MENTORS EDUSERV SCHOLASTIC APTITUDE TEST (ME-SAT)
SAMPLE TEST PAPER

[For Students presently in Class 7 going to Class 8 in 2019]

Time : 2 hours   **Maximum Marks: 300**

INSTRUCTIONS

[A]   General

1. This Question paper contains **FIVE** Parts, **A to E** (Physics, Chemistry, Mathematics, Biology & Mental Ability).

2. This Question Paper contains **19 pages.**

3. This question paper contains total **100 questions** (**20** questions each in Physics, Chemistry, Mathematics, Biology and Mental Ability).

4. The Question Paper has blank spaces at the bottom of each page for rough work. No additional sheets will be provided for rough work.

5. Blank papers, clip boards, log tables, slide rule, calculators, cellular phones, pagers and electronic gadgets, in any form, are **NOT** allowed.

6. The **OMR** (Optical Mark Recognition) sheet shall be provided separately.

[B]   Answering on the OMR

7. In all the parts, each question will have **4 choices** out of which **only one choice is correct**.

8. Darken the bubble with **Ball Pen (Blue or Black) ONLY.**

[C]   Filling OMR

9. On the **OMR sheet**, fill all the details properly and completely, otherwise your OMR will not be checked.

10. Do not write anything or tamper the barcode in the registration no. box.

[D]   Marking Scheme:

11. For each question you will be awarded **3 marks** if you darken the bubble corresponding to the correct answer **ONLY** and **zero (0) marks** if no bubble is darkened. In all other cases, **minus one (–1) mark** will be awarded.

S E A L

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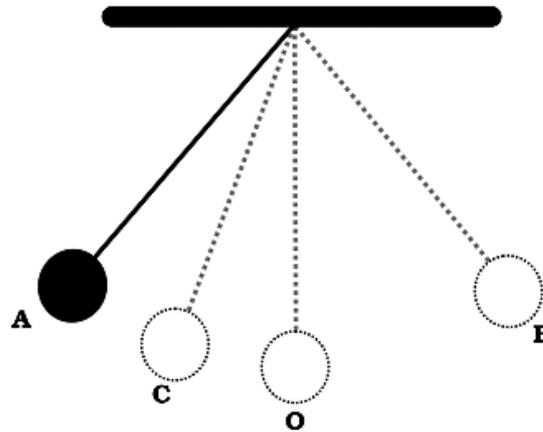
Registration No.:

PART-A : PHYSICS

1. A wooden spoon is dipped in a cup of ice cream. Its other end

  (A) becomes cold by the process of conduction.

  (B) becomes cold by the process of convection.

  (C) becomes cold by the process of radiation.

  (D) does not become cold.

2. Paheli and Boojho measured their body temperature. Paheli found her's to be 100.6 °F and Boojho recorded 37°C. Which of the followng statement is true?

  (A) Paheli has a higher body temperature than Boojho.

  (B) Paheli has a lower body temperature than Boojho.

  (C) Both have normal body temperature.

  (D) Both are suffering from fever.

3. Which one of the following place is unlikely to be affected by a cyclone.

  (A) Chennai   (B) Mangaluru (Mangalore)

  (C) Amritsar   (D) Puri

4. A fire alarm usually detects smoke in case of fire. Where should such an alarm be placed in a room?

  (A) Near the door   (B) On the floor   (C) On any wall   (D) On the ceiling

5. A curtain is hanging at the entrance of a room. A long corridor runs at right angles to the door, that is parallel to the curtain. If a strong wind blows along the corridor, the curtain will

  (A) get pushed inside the room.

  (B) get pushed outside the room.

  (C) get collected towards one end/swirled.

