SAMPLE PAPER

Aakash
NATIONAL
TALENT HUNT EXAM
2015
JUNIOR
(Class VII Studying Students)

Science, Mathematics & Mental Ability

Aakash
Medical | IIT-JEE | Foundations
(Divisions of Aakash Educational Services Pvt. Ltd.)

Aakash National Talent Hunt Exam 2015 (Junior)
(For VII Studying)

Time : 2 Hours   **MM : 320**

SECTION-A : SCIENCE

1. How many times do the pulse of a normal healthy human adult at rest, beat in 20 seconds?

   (1) 12 times

   (2) 24 times

   (3) 36 times

   (4) 72 times

2. Read the given statements carefully and identify the correct option.

   Statement-1: The basic unit of time is second.

   Statement-2: The speed of an object is given by (Distance) × (Time).

   (1) Only statement-1 is true

   (2) Only statement-2 is true

   (3) Both statements are true

   (4) Both statements are false

3. The odometer of a car reads the following distances at the given instants. The ratio of average speed of the car in the first and the second intervals is

Time	Odometer reading
9 : 45 AM	4404 km
10 : 15 AM	4449 km
10 : 30 AM	4469 km

   (1) 9 : 8

   (2) 8 : 9

   (3) 9 : 2

   (4) 2 : 1

4. The bob of a simple pendulum takes a total time of 1.5 s to go from *B* to *A* and then from *A* to *O* as shown. How long will it take to complete 20 oscillations?

   (1) 15 s   (2) 20 s
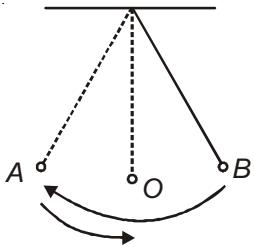
   (3) 30 s   (4) 40 s

5. Which of the following is matched incorrectly?

   (1) Convection – Occurs in liquids and gases

   (2) Land breeze – Blows from land towards the sea

   (3) Digital thermometer – Use mercury

   (4) Clinical thermometer – Has range from 35°C to 42°C

6. Wrapping an ice cube with a woollen cloth will

   (1) Speed up its melting

   (2) Slow down its melting

   (3) Not affect the process of its melting

   (4) Lower its temperature further

7. Glowing of filament of an electric bulb is based on

   (1) Magnetic effect of current

   (2) Heating effect of current

   (3) Conversion of heat energy into electrical energy

   (4) Conversion of light energy into electrical energy

Space for Rough Work

8. Water at 20°C is kept under the sun in 2 jars, one painted black and the other painted white. If the temperature of water in the white jar rises to 30°C in 30 minutes, then the temperature of water in the black jar in the same time would

   (1) Be more than 30°C

   (2) Be less than 30°C

   (3) Be equal to 30°C

   (4) Remain same *i.e.,* 20°C

9. The range of a laboratory thermometer is

   (1) 0°C to 100°C

   (2) 35°C to 42°C

   (3) −10°C to 100°C

   (4) −10°C to 110°C

10. Four circuits are prepared as shown below.
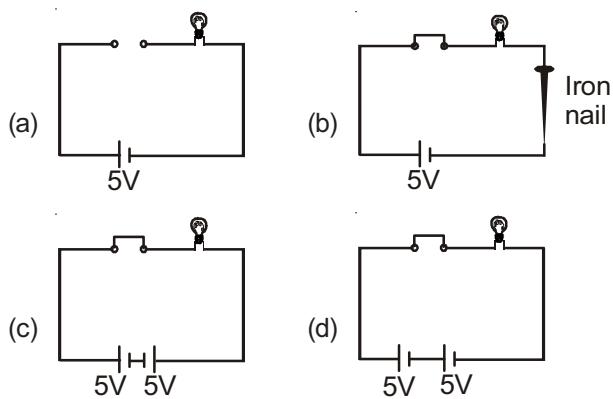
    The bulb will glow in case of

    (1) (b), (c) & (d)

    (2) (b) only

    (3) (b) & (d)

    (4) (a) only

11. In order to place two given cells in the battery compartment of a torch, the connections are made by connecting the shown points in the order
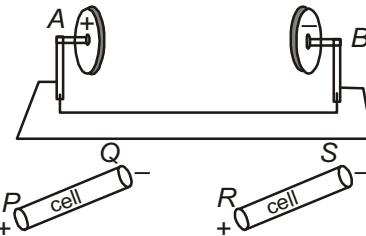

