IIT ASHRAM BRINGS...

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उड़ान

A QUEST FOR SCIENCE ASPIRANTS !

CLASS 7

SCIENCE APTITUDE TEST

TIME : 2 HOURS	MAX MARK : 300	DATE : 21- 01- 2024

INSTRUCTIONS

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

Caution : Class, as given on paper above MUST be correctly marked on the answer OMR sheet before attempting the paper. Wrong Class will give wrong results.

1. This booklet consists of 75 questions. Question paper consists of 4 sections. Marking scheme is given in table below:

Section	Subject	Questions No.	Making Scheme for each questions	
			Correct Answer	Wrong Answer
PART - **I**	Mental Ability	15	4	-1
PART - **II**	Mathematics	30	4	-1
PART - **III**	Physics & Chemistry	20	4	-1
PART - **IV**	Biology	10	4	-1

3. Answers have to be marked on the OMR sheet. The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work.

4. Blank papers, cellular phones, smart watches, log tables, slide rule, calculator and electronic devices, in any form, are not allowed.

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PART - I : MENTAL ABILITY

1. What is the number of straight lines in the following figure ?
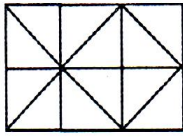
    (a) 11   (b) 14
    (c) 16   (d) 17
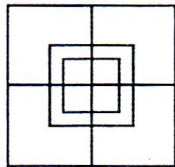
2. How many squares are there in the following figure ?

    (a) 13   (b) 14
    (c) 16   (d) 15

3. In the following question, four words are given, out of which three are same in one way and the fourth one is different from others. Select the odd one.

    (a) Earth   (b) Moon
    (c) Venus   (d) Mars

4. In the given word show the same relationship as in Boat is related to Oar in the same way as Bicycle is related to

    (a) Road   (b) Wheel
    (c) Seat   (d) Paddle

5. In the following question, there is a certain relationship between two given words on one side of :: and one word is give on another side of :: while another word is to be found from the given alternatives, having the same relation with this word as the words of the given pair bear. choose the correct alternatives.

    Bird : Fly : : Snake : ?

    (a) Timid   (b) Clatter
    (c) Crawl   (d) Hole

6. Arrange the words given below in a meaningful sequence.

    1.Presentation   2. Recommendation
    3.Arrival   4.Discussion
    5.Introduction

    (a) 5, 3, 4, 1, 2   (b) 3, 5, 4, 2, 1
    (c) 3, 5, 1, 4, 2   (d) 5, 3, 1, 2, 4

7. In the following question, choose the correct mirror image from alternatives A, B, C and D of the Word / figure (X).
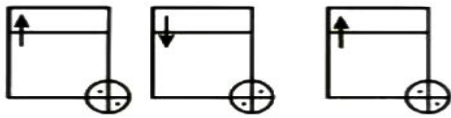
    (X)
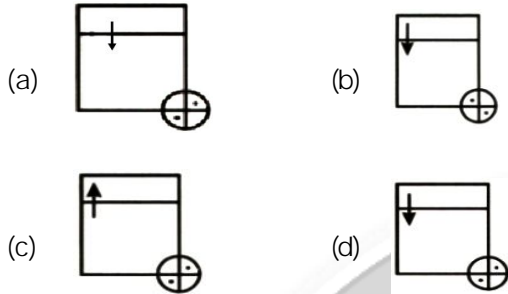
    (a)   (b)

    (c)   (d)

8. Study the problem figures carefully and try to establish the relationship between them from the answer figures. Pick out the figure which most appropriately completes the series.

Space for Rough Work

Problem Figures


Answer Figures

(a)   (b)

(c)   (d)

9. If RADIO is written PYBGM, then how would OQDKNG be written in that code ?

(a) MOBIEL   (b) MOBLIE

(c) MOIBLE   (d) MOBILE

10. If orange is called butter, butter is called soap, soap is called ink, ink is called honey and honey is called orange. Which of the following is used for washing clothes ?

