



MOMENTUM

PRE-FOUNDATION

(A Division of Momentum Education Pvt. Ltd)

DATE :

DURATION: 2 HRS.

MARKS: 280

MTSE

(MODEL PAPER)

MTSE

MOMENTUM TALENT SEARCH EXAM

TEST ID-2104

CLASS: 9 (MOVING TO CLASS 10)

TEST NO - 1

INSTRUCTIONS

A. GENERAL

1. Please read the Instructions carefully, You are allotted 10 minutes specially for this purpose.
2. Blank papers, clip boards, log tables, slide rule, calculators, mobiles or any other electronic instrument in any form is **"NOT PERMISSIBLE"**.
3. Before starting the paper, fill up the required details in the blank spaces provided in the answersheet.
4. Using a **Blue/ Black Pen**, darken the bubbles on the **OMR sheet**.
5. **DO NOT TAMPER WITH/MUTILATE THE OMR OR THE BOOKLET.**
6. No rough sheets will be provided by the invigilators. All the rough work is to be done in the blank space provided in the question paper.

B. FILLING THE RIGHT PART OF THE OMR

7. Write your name, Bach and the Father's name in the boxes provided on the right part of the OMR. Do not write any of this information anywhere else. Darken the appropriate bubble under each digit of your Student ID Number and Test ID Number.
8. Do not fold or make any stray marks on the Answer Sheet.
9. On completion of the test, the candidate must hand over the Answer Sheet & Test Booklet to the Invigilator on duty in the Room / Hall.
10. Follow instructions by invigilator/Centre Superintendent (If any).
11. **Please fill in all the correct information on back page of this paper.**

C. QUESTION PAPER FORMAT :

This Question Paper consists of 70 objective type questions.

D. MARKING SCHEME :

- 4 Marks will be awarded for each Correct Answer.
- 1 Mark will be deducted for each incorrect Answer.
- 0 Marks will be awarded for unattempted Questions

Name of the Candidate

I have read all the instructions and shall abide by them

.....
Signature of the Candidate

Candidate ID

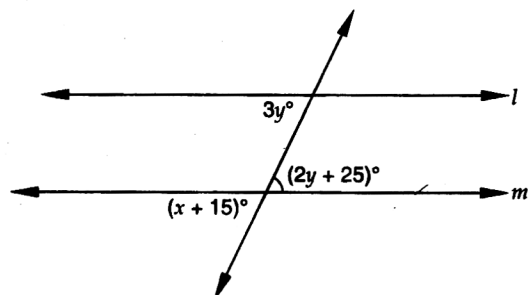
I have verified all the information filled in by the Candidate

.....
Signature of the Invigilator

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Mathematics [Part- I]

1. In Fig. , if $l \parallel m$, what is the value of x ?



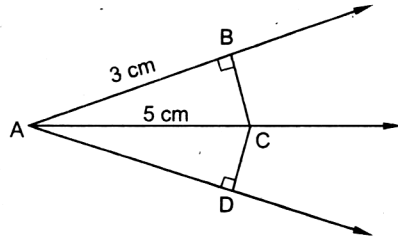
- (a) 60 (b) 50 (c) 45 (d) 30
2. If the diagonals of a rhombus are 18 cm and 24 cm respectively, then its side is equal to
(a) 16 cm (b) 15 cm (c) 20 cm (d) 17 cm
3. If l is the length of a diagonal of cube of volume V , then
(a) $3V = l^3$ (b) $\sqrt{3} V = l^3$ (c) $3\sqrt{3} V = 2l^3$ (d) $3\sqrt{3} V = l^3$
4. The value of $\{8^{-4/3} \div 2^{-2}\}^{1/2}$ is
(a) $\frac{1}{2}$ (b) 2 (c) $\frac{1}{4}$ (d) 4

Space for rough work

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5. The mean of a, b, c, d and e is 28. If the mean of a, c and e is 24, what is the mean of b and d ?
(a) 31 (b) 32 (c) 33 (d) 34

6. In Fig. , if AC is bisector of $\angle BAD$ such that $AB = 3$ cm and $AC = 5$ cm, then $CD =$
(a) 2 cm (b) 3 cm (c) 4 cm (d) 5 cm



7. If $10^x = 64$, what is the value of $10^{\frac{x}{2}+1}$?
(a) 18 (b) 42 (c) 80 (d) 81
8. The algebraic sum of the deviations of a set of n values from their mean is
(a) 0 (b) $n - 1$ (c) n (d) $n + 1$
9. The radius of a wire is decreased to one-third. If volume remains the same, the length will become
(a) 3 times (b) 6 times (c) 9 times (d) 27 times
10. A triangle and a parallelogram are on the same base and between the same parallels. The ratio of the areas of triangle and parallelogram is
(a) 1 : 1 (b) 1 : 2 (c) 2 : 1 (d) 1 : 3

