the ORS (answer sheet) to the invigilator present in the Examination Room/Hall, ensure that all the entries made on the ORS are correct. Nothing should be entertained once the ORS is handed over to the invigilator.

G. Students using any unfair means or involving himself/her self in any act of indiscipline will be barred from taking the examination.

Name of the candidate

Roll No.

T R C A T

I have read all the instructions and shall abide by them

I have verified all the information filled in by the Candidate

Signature of the Candidate

Signature of Invigilator

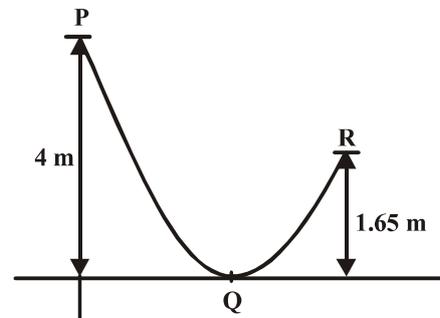
PART - I

SCIENCE

1. An athlete runs on a circular track of radius 100 m and stops after covering one sixth of the track. The magnitude of his displacement will be :
 (a) 200 m (b) 100 m (c) 100π m (d) 200π m
2. Two forces $F_1 = 20\text{N}$ & $F_2 = 30\text{N}$ are acting on an object as shown in figure. The magnitude of third force that must be applied to keep the object moving with constant velocity is

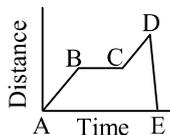


- (a) 20 N (b) 5 N (c) 10 N (d) none of these
3. A bead starts sliding from a point P on a frictionless wire with an initial velocity of 5ms^{-1} . Let velocities of bead at points P, Q and R be V_1, V_2 and V_3 respectively (take $g = 10\text{ms}^{-2}$). Now consider the following statements:



- (i) $\frac{V_1}{V_2} > \frac{V_3}{V_1}$ (ii) $\frac{V_2}{V_1} > \frac{V_3}{V_1}$ (iii) $V_2 > 4\sqrt{5}\text{m/s}$ (iv) $V_3 = 6\sqrt{2}\text{m/s}$
- (a) (i),(ii) and (iii) are correct (b) (ii)(iii) and (iv) are correct
 (c) (iii), (iv) and (i) are correct (d) none of these
4. An engine develops 10 kW of power. How much time will it take to lift a mass of 200 kg to a height of 40 m ($g = 10\text{m/s}^2$)
 (a) 4s (b) 5s (c) 8s (d) 10s
 5. A solid body of weight 25 N is completely dipped in water. The weight of the solid in water is 20 N ($g = 10\text{m/s}^2$). Now consider the following statements:
 (i) Volume of the body is $5 \times 10^{-4}\text{m}^3$
 (ii) up thrust acting on the body is 0.5 kg-wt
 (iii) the relative density of the solid is greater than 5
 (iv) density of body is 5000kg/m^3
 (a) (i)(ii) and (iii) are correct (b) (ii)(iii) and (iv) are correct
 (c) (i)(ii) and (iv) are correct (d) (i)(ii) and (iii) are correct

6. In the given figure, distance time graph of a body moving along a straight path is shown.



- (i) part AB shows body is moving with uniform velocity
 (ii) part AB shows body is moving with uniform speed,
 (iii) part BC shows body is in uniform motion
 (iv) part CD has more velocity than that in part AB
 (v) part DE has uniform retardation
- (a) (i), (iii) & (v) are correct (b) (i), (ii) & (iv) are correct
 (c) (ii), (iii) & (v) are correct (d) (ii), (iv) & (v) are correct
7. A bullet of mass 20 gm moving with a velocity 200 m/s gets embedded into a wooden block of mass 980 gm suspended by a string. Calculate velocity acquired by the combined system.
 (a) 2 m/s (b) 3 m/s (c) 4 m/s (d) none of these
8. A car is accelerated from 10 ms^{-1} to 15 ms^{-1} . The increase in kinetic energy is E_{k_1} . Again, the car is accelerated from 15 ms^{-1} to 20 ms^{-1} . The increase in kinetic energy is now E_{k_2} . What is the ratio of $\frac{E_{k_1}}{E_{k_2}}$?
 (a) 0.5. (b) 0.7 (c) 0.1 (d) 0.4
9. An object of mass 2 kg is dropped from a certain height. On rebounding from the ground, it rises vertically till $\frac{2}{5}$ th of its initial height. The ratio of magnitude of momentum of the object just before and after striking the ground is
 (a) $\sqrt{2}:\sqrt{5}$ (b) $\sqrt{5}:\sqrt{2}$ (c) $\sqrt{3}:\sqrt{5}$ (d) $\sqrt{5}:\sqrt{3}$
10. The mass of a planet is $1/9$ of the mass of the earth and its radius is half that of the earth. If a body weighs 9N on the earth, its weight on the planet would be
 (a) 4 N (b) 4.5 N (c) 2.25 N (d) 1 N
11. Metal that is made by mixing iron with carbon, nickel and manganese is called :
 (a) Stainless steel (b) German silver (c) Nichrome (d) Eureka
12. The fibres do not manufactured by petrochemicals are :
 (a) Nylon (b) Polyester (c) Acrylic (d) None of these