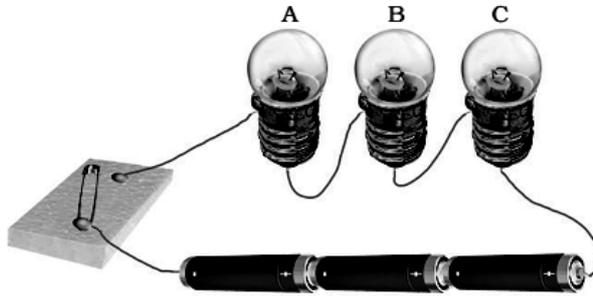 (D) remain unaffected.

Space for rough work

6. A car moves with a speed of 40 km/h for 15 minutes and then with a speed of 60 km/h for the next 15 minutes. The total distance covered by the car is:

(A) 100 km   (B) 25 km   (C) 15 km   (D) 10 km

7. A bus travels 54 km in 90 minutes. The speed of the bus is

(A) 0.6 m/s   (B) 10 m/s   (C) 5.4 m/s   (D) 3.6 m/s

8. Figure shows an oscillating pendulum.

Time taken by the bob to move from A to C is t_1 and from C to O is t_2. The time period of this simple pendulum is

(A) $(t_1 + t_2)$ (B) $2 (t_1 + t_2)$ (C) $3 (t_1 + t_2)$ (D) $4 (t_1 + t_2)$

9. Boojho walks to his school which is at a distance of 3 km from his home in 30 minutes. On reaching he finds that the school is closed and comes back by a bicycle with his friend and reaches home in 20 minutes. His average speed in km/h is

(A) 8.3   (B) 7.2   (C) 5   (D) 3.6
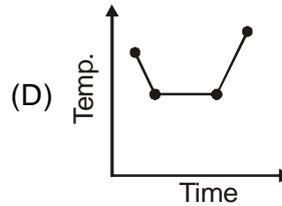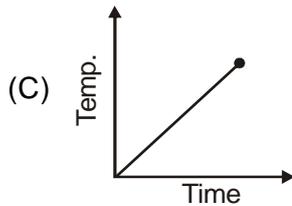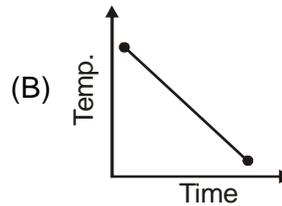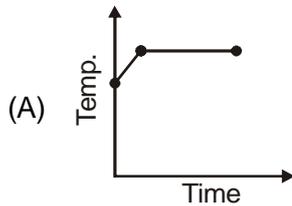
Space for rough work

10. Three bulbs A, B, C are connected in a circuit as shown in Figure. When the switch is 'ON'

(A) bulb C will glow first.

(B) bulb B and C will glow simultaneously and bulb A will glow after some time.

(C) all the bulbs A,B and C will glow at the same time.

(D) the bulbs will glow in the order A, B and C.

11. If an object is placed at a distance of 0.5 m in front of a plane mirror, the distance between the object and the image formed by the mirror will be

(A) 2 m   (B) 1 m   (C) 0.5 m   (D) 0.25 m

12. You are provided with a concave mirror, a convex mirror, a concave lens and a convex lens. To obtain an enlarged image of an object you can use either

(A) concave mirror or convex mirror.   (B) concave mirror or convex lens.

(C) concave mirror or concave lens.   (D) concave lens or convex lens.

13. You are provided with a convex mirror, a concave mirror, a convex lens and a concave lens. You can get an inverted image from

(A) both concave lens and convex lens.

(B) both concave mirror and convex mirror.

(C) both concave mirror and convex lens.

(D) both convex mirror and concave lens.

Space for rough work

14. A pot full of water is put to boil on the stove. Which one of the graphs below shows the correct change in temperature over time ?

(A)

(B)

(C)

(D)

15. A body goes 30 km east then 20 km north then 80 km west and then 50 km east. Find the magnitude of displacement of the body from the initial position.