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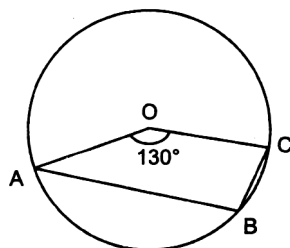
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11. If the diameter of the base of a closed right circular cylinder be equal to its height h , then its whole surface area is
(a) $2\pi h^2$ (b) $\frac{3}{2}\pi h^2$ (c) $\frac{4}{3}\pi h^2$ (d) πh^2
12. $75 \times 75 + 2 \times 75 \times 25 + 25 \times 25$ is equal to
(a) 10000 (b) 6250 (c) 7500 (d) 3750
13. If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio 2 : 3, then the measure of the larger angle is
(a) 54° (b) 120° (c) 108° (d) 136°
14. If the measures of angles of a triangle are in the ratio of 3 : 4 : 5, what is the measure of the smallest angle of the triangle?
(a) 25° (b) 30° (c) 45° (d) 60°
15. If the length of a median of an equilateral triangle is x cm, then the area is
(a) x^2 (b) $\frac{\sqrt{3}}{2}x^2$ (c) $\frac{x^2}{\sqrt{3}}$ (d) $\frac{x^2}{2}$
16. The mean of a set of seven numbers is 81. If one of the numbers is discarded, the mean of the remaining numbers is 78. The value of discarded number is
(a) 98 (b) 99 (c) 100 (d) 101

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17. ABCD is a trapezium in which $AB \parallel DC$. If $\text{area}(\triangle ABD) = 24 \text{ cm}^2$ and $AB = 8 \text{ cm}$, then height of $\triangle ABC$ is
(a) 3 cm (b) 4 cm (c) 6 cm (d) 8 cm

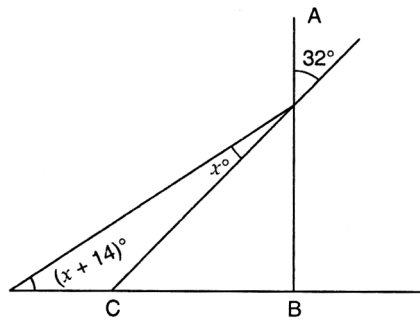


18. If $x + \frac{1}{x} = 2$, then $x^3 + \frac{1}{x^3} =$
(a) 64 (b) 14 (c) 8 (d) 2
19. Three equal cubes are placed adjacently in a row. The ratio of the total surface area of the resulting cuboid to that of the sum of the surface areas of three cubes, is
(a) 7 : 9 (b) 49 : 81 (c) 9 : 7 (d) 27 : 23
20. The value of k for which $x - 1$ is a factor of $4x^3 + 3x^2 - 4x + k$, is
(a) 3 (b) 1 (c) -2 (d) -3
21. In Fig., O is the centre of the circle such that $\angle AOC = 130^\circ$, then $\angle ABC =$
(a) 130° (b) 115° (c) 65° (d) 165°
22. If the volumes of two cones are in the ratio 1 : 4 and their diameters are in the ratio 4 : 5, then the ratio of their heights, is
(a) 1 : 5 (b) 5 : 4 (c) 5 : 16 (d) 25 : 64

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23. In Fig. if $AB \perp BC$, then $x =$
 (a) 18 (b) 22 (c) 25 (d) 32



24. The total surface area of a cone of radius $\frac{r}{2}$ and length $2l$, is
 (a) $2\pi r(\ell + r)$ (b) $\pi r\left(\ell + \frac{r}{4}\right)$ (c) $\pi r(\ell + r)$ (d) $2\pi r\ell$
25. Which of the following is (are) not equal to $\left\{\left(\frac{5}{6}\right)^{1/5}\right\}^{-1/6}$?
 (a) $\left(\frac{5}{6}\right)^{\frac{1}{5} - \frac{1}{6}}$ (b) $\frac{1}{\left\{\left(\frac{5}{6}\right)^{1/5}\right\}^{1/6}}$ (c) $\left(\frac{6}{5}\right)^{1/30}$ (d) $\left(\frac{5}{6}\right)^{-1/30}$

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Science [Part- II]