13. A specific gas CNG (compressed natural gas) is used in car cylinders; the nature of this gas is :

- (a) Highly polluting
 (b) Less polluting
 (c) Not at all polluting
 (d) None of these

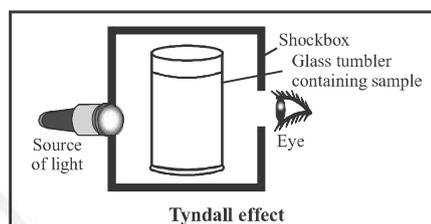


14. A solution contains 60 g of sugar in 480 g of water. Determine the concentration of the solution in terms of mass by mass percentage (% w/w) of solution.

- (a) 15.11% (b) 20.11% (c) 11.11% (d) 9.00%

15. Tyndall effect is the phenomenon of Scattering of light from colloidal solutions, which of the following will **not** show tyndall effect :

- (a) Milk
 (b) Starch solution
 (c) Copper sulphate
 (d) None of these

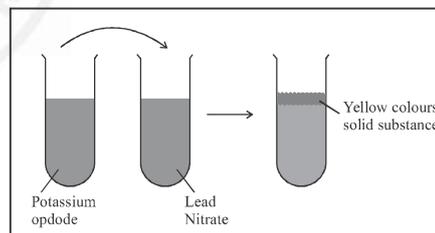


16. What is the formula of silver oxide :

- (a) AgO (b) Ag_2O (c) SO_2 (d) SiO_2

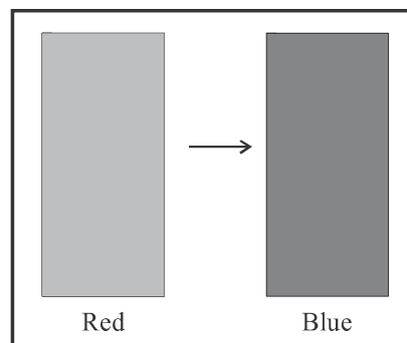
17. A reaction occurs between Potassium iodide and lead nitrate, both the solutions are colourless, if they mix completely a yellowish solid substance is formed, this type of reaction does not shows :

- (a) Formation of precipitate
 (b) Evolution of gas
 (c) Change of colour
 (d) Change of state

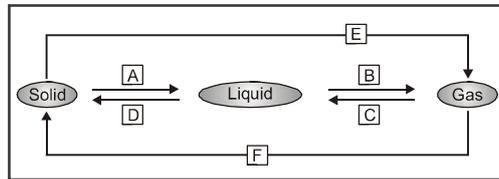


18. Litmus paper is a type of indicator which is formed from purple coloured litmus solution. The litmus is having a tendency to convert blue litmus to Red in presence of an acid & Red to blue in presence of a base. So in which of the following combination Litmus will convert from blue to Red.

- (i) HCl (ii) HNO_3
 (iii) Citric acid (iv) NaOH
 (a) (i), (ii) (b) (i), (ii) & (iv)
 (c) only (iii) (d) (i), (ii) & (iii)



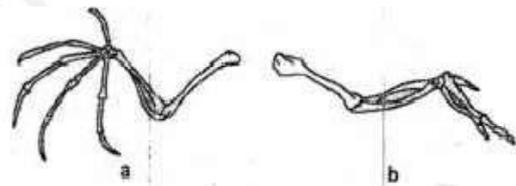
19. In the diagram below :



The process [C] shows:

- (a) Increase temperature and increase pressure
 - (b) Increase temperature and decrease pressure
 - (c) Decrease temperature and increase pressure
 - (d) Decrease temperature and decrease pressure
20. The term Atomicity is usually valid for molecules so, what is the Atomicity of Sulphur molecule :
- (a) 4
 - (b) 6
 - (c) 8
 - (d) None of these