(a) Honey   (b) Butter

(c) Orange   (d) Ink

11. Find the missing term in the given figures
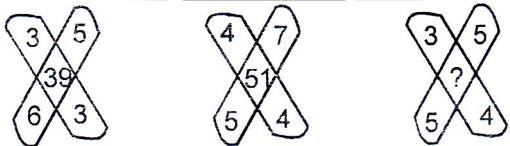
(a) 47   (b) 45

(c) 37   (d) 35

12. Arrange the given words in the order they occur in dictionary.

1. SIGN   2. SOLID

3. SCENE   4. SIMPLE

(a) 3, 1, 2, 4   (b) 3, 1, 4, 2

(c) 3, 4, 1, 2   (d) 3, 4, 2, 1

13. Find which one word can not be made from the letters of the given word.

REASONABLE

(a) ARSON   (b) BONES

(c) NOBLE   (d) BRAIN

14. In the first four letters of the word ANTHROPOMORPHISM are rewritten in the reverse order followed by the next four rewritten in the reverse order followed by the next four letters in the reverse order and so on, which letter will be twelfth from the left end in the rewritten order ?

(a) O   (b) H

(c) M   (d) P

15. How many 5's are there in the following sequence which are immediately followed by 3 but not immediately preceded by 7 ?
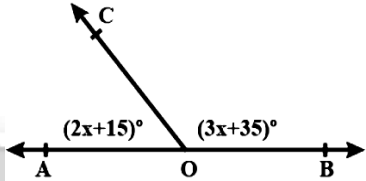
8953253855687 335775365335738

(a) One   (b) Two

(c) Three   (d) Four

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PART - II : MATHEMATICS

1. $(-1) + (-1) + (-1) + (-1) + \ldots\ldots 500$ times =
   (a) 500
   (b) 1
   (c) -1
   (d) -500

2. The additive inverse of-7 is
   (a) -7
   (b) $-\dfrac{1}{7}$
   (c) 7
   (d) $\dfrac{1}{7}$

3. The reciprocal of the fraction $2\dfrac{3}{5}$ is
   (a) $2\dfrac{5}{3}$
   (b) $\dfrac{13}{5}$
   (c) $\dfrac{5}{13}$
   (d) $2\dfrac{2}{5}$

4. Find the circumference of a circle whose area in sq. cm is equal to its circumference.
   (a) π cm
   (b) 2π cm
   (c) 4π cm
   (d) 8π cm

5. The improper fraction $2\dfrac{1}{25}$ in decimal form is
   (a) 2.4
   (b) 2.04
   (c) 2.004
   (d) None of these

6. $4 + 44 + 44.4 + 4.04 + 444 =$
   (a) 540.44
   (b) 577.2
   (c) 495.22
   (d) 472.88

7. $0.002 \times 0.5 =$
   (a) 0.1
   (b) 0.01
   (c) 0.001
   (d) 0.0001

8. $\dfrac{44}{-77}$ in standard form is
   (a) $\dfrac{4}{-7}$
   (b) $-\dfrac{4}{7}$
   (c) $-\dfrac{44}{77}$
   (d) None of these

9. What is the additive identity element in the set of whole numbers?
   (a) 0
   (b) 1
   (c) -1
   (d) None of these

10. $\dfrac{-5}{13} + ? = -1$
    (a) $\dfrac{8}{13}$
    (b) $\dfrac{-8}{13}$
    (c) $\dfrac{-18}{13}$
    (d) $\dfrac{18}{13}$

11. The number 4,70,394 in standard form is written as
    (a) 14.70394×10^{5}
    (b) 4.70394×10^{5}
    (c) 47.0394×10^{4}
    (d) 4703.94×10^{2}

12. If the area of a square is $225 m^{2}$ then its perimeter is
    (a) 15 m
    (b) 60 m
    (c) 225 m
    (d) 30 m

13. Which of the following pairs is/are like terms?
    (1) x   (2) x^{2} (3) $3x^{3}$ (4) $4x^{3}$
    (a) 1, 2
    (b) 2, 3
    (c) 3, 4
    (d) None of these

14. The sum of the coefficients in the monomials $3a^{2}b$ and $-2ab^{2}$ is
   (a) 5
    (b) -1
    (c) 1
    (d) -6

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15. What should be added to $3x^2 + 4$ to get $9x^2 - 7$?

