

For Class IX students (going to Class X)

SCIENCE MOVEMENT APTITUDE TEST

SAMPLE QUESTION PAPER

Time Allotted: 2 Hrs.

(SMAT)

Maximum Marks : **180**

- Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.
- You are not allowed to leave the Examination Hall before the end of the test.

INSTRUCTIONS

A. General Instructions

1. This booklet is your Question paper containing **45 questions**. All questions are compulsory.
Scientific aptitude (15Q), Mathematics (15Q), General Science (15Q)
2. **+4** for correct answer , No negative for Wrong attempted
3. 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.
4. Fill in the boxes provided below on this page and also write your **Name & Enrollment No.** In the space provided.
5. The answer sheet, a machine-readable (OMR), is provided separately.
6. **DO NOT TAMPER WITH/ MUTILATE THE OMR OR THE BOOKLET.**
7. Do not open the question-paper booklet before being instructed to do so by the invigilators.

B. Filling the OMR

8. On the Response sheet, write in Black Ball Point Pen, your name, your Enrollment No. and Name of the Centre. **Do not write these anywhere else.**
9. Rough spaces are provided for rough work inside the question paper. No additional sheets will be provided for rough work.
10. Use Only **Black Ball Point Pen** to Darken the OMR Sheet



| | |
|------------------------------|--|
| Name of the Candidate | _____ |
| Father's Name | _____ |
| Enrollment No. | <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> |

SCIENTIFIC APTITUDE

01. Tendon connects
(A) cartilage with muscles
(B) bone with muscles
(C) ligament with muscles
(D) bone with bone
02. Sieve tubes are better suited for translocation because these :-
(A) are broader than long
(B) possess bordered pits
(C) possess no end walls
(D) possess a broader lumen and perforated cross walls
03. Companion cells are usually seen associated with :-
(A) fibres
(B) parenchyma
(C) xylem vessels
(D) sieve tubes
04. An element A has atomic mass 39 and atomic number 19. Which one of the following ions it will form on ionising one electron?
(A) A^+ ion
(B) A^- ion
(C) A^{++} ion
(D) A^{--} ion
05. Select the pair of isobars from the following species ${}_{17}^{37}A$, ${}_{17}^{35}B$, ${}_{18}^{37}C$, ${}_{18}^{36}D$, ${}_{19}^{38}E$
(A) A and B
(B) A and C
(C) C and E
(D) C and D
06. In chromatography different constituents of a mixture get adsorbed differently on same adsorbent because
(A) they have different in pressure
(B) they have different rates of movement
(C) both (A) and (B)
(D) none of these.
07. A solution with mass of 1kg contains 3 mg of solute. Value of this in ppm and ppb will be
(A) 0.3ppm & 3×10^5 ppb
(B) 3ppm & 3×10^2 ppb
(C) 3ppm & 3×10^3 ppb
(D) 30ppm & 3×10^2 ppb

(SMAT)SAMPLE QUESTION PAPER -IX

08. Which among the following tissues stores fat?
(A) Connective tissue
(B) Epithelial tissue
(C) Adipose tissue
(D) Areolar tissue
09. What is the other name of nerve cell?
(A) Dendron
(B) Cyton
(C) Axon
(D) Neuron
10. The Study of diseases is known as pathology. What will be the correct term which can be used to study the infection in blood?
(A) Histology
(B) Histopathology
(C) Blood pathology
(D) Histopathy
- 11 Find the missing number ?

| | | |
|---|----|----|
| 6 | 18 | 15 |
| 3 | 2 | 5 |
| 4 | 3 | ? |
| 8 | 27 | 9 |

- (A) 11
(B) 6
(C) 3
(D) 2
12. If February 1, 1996 is Wednesday, what day is March 10, 1996 ?
(A) Monday
(B) Sunday
(C) Saturday
(D) Friday
- 13 Mosquito : Malaria ::
(A) Tobacco : Cancer
(B) Road : Accident
(C) Housefly : Food
(D) Soil : Erosion

Direction : (14 to 15)

Read the given information carefully and answer the questions that follows :

Ratan, Anil, Pinku and Gaurav are brothers of Rakhi, Sangeeta, Pooja and Saroj not necessarily in that order. Each boy has one sister and the names of brothers and sisters do not begin with the same letter. Pinku and Gaurav are not Saroj's and Sangeeta's brothers. Saroj is not Ratan's sister.