21. The given figure show the wings of two animals with analogous organs. Identify them.



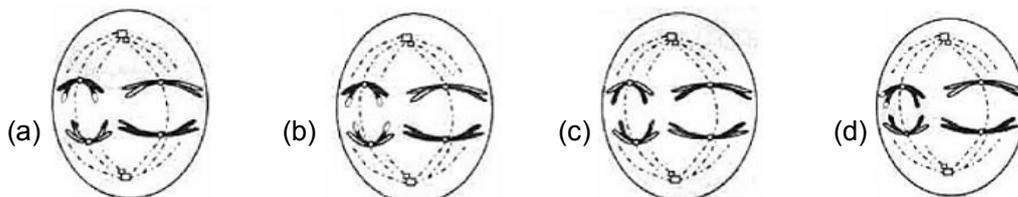
- (a) Dinosaur and bird
- (b) Bat and insect
- (c) Bat and bird
- (d) Insect and bird

22. The disease shown in the figure is caused due to the deficiency of :

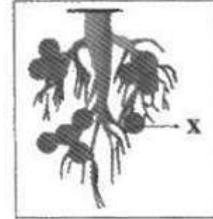


- (a) Vitamin B
- (b) Protein
- (c) Vitamin D
- (d) Vitamin A

23. Which of the following figures correctly depicts Anaphase I ?



24. The diagram given shows the roots of a leguminous plant. What type of bacteria are present in structure X?



- (a) Lactobacillus
- (b) Rhizobium
- (c) Vibrio
- (d) Spirillum

25. In the condition shown in the given figure, which of the following diseases is mostly likely to spread?



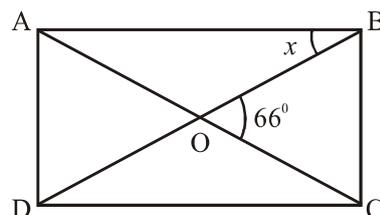
- (a) Typhoid
- (b) Tuberculosis
- (c) Malaria
- (d) Cholera

SPACE FOR ROUGH WORK

PART - II

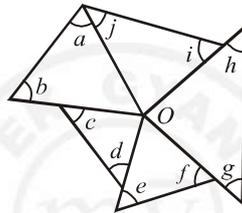
MATHEMATICS

26. If $2x + \frac{1}{3x} = 4$ then value of $27x^3 + \frac{1}{8x^3}$ is :
- (a) 104 (b) 189 (c) 121 (d) None of these
27. The number whose one-fourth is 1 less than its one-third is :
- (a) 10 (b) 12 (c) 1 (d) None of these
28. Which one of $(\sqrt{5} + \sqrt{13})$ or $(\sqrt{7} + \sqrt{11})$ is larger than the other :
- (a) $(\sqrt{5} + \sqrt{13})$ (b) $(\sqrt{7} + \sqrt{11})$ (c) Both are equal (d) None of these
29. Factors of $(x-1)(x+3)(x-2)(x-6)+96$ are :
- (a) $(x+2)(x-5)(x^2-3x-6)$ (b) $(x+2)(x+3)(x^2-5x-7)$
 (c) $(x-1)(x-2)(x^2-11x+18)$ (d) $(x+3)(x-6)(x^2-6x+6)$
30. The width of each of five continuous classes in a frequency distribution is 5 and the lower class limit of the lowest class is 10. What is the upper class limit of the highest class ?
- (a) 15 (b) 25 (c) 35 (d) 30
31. If the surface areas of a sphere and a cube are equal then the ratio of their volumes is :
- (a) 1:1 (b) $1:\sqrt{\frac{\pi}{6}}$ (c) $\frac{\pi}{4}:1$ (d) None of these
32. If $\angle BOC = 66^\circ$, the angle x in rectangle ABCD is :
- (a) 104°
 (b) 114°
 (c) 60°
 (d) 33°