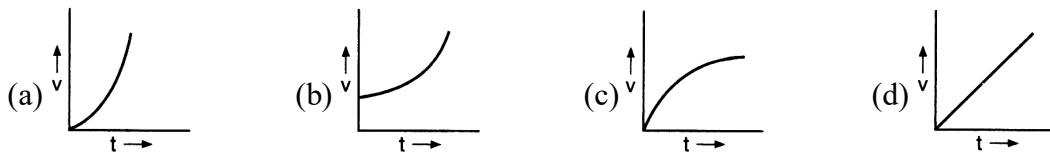
26. A person travels along a straight road for the first half length with a constant speed v_1 and the second half length with a constant speed v_2 . The average speed V is :

- (a) $(v_1 + v_2) / 2$ (b) $2v_1v_2 / (v_1 + v_2)$ (c) $(v_1v_2)^{1/2}$ (d) $(v_2 / v_1)^{1/2}$

27. Tripling the speed of a motor car multiplies the distance needed for stopping it by :

- (a) 3 (b) 6 (c) 9 (d) some other number

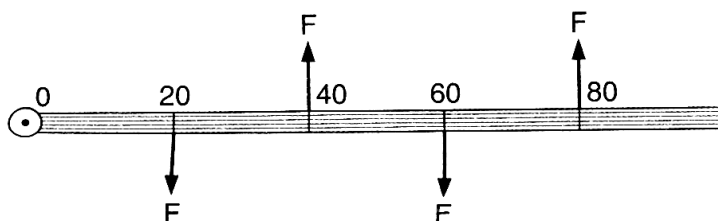
28. Which of the following figures represents the motion of a body moving in a straight line under constant acceleration ?



29. A block of mass 2 kg is placed on the floor. The coefficient of static friction is 0.4. If a force of 2.8 N is applied on the block parallel to floor, the force of friction between the block and floor is : (Taking $g = 10 \text{ m/s}^2$)

- (a) 2.8 N (b) 8 N (c) 2 N (d) zero

30. Four equal and parallel forces are acting on a rod (as shown in figure) at distances of 20 cm, 40 cm, 60 cm and 80 cm respectively from one end of the rod. Under the influence of these forces the rod :



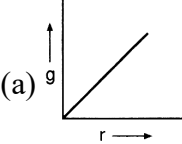
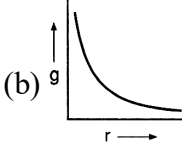
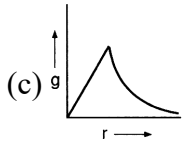
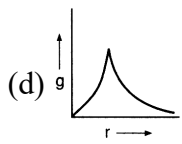
- (a) is at rest
(b) experiences a torque
(c) experiences a linear motion
(d) experiences a torque and also a linear motion

31. A body is moving in a circular path with a constant speed; its acceleration acts in a direction :

- (a) along the tangent
(b) along the circumference
(c) along the radius towards the centre
(d) along the radius away from the centre

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32. The gravitational force with which the earth attracts the moon :
 (a) is less than force with which the moon attracts the earth
 (b) is equal to the force with which the moon attracts the earth
 (c) is greater the force with which the moon attracts the earth
 (d) varies with the phases of the moon
33. Acceleration due to gravity decreases as we go up from the surface of the earth. Then in going below the surface of the earth it :
 (a) increases (b) decreases
 (c) remains constant (d) decreases then increases
34. The variation of acceleration due to gravity as one moves away from earth's centre is given by :
 (a)  (b)  (c)  (d) 
35. A weightless rubber balloon has 100 g of water in it. Its weight in water will be :
 (a) 100 g (b) 200 g (c) 50 g (d) zero
36. Which factor affect evaporation
 (a) Temprature (b) Surface area (c) Both (a) and (b) (d) None of these
37. Melting point of Ice is -
 (a) 0°C (b) 4°C (c) 5°C (d) None
38. Triple point of water is -
 (a) 373 K (b) 273 K (c) 173 K (d) 73 K
39. The particle size of colloidal solution is in between
 (a) 10^{-2} cm to 10^0 cm (b) 10^0 cm to 10^2 cm
 (c) 10^{-7} cm to 10^{-5} cm (d) None of the above
40. Coagulation occurs due to
 (a) The scattering of light (b) The presence of charge
 (c) The neutralization at charges (d) None of the above
41. The technique used in ultramicroscape is
 (a) Adsorprion (b) Coagulation
 (c) Tyndall effect (d) Electrophoresis
42. A gas sample (A) has a volume of 10 mL at temprature of 25°C under pressure of 1.5 atm. Another gas sample (B) has a volume of 9 mL at a temprature of 50°C under a pressure of 2 atm. Which sample contains a larger amount at Gas.
 (a) Sample (A) (b) Sample (B)
 (c) Sample (A) and (B) both have same amount (d) None of these
43. The absolute charge of electron is -
 (a) 1.1×10^{11} C (b) 1.6×10^{14} C (c) 1.6×10^{-23} C (d) 1.6×10^{-19} C