(A) 0 km   (B) 20 km   (C) 50 km   (D) 180 km

16. The speed of a bus is 72 km/h whereas the speed of a car is 12.5 m/s. Which is moving faster ?

(A) Bus   (B) Car

(C) Both with same speed   (D) Data insufficient

17. An electric component used as a safety device in electric circuits is

(A) switch   (B) fuse

(C) cell   (D) electric wires

18. Which of the following is not a circuit element ?

(A) Potential difference   (B) Voltmeter

(C) Resistor   (D) Battery

Space for rough work

19. Which one of the following phenomenon occurs when two naked wires of electricity supply line touch each other ?

(A) Overloading   (B) Shortcircuiting (C) Lightening   (D) None of these

20. What is overloading ?

(A) Touching of live wire with the neutral wire

(B) Touching of live wire with the earth wire

(C) Touching of neutral wire with the earth wire

(D) Putting more current across a wire than it can handle

PART-B : CHEMISTRY

21. Which of the following will turn blue litmus red?

(A) Limewater

(B) Lemon water

(C) Sugar solution

(D) Salty water

22. Which of the following acids is present in sour milk?

(A) Lactic acid   (B) Formic acid   (C) Acetic acid   (D) Citric acid

23. Vinegar is

(A) bitter in taste   (B) sweet in taste (C) sour in taste   (D) tasteless

24. The acid present in the stomach which helps in digestion is

(A) sulphuric acid   (B) citric acid   (C) lactic acid   (D) hydrochloric acid

25. Hydrochloric acid can be neutralised by

(A) sodium hydroxide

(B) calcium hydroxide

(C) sodium carbonate

(D) All of these.

Space for rough work

26. Acidic soil can be neutralised by

    (A) vinegar   (B) quick lime   (C) orange juice   (D) tamarind juice

27. When added to acids, phenolphthalein

    (A) changes to pink   (B) changes to green

    (C) remains colourless   (D) changes to orange

28. When an acid and a base react, salt (X) and another product (Y) are formed. (Y) is

    (A) an acid   (B) a base

    (C) water   (D) hydrogen

29. Galvanisation is a process in which

    (A) iron is coated on zinc metal   (B) zinc and iron are mixed in molten state

    (C) zinc is coated as a layer on iron (D) carbon is mixed with iron and heated.

30. A substance that changes colour in acidic and basic solutions is called

    (A) an indicator   (B) a weak base

    (C) a weak acid   (D) a neutral salt

31. Which of the following is not a physical change?

    (A) Breaking of a glass tumbler   (B) Melting of butter

    (C) Dissolving of sugar in water   (D) Ripening of a fruit

32. Which of the following is a chemical change.

    (A) Cutting of a cloth   (B) Ironing of a cloth

    (C) Drying of a cloth   (D) Burning of a cloth

33. Which of the following methods cannot be used to prevent rusting? ,

    (A) Painting   (B) Alloying   (C) Galvanisation   (D) Mixing with sulphur

Space for rough work

34. Copper sulphate solution is ....in colour.

    (A) green   (B) blue   (C) pink   (D) colourless

35. Carbon dioxide gas turns lime water milky. This change is a

    (A) physical change   (B) chemical change

    (C) displacement reaction   (D) neutralisation reaction.

36. Which of the following metals burns with a dazzling white flame?

    (A) Zinc   (B) Copper   (C) Iron   (D) Magnesium

37. Which of the following gases burns with a pop sound?

    (A) Hydrogen   (B) Oxygen   (C) Nitrogen   (D) Carbon dioxide

38. A reversible change is a change which

    (A) cannot be reversed

    (B) is a chemical change

    (C) takes place during a displacement reaction

    (D) can be reversed.

39. Identify the physical change in the following.

    (A) Burning of magnesium ribbon

    (B) Formation of solution by dissolving a soluble substance in water

    (C) Photosynthesis

    (D) Digestion of food

40. A cut piece of apple turns brown when exposed to air for some time. It is an example of a

    (A) reversible change   (B) physical change

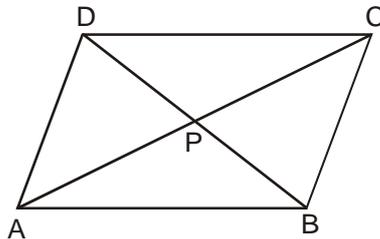   (C) chemical change   (D) physical and reversible change.