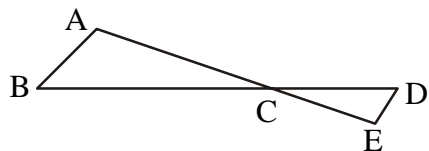
14. Pooja's brother is ?
(A) Ratan
(B) Anil
(C) Pinku
(D) Gaurav
15. Which of the following are brother and sister ?
(A) Ratan and Pooja
(B) Anil and Saroj
(C) Pinku and Sangeeta
(D) Gaurav and Rakhi

MATHEMATICS

16. Expressing 153 as the difference of two squares is
(A) $76^2 - 75^2$
(B) $74^2 - 73^2$
(C) $77^2 - 76^2$
(D) None
17. The number 899 is
(A) A number with 4 factors
(B) a perfect cube
(C) A number with more than 4 factors
(D) a prime number
18. If $N = \frac{1}{2} + \frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \dots + \frac{1}{156}$, then the value of N is
(A) $\frac{13}{12}$
(B) $\frac{12}{13}$
(C) 1
(D) $\frac{1}{13}$

19. If 25^{25} is divided by 26, the remainder is
- (A) 25
(B) 24
(C) 2
(D) 1
20. If $f(x) = x^2 + 5x + a$ and $g(x) = x^2 + 3x + b$ have a common factor, then the common factor is
- (A) $x + \frac{1}{2}(b - a)$
(B) $x - \frac{1}{2}(b - a)$
(C) $x + \frac{1}{2}(b + a)$
(D) $x - \frac{1}{2}(a - b)$
21. Real numbers a, b, c satisfying the equations $a + b + c = 26$, $\frac{1}{a} + \frac{1}{b} + \frac{1}{c} = 28$ then the value of $\frac{a}{b} + \frac{b}{c} + \frac{c}{a} + \frac{a}{c} + \frac{c}{b} + \frac{b}{a} =$
- (A) 735
(B) 625
(C) 728
(D) 725
22. If $p = a + d$, $q = b + d$, $r = c + d$ then what will be the value of $p^2 + q^2 + r^2 - qr - rp - pq =$
- (A) $a^2 + b^2 + c^2 + bc + ca + ab$
(B) $a^2 + b^2 + c^2 - bc - ca - ab$
(C) $a^2 + b^2 + c^2 + bc + ca + ab$
(D) $a^2 + b^2 + c^2$
23. The expression $\frac{1}{x-1} - \frac{1}{x+1} - \frac{2}{x^2+1} - \frac{4}{x^4+1} + \dots$ simplifies to :
- (A) $\frac{8}{x^7+1}$
(B) $\frac{8}{x^7-1}$
(C) $\frac{8}{x^8-1}$
(D) $\frac{8}{x^8+1}$

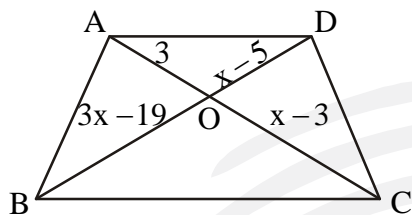
24. If $a^{1/3} + b^{1/3} + c^{1/3} = 0$, then the value of $(a + b + c)^3$ will be :
- (A) $9a^2b^2c^2$
(B) $3abc$
(C) $6abc$
(D) $27abc$
25. What are the points on the axis of x whose perpendicular distance from the straight line $\frac{x}{p} + \frac{y}{q} = 1$ is p ?
- (A) $\frac{p}{q} \left[q + \sqrt{(p^2 + q^2)} \right], 0$
(B) $\frac{p}{q} \left[q - \sqrt{(p^2 + q^2)} \right], 0$
(C) Both (A) and (B)
(D) None of these
26. Find the coordinates of the point that divides the line segment joining the points (6, 3) and (-4, 5) in the ratio 3 : 2 internally.
- (A) $\left(0, \frac{-21}{5} \right)$
(B) $\left(0, \frac{21}{5} \right)$
(C) $\left(\frac{11}{2}, \frac{14}{3} \right)$
(D) $\left(\frac{-11}{2}, \frac{-14}{3} \right)$
27. In the figure, ΔABC is similar to ΔEDC .