    (1) A - (Q - P) - (S - R) - B

    (2) A - (P - Q) - (R - S) - B

    (3) A - (P - Q) - (S - R) - B

    (4) A - (Q - P) - (R - S) - B

12. Which property of a given material can be utilized for manufacturing electric fuse wires?

    (1) Magnetic property

    (2) Insulating property

    (3) High boiling point

    (4) Low melting point

13. The gas present in the atmosphere which protects us from the harmful ultraviolet radiations coming from the sun is

    (1) Oxygen　　　　(2) Ozone

    (3) Carbon dioxide　　(4) Nitrogen

14. The process of coating iron articles with zinc to prevent it from rusting, is called

    (1) Galvanisation　　(2) Neutralisation

    (3) Scouring　　　(4) Crystallisation

15. The acid present in ant-sting is

    (1) Hydrochloric acid　(2) Acetic acid

    (3) Formic acid　　(4) Lactic acid

Space for Rough Work

16. Which of the following substances can be added to the soil to reduce its basic nature?

    (1) Quick lime

    (2) Organic matter

    (3) Slaked lime

    (4) Magnesium hydroxide

17. Which of the following is acidic in nature?

    (1) Lime water

    (2) Ammonium hydroxide solution

    (3) Soda water

    (4) Calamine solution

18. A magnesium ribbon is burnt in air to form a compound 'Y'. The colour of the litmus paper in the aqueous solution of Y will be

    (1) Red   (2) Green

    (3) Mauve   (4) Blue

19. Which of the following conditions are essential for rusting?

    (i) Presence of air

    (ii) Presence of moisture

    (iii) Presence of sunlight

    Mark the correct option.

    (1) (i) & (ii)   (2) (ii) & (iii)

    (3) (i), (ii) & (iii)   (4) (i) & (iii)

20. During the reaction of acetic acid and sodium hydrogencarbonate, gas X is evolved. When X is passed through lime water, the solution turns milky. X is

    (1) Oxygen   (2) Hydrogen

    (3) Carbon dioxide   (4) Nitrogen

21. The colour of China rose indicator in vinegar solution is

    (1) Green   (2) Yellow

    (3) Magenta   (4) Blue

22. Which of the following processes do not show neutralization?

    (i) Intake of milk of magnesia during indigestion

    (ii) Rubbing calamine solution on skin to get relief from ant bite

    (iii) Addition of turmeric in soap solution

    (iv) Dissolving lime in water

    (1) Both (i) & (ii)   (2) Both (ii) & (iii)

    (3) Both (iii) & (iv)   (4) Both (i) & (iv)

23. Which of the following is not a chemical change?

    (1) Burning of a candle

    (2) Explosion of cracker

    (3) Evaporation of water

    (4) Rusting of iron

24. A blue coloured solution turns green when a shaving blade is put in it. The colour change is due to the formation of

    (1) Copper sulphate   (2) Iron sulphate

    (3) Copper   (4) Iron

25. Match the following and choose an appropriate option.

Column-I	Column-II
a. *Cuscuta*	(i) Insectivorous plant
b. Pitcher plant	(ii) Symbiotic relationship
c. Mushroom	(iii) Parasitic plant
d. Lichen	(iv) Saprotrophic

    (1) a(i), b(ii), c(iii), d(iv)   (2) a(i), b(iii), c(iv), d(ii)

    (3) a(iii), b(ii), c(i), d(iv)   (4) a(iii), b(i), c(iv), d(ii)

Space for Rough Work

26. Mostly all veins carry blood rich in
    (1) Carbon dioxide   (2) Oxygen
    (3) Carbon monoxide   (4) Sulphur dioxide

27. Breakdown of glucose in the absence of oxygen leads to the formation of
    (1) Alcohol and carbon dioxide
    (2) Lime and water
    (3) Carbon dioxide and water
    (4) Water and alcohol

28. The inner wall of the small intestine has thousands of finger like outgrowths whose function is to
    (1) Assimilate the absorbed food
    (2) Increase the surface area for absorption of food
    (3) Egest the undigested food
    (4) Secrete bile

29. The fleshy muscular organ attached at the back of the floor of buccal cavity is
    (1) Tongue   (2) Small intestine
    (3) Liver   (4) Oesophagus

30. Refer the diagram and identify the part of alimentary canal where hydrochloric acid is secreted.
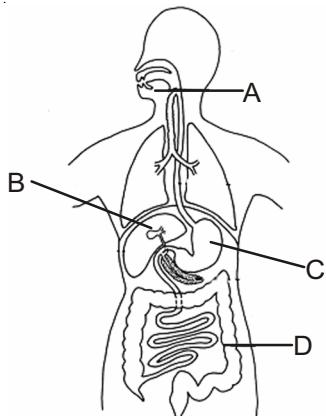
    (1) A   (2) B
    (3) C   (4) D

31. **Statement-1:** *Amoeba* is a microscopic single celled organism.