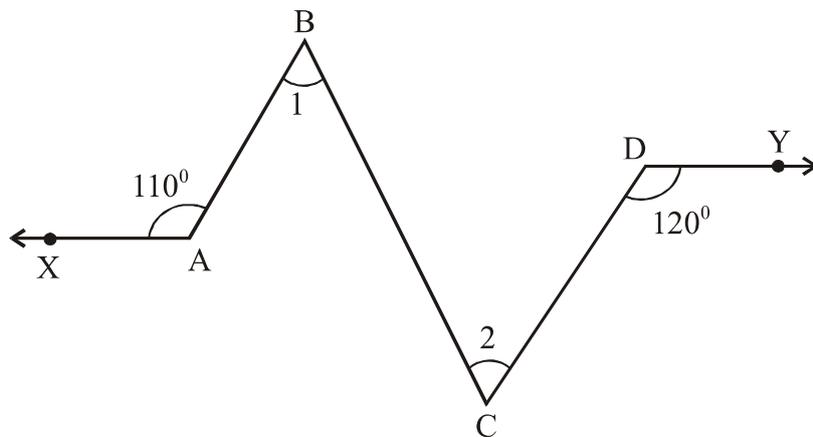


33. PQRS is a square. T and U are the mid-points of sides PS and QR respectively. If PQ=8 cm, the area of $\triangle OTS$, where O is the point of intersection of TU and QS is :
- (a) 16cm^2 (b) 8cm^2 (c) 32cm^2 (d) None of these
34. Dipu's salary was increased by 20% and then decreased by 20%. By how much percentage Dipu's salary increased or decreased finally:
- (a) No change (b) 40% increased (c) 4% decreased (d) 40% decreased

35. A tap can fill a water tank in 40 min. Another tap can empty the same tank in 60 min. If both of them are running simultaneously then how many minutes will it take to fill the tank :
 (a) 100 min (b) 20 min (c) 120 min (d) 40 min
36. The ratio of syrup and water in a mixture is 5:2. If some quantity of mixture is replaced by same quantity of water then quantity of water and syrup becomes same. What quantity of mixture is required to be replaced ?
 (a) $\frac{3}{10}$ (b) $\frac{1}{2}$ (c) $\frac{1}{5}$ (d) None of these
37. The sum of length, breadth and height of a cuboidal room is 25cm and the sum of products of length, breadth & height taken two of them at a time is 240.5 cm. What will be the maximum length of the rod which can be kept in the room.
 (a) 625cm (b) 265.5cm (c) 12cm (d) None of these
38. In the figure, the measure of $(a+b+c+d+e+f+g+h+i+j) =$



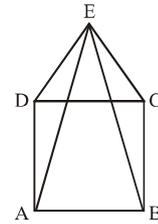
- (a) 540° (b) 360° (c) 900° (d) None of these
39. A well with 10m inside diameter is dug 14m deep. Earth taken out of it is spread all around it to make an embankment like a hollow cylinder of height $4\frac{2}{3}$ m. What is the width of the embankment:
 (a) 5m (b) 4m (c) 4.3m (d) 6m
40. In figure $AX \parallel DY$. What is the difference between $\angle 1$ & $\angle 2$?



- (a) 70° (b) 60° (c) 10° (d) None of these

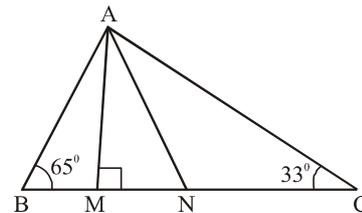
41. ABCD is a square and EDC is an equilateral triangle.
Then $\angle EBC =$

- (a) 45°
(b) 30°
(c) 15°
(d) None of these



42. In the given figure, AM is perpendicular to BC
and AN is the bisector of $\angle BAC$. If
 $\angle B = 65^\circ$ and $\angle C = 33^\circ$, find $\angle MAN$.

- (a) 16° (b) 82°
(c) 47° (d) None of these



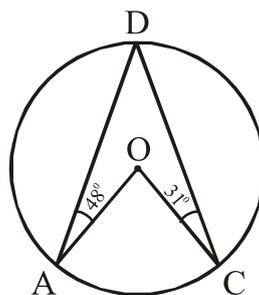
43. When a fair coin is tossed either a head or a tail appears with equal chances. How many times the coin was tossed, if the head appeared for 24 times and probability of getting a head was found to be 0.4 :

- (a) 24 (b) 60 (c) 36 (d) None of these

44. There is a road of 3 m wide at outside of a square park of a colony. The perimeter of the park with road is 484 m. What will be the area of the road :

- (a) 1400 sq.m (b) 1416 sq.m (c) 1024 sq.m (d) None of these

45. In the figure, O is the centre of the circle. What is the measure of $\angle AOC$?



- (a) 120° (b) 136° (c) 128° (d) 158°

SPACE FOR ROUGH WORK

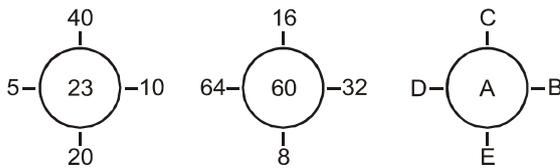
PART - III

LOGICAL APTITUDE

46. Find out the number from alternatives which will come in place of question mark '?' to continue the sequence 2, 3, 11, 20, 84, ?, 325, 374