Space for rough work

PART-C : MATHEMATICS

41. The smallest positive odd number is

(A) 0   (B) 5   (C) 3   (D) 1

42. The HCF of 17 and 19 is

(A) 1   (B) 2   (C) 17   (D) 19

43. $\dfrac{1}{12} : \dfrac{1}{60}$ equals

(A) 4 : 1   (B) 1:4   (C) 5:1   (D) 1:5

44. $\dfrac{2}{5}$ as a percent is

(A) 30%   (B) 35 %   (C) 40 %   (D) 45 %

45. Radius of the first orbit of hydrogen is $\dfrac{0.529}{100000000}$ cm. Its value by using powers of 10 is

(A) 0.529×10^{-9} cm   (B) 5.29×10^{-9} cm

(C) 0.0529×10^{-9} cm   (D) 5.29×10^{-10} cm

46. The value of $\dfrac{\sqrt{144} + \sqrt{256}}{3^2 - 2}$ is

(A) 8   (B) 4   (C) –4   (D) –8

47. The value of $3^4 \left[\left(\dfrac{2}{3} \right)^2 + \left(\dfrac{2}{3} \right) - \left(\dfrac{2}{3} \right)^3 \right]$ is

(A) 86   (B) 66   (C) 68   (D) 88

Space for rough work

48. The sum of an angle and one third of its supplementary angle is 90° then the angle is

(A) 135°   (B) 120°   (C) 60°   (D) 45°

49. In a rhombus, if diagonals are equal, then the rhombus necessarily will be

(A) a rectangle but not square   (B) a square

(C) a parallelogram but not a square   (D) None of these

50. The triangle whose two of its angles are 40° and 70° is

(A) Scalene   (B) Obtuse   (C) Isosceles   (D) Equilateral

51. In the figure below, ABCD is a parallelogram, AC = 14 cm and BD = 10 cm, then AP + BP is

(A) 5 cm   (B) 7 cm   (C) 24 cm   (D) 12 cm

52. The lengths of two sides of an isosceles triangle are 5 cm and 12 cm. The length of the third side is

(A) 12 cm   (B) 5 cm   (C) 17 cm   (D) 6 cm

53. If $\dfrac{2z}{5} + 6 = z - 3$ then 'z' equals

(A) 12   (B) 15   (C) 11   (D) 10

54. A parallelogram in which the diagonals bisect each other at right angles must be

(A) a rhombus   (B) a rectangle   (C) a square   (D) Either (B) or (C)

Space for rough work

55. If $12x - 7 = 7x - 13$ then 'x' equals

(A) -1.2 (B) -1.6 (C) -1.8 (D) -1.4

56. If $\dfrac{x}{2} + \dfrac{x}{3} = 5$, then x equals

(A) 2   (B) 3   (C) 4   (D) 6

57. If one-fourth, half and one-third of a number are added to the number itself, then the result is equal to 25 then the number is

(A) 10   (B) 11   (C) 12   (D) 14

58. The present age of a man is seven times the present age of his son. Two years ago, the age of the man was eleven times the age of the son then the present age of the man (in years) is

(A) 35   (B) 26   (C) 47   (D) 45

59. The sum of 20 observations is 500, then the mean of the observations is

(A) 15   (B) 20   (C) 25   (D) 30

60. In a pie chart, the sum of the angles of all its component is

(A) 90°   (B) 180°   (C) 240°   (D) 360°

PART-D : BIOLOGY

61. Which of the following statements is/are correct?

(i) All green plants can prepare their own food

(ii) Most animals are autotrophs

(iii) Carbon dioxide is not required for photosynthesis

(iv) Oxygen is liberated during photosynthesis

Choose the correct answer from the options below :

(A) (i) and (iv)   (B) (ii) only   (C) (ii) and (iii)   (D) (i) and (ii)