(a) $6x^2 - 11$ (b) $6x^2 + 11$

(c) $12x^2 - 11$ (d) $12x^2 + 11$

16. The length of a rectangle is 8 cm and its area is 48 cm². The perimeter of the rectangle is

(a) 14 cm   (b) 24 cm

(c) 12 cm   (d) 28 cm

17. If $\dfrac{x}{2} - 4 = \dfrac{x}{3} - 1$, then x =

(a) 3   (b) 6

(c) 18   (d) 2

18. The simplest form of 24 : 36 is

(a) 9 : 4   (b) 4 : 9

(c) 3 : 2   (d) 2 : 3

19. If 2a = 3b = 4c then a : b : c =

(a) 2 : 3 : 4   (b) 3 : 4 : 6

(c) 4 : 3 : 2   (d) 6 : 4 : 3

20. What distance (in m) will a train cover in 1 minute travelling at 72 km/hr?

(a) 120   (b) 1200

(c) 1400   (d) 120

21. If 25% of x is 100, then x=

(a) 100   (b) 200

(c) 300   (d) 400

22. If CP = Rs 200 and SP = Rs 250, then the profit or loss is equal to

(a) Rs 50 loss   (b) Rs 50 profit

(c) Rs 25 profit   (d) Rs 25 loss

23. On selling a plastic chair for Rs 630, a man loses 10% , the cost price of the chair is

(a) Rs 567   (b) Rs 693

(c) Rs 700   (d) Rs 730

24. In what time will a sum of Rs 8000 amount to 8360 at 6% per annum simple interest?

(a) 8 months   (b) 9 months

(c) 1 months   (d) $1\dfrac{1}{2}$ years

25. In Figure 90, AOB is a straight line and the ray OC stands on it. The value of x is

(a) 16   (b) 26

(c) 36   (d) 46

26. If angles of a linear pair are equal, then the measure of each angle is

(a) 30^0 (b) 45^0

(c) 60^0 (d) 90^0

27. Two supplementary angles are in the ratio 3 : 2. The smaller angle measures

(a) 108^0 (b) 81^0

(c) 72^0 (d) 68^0

28. Which of the following is the set of measures of the sides of a triangle?

(a) 8 cm, 4 cm, 20 cm

(b) 9 cm, 17 cm, 25 cm

(c) 11 cm, 16 cm, 28 cm

(d) None of these

29. The number of lines of symmetry of a rectangle is

(a) 2   (b) 3

(c) 4   (d) 1

30. The order of rotational symmetry of an equilateral triangle is

(a) 0   (b) 1

(c) 2   (d) 3

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PART - III : PHYSICS & CHEMISTRY

1. The graph given below shows the positions of a body at different times. _____ is the speed of the body as it moves from B to C and _____ is the speed of the body as it moves C to D.
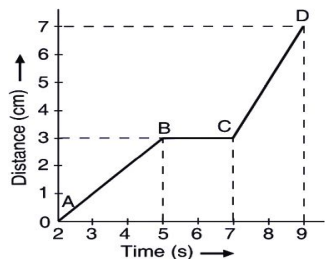
   (a)   3 cm/s & 4 cm/s
   (b)   0 cm/s & 2 cm/s
   (c)   0 cm/s & 4 cm/s
   (d)   2 cm/s & 0 cm/s

2. An object starts moving in a circular path of radius X, from point A. The magnitude of Displacement of the object, when it reaches point B is ___.
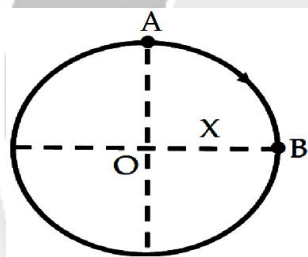
   (a) $\prod X$
   (b) $\sqrt{2}X$
   (c) $\sqrt{2}\prod X$
   (d) $\dfrac{\prod X}{2}$

3. Choose the correct statement:

   (I)   Boiling of a given substance takes place at all temperatures.

   (II)   Evaporation of a substance takes place at a constant temperature.

   (III)   Boiling takes place at every part of the liquid.

   (IV)   Evaporation takes place only on the surface of liquid.

   (a)   Both I and III
   (b)   II, III & IV
   (c)   Both III and IV
   (d)   All the above

4. Fog is formed on the bathroom mirror when one takes a hot shower but does not during a cold shower, because _____

   (a)   evaporation of water is more at higher temperature.

   (b)   formation of fog on the mirror does not depend on amount of vapour.

   (c)   formation of fog on mirror is not concerned with temperature of water.