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44. Cathod rays get deflected in an electrical field towards
(a) Positive plates
(b) Negative plates
(c) First toward negative, then toward positive
(d) No deflection takes place
45. The valancy of Silver in Ag_2CO_3 is
(a) 1 (b) 2 (c) 3 (d) Zero
46. Rice is a
(a) Kharif crop (b) Rabi crop (c) Winter crop (d) Oil seed crop
47. Nitrogen - fixing bacteria are present in the root nodules of
(a) Mustard (b) Rice (c) Gram (c) Jawar
48. Dr. M. S. Swaminathan is related to
(a) Yellow Revolution (b) Blue Revolution (c) White Revolution (d) Green Revolution
49. The most popular breed of layer all over the world is
(a) Rhode island red (b) White leghorn (c) Aseel (d) Busra
50. Root hairs of plants absorb water from the soil by
(a) Osmosis (b) Phagocytosis (c) Pinocytosis (d) Exocytosis
51. Rough endoplasmic reticulam remains in connection with
(a) Lysosome (b) Nucleus (c) Mitochondria (d) Golgi bodies
52. 50s & 30s are subunits of
(a) Cristae (b) 80s ribosome (c) Oxysomes (d) 70s ribosomes
53. Which organelle can clear the worn out cell organelle
(a) Oxysome (b) Mitochondria (c) Lysosome (d) Peroxisome
54. Which among the following connects muscles to bones ?
(a) Tendon (b) Ligament (c) Cartilage (d) Hyaline Cartilage
55. Which Of the following provides flexibility to the plants ?
(a) Parenchyma (b) Collenchyma (c) Sclerenchyma (d) Aerenchyma

Space for rough work

Direction for Q. No.-56 - 58

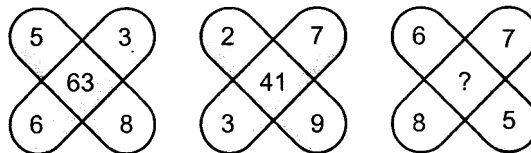
In the following questions, one word, which is in capitals, has had three OR four consecutive letters taken out. These 3 or 4 letters will make only correctly spelt word without changing the order. Find the appropriate 3 or 4 letter word.

56. After a fierce argument, the two boys started FIGHG with each other :
(a) FIN (b) RAP (c) TEN (d) TIN
57. Satya's monitor and keyboard were next to his COMER.
(a) PUT (b) CUT (c) PIN (d) POT
58. The latest computer is very SOPTICATED.
(a) BUS (b) EAR (c) HIS (d) OLD

Direction for Q.No.- 59 - 61

Find the number which replaces the question mark.

59. 10 12 28 90 368 (?) 11112 :
(a) 1850 (b) 338 (c) 90 (d) 28
60. 4 8 12 24 36 72 (?)
(a) 108 (b) 98 (c) 92 (d) 96
61. 2 3 8 27 112 (?)
(a) 226 (b) 339 (c) 452 (d) 565
62. A man goes towards east 5km, then he takes a turn south-we..... and goes 5km. He again takes a turn north-west and goes 5km..... with respect to the point from where he started, where is now :
(a) At the starting point (b) 15m, South
(c) In the East (d) In the North-East
63. A person travels 6 km towards west, then travels 5 km north, then finally travels 6 km west, how far is he from his original place and in what direction :
(a) 13 km to the South-East (b) 13 km to the North-West
(c) 13 km to the West-East (d) 14 km to the East-South
64. Find the missing number in the figure below :



- (a) 26 (b) 82 (c) 83 (d) 86

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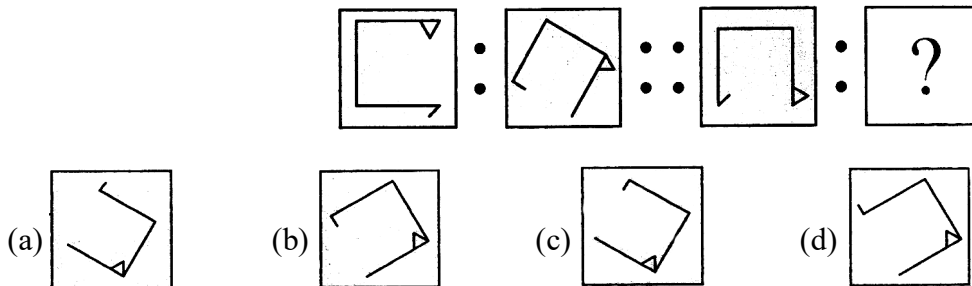
65. Shweta said to her friend, "Yesterday I attended the birthday party of the son of the only son-in-law of my mother's mother". How is Shweta related to the man whose birthday party she attended :