Space for rough work

62. The term that is used for the mode of nutrition in yeast, mushroom and bread-mould is

(A) Autotrophic   (B) Insectivorous   (C) Saprophytic   (D) Parasitic

63. The finger-like outgrowths of Amoeba helps to ingest food. However, the finger-like outgrowths of human intestine helps to

(A) Digest the fatty substances   (B) Make the food soluble

(C) Absorb the digested food   (D) Absorb the undigested food

64. The enzymes present in the saliva convert

(A) Fats into fatty acids and glycerol   (B) Starch into simple sugars

(C) Proteins into amino acids   (D) Complex sugars into polysaccharides

65. Out of the given definitions, which is the most appropriate definition of climate?

(A) Changes in weather conditions in a year

(B) Average weather pattern of many years

(C) Change in weather pattern in a few years

(D) Weather conditions during summer

66. Which of the following statement is incorrect for penguins?

(A) They huddle together   (B) They cannot swim

(C) They have webbed feet   (D) They have streamlined body

67. Breathing is a process that

(i)   Provides O_2 to the body   (ii)   Breaks down food to release energy

(iii) Helps the body to get rid of CO_2 (iv)   Produces water in the cells

Which of the following gives the correct combination of functions of breathing?

(A) (i) and (ii)   (B) (ii) and (iii)   (C) (i) and (iii)   (D) (ii) and (iv)

Space for rough work

68. The ovary of different flowers may contain

(A) Only one ovule   (B) Many ovules   (C) One to many ovules   (D) Only two ovules

69. Which of the following statements is/are true for sexual reproduction in plants?

(i) Plants are obtained from seeds

(ii) Two plants are always essential

(iii) Fertilisation can occur only after pollination

(iv) Only insects are agents of pollination

Choose from the options given below

(A) (i) and (iii)   (B) (i) only   (C) (ii) and (iii)   (D) (i) and (iv)

70. Which of the following statements is true regarding insectivorous plants?

(A) They are called as partial heterotrophs

(B) They exhibit both autotrophic and heterotrophic modes of nutrition

(C) They trap and digest insects to obtain N_2- nutrition

(D) All of these

71. Select the incorrect statement out of the following

(A) Large intestine is called large because its length is greater than small intestine

(B) Minerals and vitamins do not need to be broken down during digestion

(C) Mucus of stomach protects the lining of stomach from the action of enzymes and acids

(D) Small intestine is smaller in diameter than large intestine

72. Tropical rainforests are characterized by .... type of climate

(A) Hot and dry   (B) Cold and dry   (C) Hot and humid   (D) Cold and wet

Space for rough work

73. Which of the following options represents the benefit of weather forecasting ?

(A) It helps to plan activities and events

(B) It helps people to prepare for bad weather

(C) It helps to protect life and property of people

(D) All of these

74. Which of the following statements is correct for anaerobic respiration?

(A) Food is broken down in the absence of oxygen to release energy

(B) Breakdown of food occurs in presence of oxygen

(C) It is slow process compared to aerobic respiration

(D) It produces large amount of energy compared to aerobic respiration

75. During respiration, plants

(A) Release O_2 and take in CO_2 (B) Release H_2O and take in O_2

(C) Release CO_2 and take in O_2 (D) Both (B) and (C)

76. Which of the following is an incorrect match?

(A) Respiration through skin - Earthworm   (B) Respiration through gills - Lizard

(C) Respiration through lungs - Humans   (D) Respiration through spiracles - Cockroach

77. Which of the following is the male part of a flower?

(A) Ovule   (B) Style   (C) Stigma   (D) Anther

78. Fruit usually develops from

(A) Thalamus   (B) Ovary   (C) Ovule   (D) None of these

Space for rough work

79. __(i)__ transports __(ii)__ in both upward and downward directions

Which of the following options completes the given statement?