   (d)   Both (A) and (B)

5. The mirror which can form a magnified image of an object is_____.

   (a)   convex mirror

   (b)   plane mirror

   (c)   concave mirror

   (d)   both convex and concave mirrors

6. Two big mirrors A and B are fitted side by side on a wall. A man is standing at such a distance from the wall that he can see the erect image of his face in both the mirrors. When the man starts walking towards the mirrors, he finds that the size of his face in mirror A goes on increasing but that in mirror B remains the same.

   (a)   mirror A is concave and mirror B is convex

   (b)   mirror A is plane and mirror B is concave

   (c)   mirror A is concave and mirror B is plane

   (d)   mirror A is convex and mirror B is concave

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7. When a switch is in OFF position, then Choose the combination of correct answer from the following

   i. Current starting from the positive terminal of the cell stops at the switch

   ii. Circuit is open

   iii. No current flows through it.

   iv. Current flows after some time.

   (a) All are correct

   (b) Both ii and iii are correct

   (c) Only iv is correct

   (d) Both I and ii are correct

8. A student has to connect 4 cells of 2 V each, in-order to form a battery of voltage 8V. Which of the following is correct arrangement of cells?

   (a)

   (b)

   (c)

   (d)

9. The warm air is

   (a) lighter than the cold air

   (b) heavier than the cold air

   (c) equal to the weight of cold air

   (d) none of the above

10. Absolute zero on Celsius scale is _____.

    (a) 100^0C

    (b) 80^0C

    (c) -273^0C

    (d) -12^0C

11. What is the process of obtaining wool from sheep called?

    (a) Spinning

    (b) Shearing

    (c) Weaving

    (d) Knitting

12. Which of the following is a synthetic fibre?

    (a) Cotton

    (b) Wool

    (c) Rayon

    (d) Jute

13. The process of making fabric from yarn is called:

    (a) Ginning

    (b) Weaving

    (c) Spinning

    (d) Felting

14. Which of the following substances turns blue litmus paper red?

    (a) Acid

    (b) Base

    (c) Salt

    (d) Water

15. Lemon juice is acidic due to the presence of which acid?

    (a) Citric acid

    (b) Acetic acid

    (c) Tartaric acid

    (d) Lactic acid

16. What is the common name for sodium bicarbonate?

    (a) Baking soda

    (b) Washing soda

    (c) Table salt

    (d) Glauber's salt

17. What happens when an acid reacts with a metal?

    (a) Bubbles of gas are evolved

    (b) A sweet taste is produced

    (c) It becomes slimy

    (d) It becomes colorless

18. Rusting of iron is an example of:

    (a) Physical change

    (b) Chemical change

    (c) Biological change

    (d) Nuclear change

19. Sublimation is the process in which a substance changes from a:

    (a) Solid to a liquid

    (b) Liquid to a gas

    (c) Solid to a gas

    (d) Gas to a solid

20. Cooking an egg is an example of:

    (a) Physical change

    (b) Chemical change

    (c) Both

    (d) Neither

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PART - IV : BIOLOGY

1. Pitcher plant falls in the category of:
   (a) Herbivore
   (b) Insectivore
   (c) Carnivore
   (d) None of these

2. Products of photosynthesis are:
   (a) Carbon dioxide and oxygen
   (b) Carbohydrate and carbon dioxide
   (c) Carbohydrate and oxygen
   (d) None of these

3. The largest gland in our body is
   (a) Liver
   (b) Salivary gland
   (c) Pancreas
   (d) Gallbladder

4. Bile is produced by
   (a) Small intestine
   (b) Gallbladder
   (c) Liver
   (d) Pancreas

5. Coccon is used for
   (a) Reeling the silk
   (b) Scouring the silk
   (c) Both a and b
   (d) None of these

6. Yeast is used in wine industries because it respires
   (a) Aerobically producing oxygen
   (b) Aerobically producing alcohol
   (c) Anaerobically producing alcohol
   (d) Anaerobically producing carbon dioxide

7. Name the organ of the body in which the blood is oxygenated
   (a) Heart   (b) Lungs
   (c) Liver   (d) Pancreas

8. Which one of the following contains hemoglobin
   (a) RBCs   (b) WBCs
   (c) Platelets   (d) None of these

9. In which of the following plants buds are present on the margins of leaves
   (a) Bryophyllum
   (b) Touch me not
   (c) Chandan
   (d) Corander

10. In amoeba asexual reproduction occurs by
    (a) Budding
    (b) Binary Fission
    (c) Fragmentation
    (d) Spore formation

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