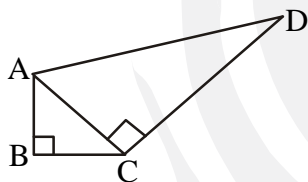
If we have $AB = 4\text{cm}$, $ED = 3\text{ cm}$, $CE = 4.2$ and $CD = 4.8\text{ cm}$, find the value of CA and CB

- (A) 6 cm , 6.4 cm
(B) 4.8 cm , 6.4 cm
(C) 5.4 cm , 6.4 cm
(D) 5.6 cm , 6.4 cm

28. The area of similar triangles, ABC and DEF are 144 cm^2 and 81 cm^2 respectively. If the longest side of larger $\triangle ABC$ be 36 cm, then the longest side of smaller $\triangle DEF$ is
- (A) 20 cm
(B) 26 cm
(C) 27 cm
(D) 30 cm
29. In the given figure, $AD \parallel BC$. Find the value of x.



- (A) $x = 8, 9$
(B) $x = 7, 8$
(C) $x = 8, 10$
(D) $x = 7, 10$
30. In the given figure, $\triangle ABC$ and $\triangle ACD$ are right angle triangles and $AB = x\text{ cm}$, $BC = y\text{ cm}$, $CD = z\text{ cm}$ and $x \cdot y = z$ and x, y and z has minimum integral value. Find the area of ABCD

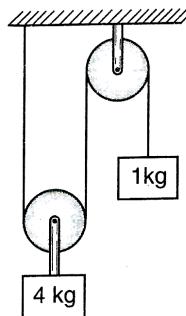


- (A) 36 cm^2
(B) 64 cm^2
(C) 24 cm^2
(D) 25 cm^2
- GENERAL SCIENCE**
31. Passengers standing in a bus are thrown outwards when the bus takes a sudden turn. This happens because of
- (A) outward pull on them
(B) inertia
(C) change in momentum
(D) change in acceleration

32. A diwali rocket is ejecting 50 g of gas/es at a velocity of 400 m/s. The acceleration force on the rocket will be:

- (A) 22 dyne
- (B) 20 N
- (C) 20 dyne
- (D) 100 N

33. In the system shown in the adjoining figure, the acceleration of the 1 kg mass is

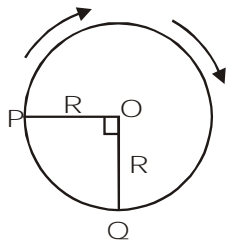


- (A) $\frac{g}{4}$ downwards
- (B) $\frac{g}{4}$ upwards
- (C) $\frac{3g}{2}$ downwards
- (D) $\frac{g}{2}$ upwards

34. The breaking load of the rope is half the weight of the climber. In which of the following cases, is the rope not likely to break ?

- (A) Climbing up fast
- (B) Climbing down fast
- (C) Climbing up slowly
- (D) Climbing down slowly

35. A body moves along the circumference of a circular track of radius R (Fig.). What is displacement of the body when it covers 3/4th of its circumference?