- (a) 101 (b) 109 (c) 154 (d) 209

47. Find the value of A, B, C, D, E from given options -



	A	B	C	D	E
(a)	117	11	44	22	33
(b)	11	22	33	44	88
(c)	113	11	44	22	88
(d)	113	22	11	44	88

48. **Statement-** $P \leq Q = R \leq S < T$

Conclusions -

(I) $P = T$

(II) $Q \leq S$

(III) $P < T$

(a) Only I correct

(b) Only II & III are correct

(c) Only I & III correct

(d) Only II correct

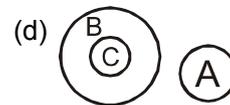
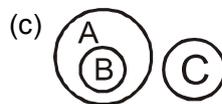
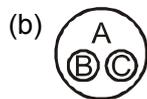
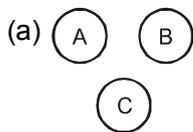
Directions (Q No. 49 - 53):

Six persons Ashok, Pratap, Shivaji, Sultan, Chandel and Akbar sit around a round table facing each other but not in same order. Each teaches one subject Physics, Biology, Geology, Chemistry, Botany and maths not in same order.

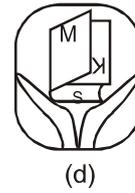
Teachers of Chemistry and Geology sit opposite to each other. Akbar teaches Chemistry. Chandel sits immediate left to Geology teacher. Shivaji sits between Sultan and Botany teacher. Pratap sits second left to Ashok. Physics and Maths teachers sit opposite to each other. Maths and Biology teachers are neighbour. Shivaji does not teach Geology.

From the given information answer the following questions :

49. Teacher of Maths is
 (a) Pratap (b) Ashok (c) Shivaji (d) Sultan
50. Immediate neighbour of Sultan is
 (a) Biology teacher (b) Maths teacher (c) Chemistry teacher (d) Botany teacher
51. Akbar is related to Chemistry in the same way Shivaji is related with
 (a) Botany (b) Physics (c) Geology (d) Maths
52. The person sitting between Akbar and Physics teacher is
 (a) Ashok (b) Chandel (c) Pratap (d) Shivaji
53. Find the odd pair
 (a) Akbar - Sultan (b) Pratap - Chandel (c) Ashok - Shivaji (d) Pratap - Ashok
54. A person starts walking towards east & covers a distance of 10 km. Then he turns to his right and walks 6 km. After that he takes two consecutive left turns and walks 10- 10 km each time. Then
 (I) Person is 20.4 km far in East direction from his origin.
 (II) Person is 20 km far in North - East direction from his origin.
 (III) Person is 20.4 km far in North - East direction from his origin.
 (IV) Person is $4\sqrt{26}$ km far in North - East direction from his origin.
 (a) Only statement (I) follows (b) Only statement (II) follows
 (c) Statement (II) and (III) follows (d) Only statement (III) and (IV) follows
55. If East is called South - West, South - West as West, West as North - East, North - East as North, North as South - East, South - East as South, South as North -West. Then Pole star in which direction :
 (a) North - West (b) South - East (c) North (d) South
56. Which of the following diagram indicates best relation between A) Milky way B) Sirius C) Phobos



57. Choose the correct water image of figure 'X' from amongst the following four alternatives :



58. Rita's brother-in-law is the son of Sheena. Rita's husband is _____ of Sheena's husband. If Rita has no siblings.

- (a) Son-in-law (b) Father-in-law (c) Father (d) Son

59. **Statements:**

- (i) All computers sold in that shop are of high cost.
 (ii) Some Lenovo computers are sold in that shop.

Conclusions:

- (I) All computers of high cost manufactured by Lenovo
 (II) Some of Lenovo computers are of high cost
 (III) Some of Lenovo computers of high cost are sold in that shop

- (a) Only (I) and (II) is true (b) Only (II) is true
 (c) Only (II) and (III) is true (d) Only (III) is true

60. Select the related letters from the given article.

FILM : ADGH :: MILK : ?

- (a) HDGE (b) HDGF (c) HEGF (d) ADGF

SPACE FOR ROUGH WORK