

**Homi Jehangir Bhabha**

(30 October 1909 – 24 January 1966)

Father of Indian Nuclear Programme

Adams Prize (1942)

Padma Bhushan (1956)

Fellowship of the Royal Society London

**Dr. Homi Bhabha**
FOUNDATION MUMBAI**MSAT (Mathematics & Science Ability Test)**

Student Name: _____

School Name: _____

City: _____

MSAT Roll No: **Your Mobile Number is your Roll Number.**

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Instruction to Candidate:

- Use of Mobile, Calculator, any other electronic gadget during examination is **STRICTLY PROHIBITED**
- In addition to this question paper, you are given OMR sheet.
- On the OMR sheet, make all the entries carefully in the space provided **ONLY** in **BLOCK CAPITAL** as well as by properly darkening the appropriate circle.
- Question paper has **45 multiple choice questions**. Each question has 4 alternatives, out of which **only one** is correct. Choose the correct alternatives and fill the appropriate circle, as shown.

For Example:

Q. No. 10 ○ ○ ○ ●

- A correct answer carried **4** marks whereas **1 mark will be deducted** for each wrong answer.
- **Total Number of Questions :45 Questions Total time : 45 Minutes Marks : 180 Marks**
- No candidate should leave examination hall before the completion of the examination.

Answer sheet are evaluated using machine, hence CHANGES OF ENTRY IS NOT ALLOWED.

Scratching or overwriting may result in a wrong score.

Hand over question paper & answer sheet to the invigilator before leaving the examination hall.

◆ DO NOT WRITE ON THE BACK SIDE OF THE ANSWER SHEET.

◆ USE BLUE / BLACK BALL POINT PEN TO ENCIRCLE THE RIGHT ANSWER

Q 1. Which of the following are rational numbers

A) $4, -\frac{4}{5}, 7$ B) $3, +\frac{1}{2}, \frac{7}{\sqrt{3}}$ C) $-, 0 - 4, -5$ D) $\frac{1}{\sqrt{2}}, \sqrt{2}, \frac{\sqrt{3}}{2}$

1) Both A and B 2) Option A, B, & C 3) Option A and D 4) Only D

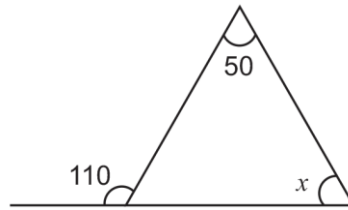
Q 2. What is the difference between Greatest 7 Digit number and the least 7-digit number?

1) 9999999 2) 8999999 3) 1111111 4) None

Q 3. 231276 231476 Fill in the box by, >, < or =

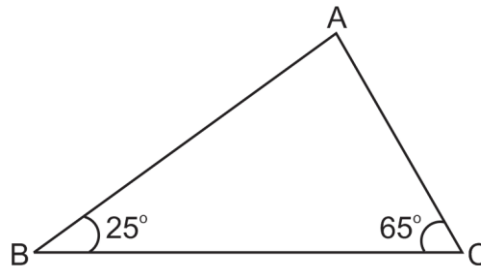
1) = 2) > 3) < 4) None

Q 4. In the adjoining figure find $x = ?$



- 1) 60 2) 50 3) 110 4) 70

Q 5. In the figure

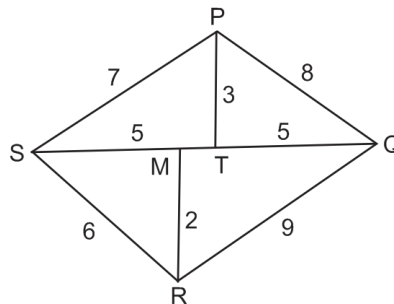


- 1) $AC^2 + AB^2 = 2 BC^2$ 2) $AB^2 + BC^2 = AC^2$
 3) $AB^2 - AC^2 = BC^2$ 4) $AC^2 + AB^2 = BC^2$

Q 6. Which of the following pair of angles are complementary?

- 1) $65^\circ, 115^\circ$ 2) $63^\circ, 27^\circ$ 3) $130^\circ, 50^\circ$ 4) $112^\circ, 68^\circ$

Q 7. Perimeter of the following figure is



- 1) 27 2) 30 3) 45 4) 40

Q 8. Area of a circle where 'R' is the radius is

- 1) $2\pi r$ 2) $2\pi R$ 3) πR^2 4) πR

Q 9. Solution of the algebraic equation : $10y - 30 = 60$ is

- 1) 10 2) 1 3) 9 4) 3

Q 10. The algebraic form of the given statement "One fifth of m is 2 more than 7" is

- 1) $5m - 2 = 7$ 2) $\frac{1}{5}(m - 2) = 7$ 3) $\frac{1}{5}(m - 7) = 2$ 4) $\frac{m}{5} - 7 = 2$

Q 11. An integer can be ___ ?