- (a) Niece (b) Daughter (c) Sister (d) Mother

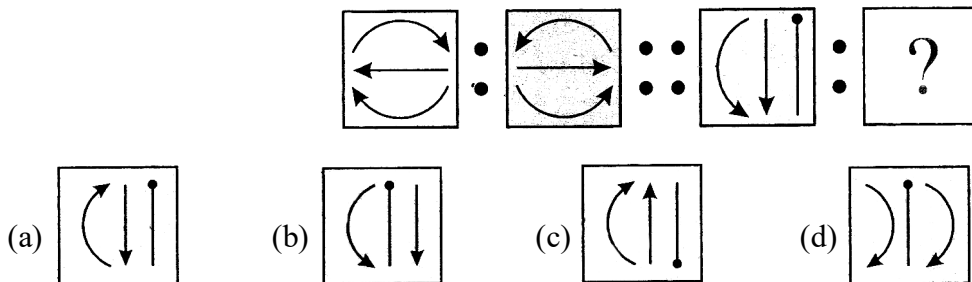
66. Choose the figure that does not belong to the group :



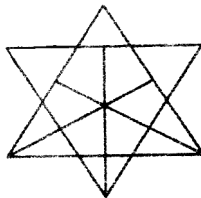
67. Which shape completes the second pair in the same way as the first pair :



68. Which shape completes the second pair in the same way as the first pair :



69. Find the number of triangles in the given figure :



- (a) 21 (b) 23 (c) 25 (d) 27

70. A solid wooden cube is painted RED on all the four adjoining faces where as its top and bottom faces are painted with BLACK paint. This cube is cut into 27 cubes all of equal size. How many cubes are there without any paint :

- (a) 4 (b) 3 (c) 2 (d) 1

Space for rough work

C. QUESTION PAPER FORMAT

The question paper consists of 3 parts I, II & III Mathematics, Science & Reasoning respectively.

D. MARKING SCHEME

There are three parts in the question paper. The distribution of marks subjectwise in each part is as under for each correct response :

| PART | SUBJECT | QUESTION NO. | MARKS |
|------------|-------------|--------------|-------|
| Part - I | MATHEMATICS | 01 to 25 | 4 |
| Part - II | SCIENCE | 26 to 55 | 4 |
| Part - III | REASONING | 56 to 70 | 4 |

You must fill the bubble in OMR in following manner. For example if only 'b' choice is correct then



If you fill the bubble for any option other than the correct option then, your response will be considered incorrect. 1/4 (one four) of allotted marks i.e. 1 mark if a question carries 4 marks will be deducted for indicating incorrect response of each question. No. deduction from the total score will be made if no response is indicated for a question in the answer sheet.

GENERAL INFORMATION

Fill by the candidate :-

Candidate ID : _____

- Candidate Name : _____
- Father's Name : _____
- Mother's Name : _____
- Category : ☐ GEN ☐ OBC ☐ SC ☐ ST
- Mobile No. 1.(G) _____ 2. (P) _____
- NTSE Qualified ☐ Y ☐ N 7. KVPY ☐ Y ☐ N 8. OLYMPIAD ☐ Y ☐ N
- Board ☐ CBSE ☐ ICSE / ISC ☐ U.P. Others : _____
- Last Class : _____ % _____ 10th % _____ 12th % _____
- Last School Name : _____ City _____
- Any other achievement : _____
- Have you attempted any admission test before : ☐ Y ☐ N _____
- Old student of Momentum or admitted : ☐ Y ☐ N If yes, St.Id _____ /Batch _____

Disclaimer :

I hereby solemnly and sincerely affirm that all the particulars stated by me in this form are true and correct. However, if any information furnished herein is found false, wrong, incorrect or inaccurate, I understand that my candidate for Admission Test-2021 will be cancelled and lead to cancellation of the test result.

Candidate Signature _____

Invigilator Signature _____

MOMENTUM

ABOVE AXIS BANK, BETIAHATA CHOWK, GORAKHPUR

PHONES : 6389138701, 02