(A) (i) - Xylem; (ii) - water

(B) (i) - Phloem; (ii) - water

(C) (i) - Xylem; (ii) - food

(D) (i) - Phloem; (ii) - food

80. Which of the following options is correct with regard to blood circulation?

(A) Lungs $\rightarrow$ Left ventricle $\rightarrow$ Left atrium $\rightarrow$ Body tissues $\rightarrow$ Right ventricle $\rightarrow$ Right atrium $\rightarrow$ Lungs

(B) Body tissues $\rightarrow$ Left ventricle $\rightarrow$ Left atrium $\rightarrow$ Lungs $\rightarrow$ Right ventricles $\rightarrow$ Right atrium $\rightarrow$ Body tissues

(C) Body tissues $\rightarrow$ Left atrium $\rightarrow$ Left ventricle $\rightarrow$ Lungs $\rightarrow$ Right atrium $\rightarrow$ Right ventricle $\rightarrow$ Body tissues

(D) Lungs $\rightarrow$ Left atrium $\rightarrow$ Left ventricle $\rightarrow$ Body tissues $\rightarrow$ Right atrium $\rightarrow$ Right ventricle $\rightarrow$ Lungs

PART-E : MENTAL ABILITY

DIRECTIONS (Q.No. 81) : Find the odd numbers/letters/number pair from the given alternatives.
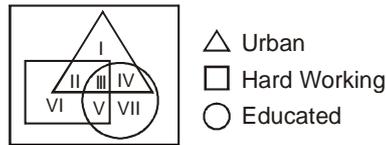
81. (A) TPLI (B) RNJF (C) YUQM (D) SOKJ

DIRECTIONS (Q.No 82) : Which one set of letters when sequentially placed at the gaps in the given letter series shall complete it ?

82. adb_ac_da_cddcb_abc_cbda

(A) bbcad (B) cbbaa (C) ccbba (D) bccba

Space for rough work

83. Which one of the areas marked I-VII represents the urban educated who are not hardworking?

△ Urban
□ Hard Working
○ Educated

(A) I   (B) IV   (C) II   (D) III

84. 8 : 56 : : 9 : ?

(A) 10   (B) 63   (C) 7   (D) 9

DIRECTIONS (Q.Nos. 85) : Select the missing number from the given responses.

85.

	25			324			64	
64	31	144	9	38	16	36	?	576
	36			169			361	

(A) 115   (B) 82   (C) 135   (D) 57

DIRECTIONS (Q.No.86) : Which one of the given responses would be a meaningful order of the following ?

86. 1. Frog   2. Eagle   3. Grasshopper   4. Snake

5. Grass

(A) 5, 3, 1, 4, 2   (B) 5, 3, 4, 2, 1   (C) 1, 3, 5, 2, 4   (D) 3, 4, 2, 5, 1

DIRECTIONS (Q.No. 87) : A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.
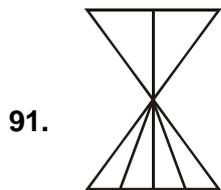
87. Sohan drove 15 km to the West from his house, then turned left and walked 20 km. He, then turned East and walked 25 km and finally turning left covered 20 km. How far he is from his house?

(A) 40 km   (B) 5 km   (C) 10 km   (D) 80 km

Space for rough work

DIRECTIONS (Q.No.88 - 90) : Find the odd number/letters/number pair from the given alternatives.

88. (A) 339   (B) 326   (C) 428   (D) 338

89. (A) STR   (B) ONP   (C) IHJ   (D) LKM

90. (A) Assassinate   (B) Kill   (C) Murder   (D) Kidnap

DIRECTIONS : How many triangles are there in the following figures ?

91.

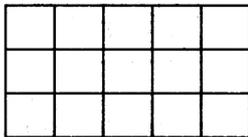(A) 21 to more   (B) 13 to 20   (C) 6 to 9   (D) 10 to 12

DIRECTIONS : The numbers in following questions have been arranged according to an identical pattern. Find out the missing numbers.

92.