- 1) only positive 2) only negative 3) Both 1) and 2) 4) None

Q 12. The multiplicative inverse of '-2' is

- 1) 2 2) $\frac{1}{2}$ 3) $-\frac{1}{2}$ 4) 2

Q 13. The product of any rational number with zero will be

- 1) zero 2) rational number 3) integer 4) All of the above

Q 14. Sum of (-8) and (-2) will be

- 1) 10 2) -10 3) 6 4) -6

Q 15. The L.C.M. and G.C.D. of 6 and 12 is

- 1) 12, 6 2) 72, 6 3) 6, 12 4) 6, 72

Q 16. How are plants classified on basis of their life span

- 1) Perennial 2) Annual 3) Both 1) and 2) 4) None

Q 17. The inorganic impurities present in sewage wate are

- 1) Nitrates 2) Phosphates 3) Iron 4) All

Q 18. Correct order of the food chain is

- 1) Frog → Eagle → Insects → Grass → Snake
2) Grass → Insects → Frog → Snake → Eagle
3) Grass → Frog → Insects → Snake → Eagle
4) Grass → Insects → Frog → Eagle → Snake

Q 19. Expanded form of SPM is

- 1) Suspended particular matter 2) Special particular matter
3) Suspended particular mixture 4) None

Q 20. The chemical formula for oxygen is

- 1) O 2) O_x 3) O₂ 4) O_{x2}

Q 21. Who is lying

- (i) Cockroach – I have six legs
(ii) Hen – I have webbed toes
(iii) Cactus – The fleshy green part, is my leaf

- 1) (i) and (iii) 2) (i) and (ii) 3) i only 4) iii only

Q 22. Which of following is not part of female reproductive system of a flower

- 1) Androecium 2) Gynoecium 3) Ovary 4) None

Q 23. The capacity of air to hold moisture depends upon the _____ of the air.

- 1) volume 2) mass 3) temperature 4) shape

Q 24. If soil has a ph7 it is _____

- 1) acidic 2) neutral 3) basic 4) None

Q 25. Boiling point of pure water is _____

- 1) 100 F 2) 110° C 3) 100°C 4) 110°F

Q 26. A simple pendulum is oscillating between two points A and B. the motion of BOB is ____ ?

- 1) Circular 2) Uniform 3) Non-Uniform 4) can not determined

Q 27. If a body travels 200 km in 2 Hr then speed of the body is?

- 1) 0.03 m/s 2) 0.3 m/s 3) 30 m/s 4) None of these

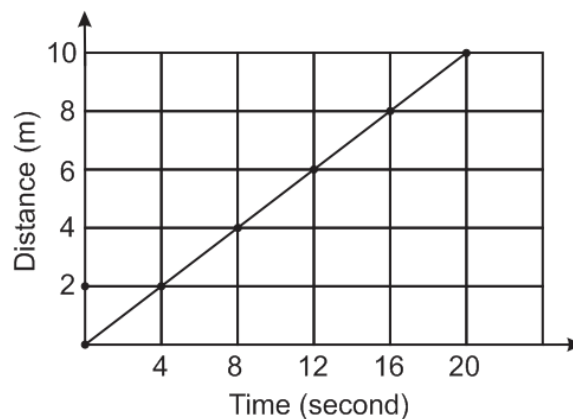
Q 28. The image formed by a _____ lens is always virtual, erect and smaller in size.

- 1) concave 2) convex 3) spherical 4) plane

Q 29. What type of image is formed on a cinema screen.

- 1) Real image 2) Virtual image 3) Inverted image 4) Both 1) and 3)

◆ **Given below is a figure of distance time graph of the motion of an object observe the figure and answer. The questions 30 to 34.**



Q 30. What will be the position of object at 20 seconds?

- 1) 8 m 2) 10 m 3) 5 m 4) 6 m

Q 31. What will be the distance travelled by the object in 4 seconds?

- 1) 0 m 2) 2 m 3) 4 m 4) 8 m

Q 32. What is the average speed of the object?

- 1) 0.4 m 2) 0.8 m 3) 1.2 m 4) 2 m

Q 33. What is the time required to travel a distance 2 m?

- 1) 0 second 2) 2 seconds 3) 4 seconds 4) 8 seconds

Q 34. The motion of body discussed a box above is in _____ motion.

- 1) uniform 2) Non uniform motion
3) circular 4) None of these

Q 35. _____ is a good conductor of electricity.

- 1) Rubber 2) Paper 3) Plastic 4) Iron

Q 36. Find the odd one out:- Aluminium, Iron, Copper, Silver, Sand

- 1) Aluminium 2) Iron 3) Silver 4) Sand

Q 37. Objects / Materials through which objects can be seen, but not clearly are known as ____ .

- 1) Translucent 2) Opaque 3) Transparent 4) None of these

Q 38. The process of conversion of water vapor into its liquid form is called _____ .

- 1) Evaporation 2) condensation 3) Saturation 4) None of these

Q 39. State true or false.

- a) Separation of sugar from Tea can be done by filtration method.
b) Grains and husk can be separated with the process of decantation

- 1) Both a and b are true 2) a is true b is false
3) Both a and b are false 4) a is false b is true

Q 40. Which of the following is non-magnetic material

- 1) Nickel 2) Iron 3) Plastics 4) Cobalt

Q 41. A magnet always has _____ poles.

- 1) North 2) South 3) North-South 4) East- West

Q 42. _____ objects do not allow light to pass through them.

- 1) Transparent 2) Opaque 3) Translucent 4) None of these

Q 43. Substance that dissolve completely in water are called _____ materials.

- 1) mixture 2) solution 3) soluble 4) Insoluble

Q 44. The taste of acid is.

- 1) Bitter 2) Sour 3) Salty 4) sweet

Q 45. The strongest Acid is.

- 1) Sulphuric Acid 2) Hydrochloric Acid 3) Acetic Acid 4) Nitric Acid

Space for Rough Work