- (A) 3R
- (B) $\frac{3}{4}\pi R$
- (C) $\frac{3}{2}\pi R$
- (D) $\sqrt{2}R$

(SMAT)SAMPLE QUESTION PAPER -IX

36. A small amount of the sample of a soil was mixed with water in beaker .After stirring for sometime,the beaker was allowed to stand .The mud was found to settle down .The liquid above the mud was care fully filtered .The filtrate will be
- (A)A true solution
(B)a colloidal solution
(C)can be a true solution or a colloidal solution
(D)a suspension.
37. Which one of the following statements is true?
- (A)mass of 0.5 mole of N_2 gas > Mass of 0.5 mole of N atoms
(B)mass of 0.5 mole of N_2 gas = Mass of 0.5 mole of N atoms
(C)mass of 0.5 mole of N_2 gas < Mass of 0.5 mole of N atoms
(D)mass of 0.5 mole of N_2 gas = Mass of 0.5 mole of O_2 atoms
38. 20.8g of $BaCl_2$ on reaction with 9.8g of H_2SO_4 produces 7.3 g of HCl and some amount of $BaSO_4$.The amount of $BaSO_4$ formed is
- (A)23.3g
(B)20.8g
(C)9.8g
(D)10.4g
39. The weight of a molecule of the compound $C_{60}H_{122}$ is
- (A) 1.4×10^{-21} g
(B) 1.09×10^{-21} g
(C) 5.025×10^{23} g
(D) 16.023×10^{23} g
40. Grass stem elongates by the activity of :-
- (A) secondary meristem
(B) intercalary meristem
(C) apical meristem
(D) primary meristem
41. Which of the following statements is NOT true regarding B cells?
- (A) They are formed in the bone marrow.
(B) They develop into plasma cells and memory cells.
(C) They recognize peptide antigens by the major histocompatibility complex molecules.
(D) They are the source of antibodies.

42. Which of the following structures and processes can exist in eukaryotic cells and in all prokaryotic cells?
- I. Nuclear envelope
 - II. Ribosomes
 - III. Introns
 - IV. ATP synthesis
 - V. rRNA 18S
 - VI. Cell membrane
 - VII. DNA polymerase
 - VIII. Cytoskeletal elements
- (A) I, II, III and VIII
(B) II, IV, VI and VIII
(C) I, III, V and VII
(D) II, IV, V and VI
43. Which of the following cell type is absent in phloem tissue?
- (A) Tracheids
(B) Companion cells
(C) Sieve elements
(D) Sieve tube
44. What is the location of ribosome in the cell?
- (A) Nucleolus
(B) Chromosome
(C) Endoplasmic reticulum
(D) Nucleus
45. Match the following
- | | |
|-------------------------|-----------------------|
| (i) Nervous tissue | (a) Cardiac muscles |
| (ii) Muscle tissue | (b) Motor nerve cells |
| (iii) Connective tissue | (c) Skin |
| (iv) Epithelial tissue | (d) Bone |
- (A) (i) – (a), (ii) – (b), (iii) – (d), (iv) – (c)
(B) (i) – (b), (ii) – (a), (iii) – (d), (iv) – (c)
(C) (i) – (b), (ii) – (c), (iii) – (a), (iv) – (d)
(D) (i) – (a), (ii) – (c), (iii) – (b), (iv) – (d)



SCIENCE MOVEMENT APTITUDE TEST (SMAT)

For Class IX students (going to Class X)

ANSWER KEY

- | | | | |
|-----|---|-----|---|
| 01. | B | 24. | D |
| 02. | D | 25. | C |
| 03. | D | 26. | B |
| 04. | A | 27. | D |
| 05. | B | 28. | C |
| 06. | B | 29. | A |
| 07. | C | 30. | A |
| 08. | C | 31. | B |
| 09. | D | 32. | D |
| 10. | C | 33. | D |
| 11. | C | 34. | B |
| 12. | C | 35. | D |
| 13. | A | 36. | B |
| 14. | D | 37. | A |
| 15. | B | 38. | A |
| 16. | C | 39. | A |
| 17. | A | 40. | B |
| 18. | B | 41. | C |
| 19. | A | 42. | D |
| 20. | B | 43. | A |
| 21. | D | 44. | C |
| 22. | B | 45. | B |
| 23. | C | | |