16	14	4
15	34	?
3	16	15

(A) 15   (B) 16   (C) 17   (D) 14

93. How many squares are there in the following figure ?

(A) 24   (B) 25   (C) 26   (D) 27

Space for rough work

DIRECTIONS: In each of the questions given below, two signs in the equations given have been interchanged. Find out these two signs to make the equation correct.

94. If '+' means 'x', '–' means '+' 'x' means ' ÷ ', and ' ÷ ' means '–', then

6 – 9 + 8 x 3 ÷ 20 = ?

(A) – 2   (B) 6   (C) 10   (D) 12

95. A man walks 6 km south, turns left and walks 4 km, again turns left and walks 5 km. Which direction is he facing now ?

(A) South   (B) North   (C) East   (D) West

96. Anil left home and cycled 10 km Southwards, turned right and cycled 5 km & turned right and cycled 10 km and turned left and cycled 10 km. How many kilometer will he have to cycle to reach his home straight ?

(A) 10 km   (B) 15 km   (C) 20 km   (D) 25 km

97. Village Chimur is 20 km to the North of village Rewa. Village Rahate is 18 km to the East of village Rewa. Village Angne is 12 km to the West of Chimur. If Sanjay starts from village Rahate and goes to village Angne, in which direction is he from his starting point?

(A) North   (B) North-West   (C) South   (D) South-East

98. Which one of the given interchanges in signs would make the given equation correct ?

10 – 2 + 9 x 2 ÷ 4 = 19

(A) – and ÷   (B) – and +   (C) ÷ and x   (D) x and ÷

Space for rough work

99. Ms. A goes for her morning walk at 6 O' clock towards sun for 2 km, then she turns to her right and walks 3 km. She again turns to her left and walks 2 km, finally she turns to her left to walks another 6 km. In which direction is she moving and at what distance from the last turn, she is standing?

(A) 6 km, East   (B) 9 km, East   (C) 6 km, North   (D) 9 km, North

100. If + stands for 'division', x stands for 'addition', – stands for 'multiplication' and ÷ stands for subtraction, then which of the following equations is correct ?

(A) $36 \times 6 + 7 \div 2 - 6 = 20$

(B) $36 + 6 - 3 \times 5 \div 3 = 24$

(C) $36 \div 6 + 3 \times 5 - 3 = 45$

(D) $36 - 6 + 3 \times 5 \div 3 = 74$

Space for rough work

ANSWER - KEY

PART-A : PHYSICS

1. (D)	2. (A)	3. (C)	4. (D)	5. (B)	6. (B)
7. (B)	8. (D)	9. (B)	10. (C)	11. (B)	12. (B)
13. (C)	14. (A)	15. (B)	16. (A)	17. (B)	18. (A)
19. (B)	20. (D)				

PART-B : CHEMISTRY

21. (B)	22. (A)	23. (C)	24. (D)	25. (D)	26. (B)
27. (C)	28. (C)	29. (C)	30. (A)	31. (D)	32. (D)
33. (D)	34. (B)	35. (B)	36. (D)	37. (A)	38. (D)
39. (B)	40. (C)				

PART-C : MATHEMATICS

41. (D)	42. (A)	43. (C)	44. (C)	45. (C)	46. (B)
47. (B)	48. (D)	49. (B)	50. (C)	51. (D)	52. (A)
53. (B)	54. (A)	55. (A)	56. (D)	57. (C)	58. (A)
59. (C)	60. (D)				

PART-D : BIOLOGY

61. (A)	62. (C)	63. (C)	64. (B)	65. (B)	66. (B)
67. (C)	68. (A)	69. (A)	70. (D)	71. (A)	72. (C)
73. (D)	74. (A)	75. (D)	76. (B)	77. (D)	78. (B)
79. (D)	80. (D)				

PART-E : MENTAL ABILITY

81. (B)	82. (B)	83. (B)	84. (B)	85. (D)	86. (A)
87. (C)	88. (D)	89. (A)	90. (D)	91. (B)	92. (B)
93. (C)	94. (C)	95. (B)	96. (B)	97. (B)	98. (A)
99. (C)	100. (D)				