    Statement-2: In *Amoeba* the digestive juices are secreted in pseudopodia.
    (1) Both the statements are false
    (2) Both the statements are true
    (3) Statement-1 is true and statement-2 is false
    (4) Statement-2 is true and statement-1 is false

32. Partially digested food in ruminants is called
    (1) Lump   (2) Cud
    (3) Caecum   (4) Rumen

33. How many organism(s) given in the box can breathe through gills?

    Cockroach, Earthworm, Frog, Fish

    (1) Four   (2) Three
    (3) Two   (4) One

34. While playing, Ram injured his knee and it started bleeding. But after sometime, the cut was plugged by a dark red clot and bleeding was stopped. This occurred due to
    (1) Red blood cells   (2) Platelets
    (3) White blood cells   (4) Plasma

35. Which part of the alimentary canal runs along the neck and the chest?
    (1) Trachea   (2) Larynx
    (3) Oesophagus   (4) Stomach

36. Breathing involves movement of _____ and_____.
    (1) Diaphragm, Rib cage
    (2) Trachea, Rib cage
   (3) Oral cavity, Trachea
    (4) Diaphragm, Pharynx

Space for Rough Work

SECTION-B : MATHEMATICS

37. Expressing $5\dfrac{1}{5}$ as a percent, we get

    (1) 52   (2) 5.2

    (3) 520   (4) 5200

38. In the given figure, QOP is a straight line. If $\angle ROS = 90°$ and $\angle ROQ = 110°$, then the measure of $\angle POS$ is
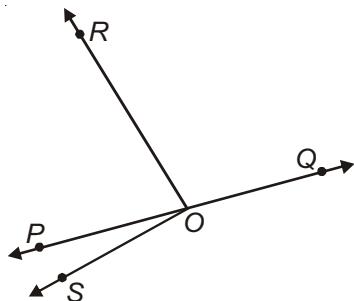
    (1) 340°   (2) 20°

    (3) 200°   (4) 70°

39. In the given figure, BC is

    16 cm   20 cm
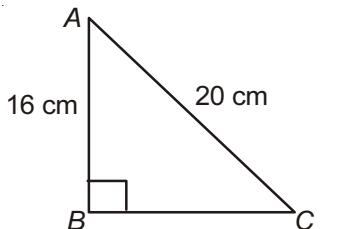
    (1) 12 cm   (2) $4\sqrt{41}$ cm

    (3) 18 cm   (4) $2\sqrt{41}$ cm

40. If the sum of a number and its one-third is 588, then the number is

    (1) 414   (2) 147

    (3) 441   (4) 784

41. $\dfrac{3}{10^4} + \dfrac{34}{10^3} + \dfrac{456}{10^2}$ can be written as

    (1) 45.943   (2) 0.45943

    (3) 459.43   (4) 4.5943

42. Which of the following is not true?

    (1) 5 : 25 = 20%   (2) 0.27% = 0.0027

    (3) 7.4% = 37 : 50   (4) 18 : 72 = 25%

43. If the lengths of two sides of an isosceles triangle are 13 cm and 26 cm, then the perimeter of the triangle is

    (1) 52 cm   (2) 65 cm

    (3) 39 cm   (4) 75 cm

44. If $\dfrac{x}{0.3} - \dfrac{5}{2} = \dfrac{x}{3} + \dfrac{2}{7}$, then the value of x is

    (1) $\dfrac{31}{42}$ (2) $-\dfrac{31}{42}$

   (3) $\dfrac{117}{154}$ (4) $\dfrac{13}{14}$

45. The number that should be added to $2\dfrac{1}{9}$ to get $4\dfrac{5}{36}$ is

    (1) $2\dfrac{1}{36}$ (2) $\dfrac{225}{36}$

    (3) $-\dfrac{73}{36}$ (4) $1\dfrac{1}{36}$

46. If $\dfrac{1}{3}$ of $x = \dfrac{4}{5}$ of 20, then $\dfrac{x}{16}$ is equal to

    (1) $\dfrac{25}{48}$ (2) $\dfrac{75}{16}$

    (3) 3   (4) $\dfrac{1}{3}$

Space for Rough Work

47. If the lengths (in cm) of the sides of a triangle are 9, 23 and *m,* where *m* is any integer, then the number of possible values of *m* is

   (1) 19   (2) 17

   (3) 16   (4) 18

48. The price of a scooter increases 2% annually. If its present cost is ₹ 51,000, then what was it a year ago?

   (1) ₹ 49,980   (2) ₹ 50,000

   (3) ₹ 50,500   (4) ₹ 50,250

49. If *x* is the reciprocal of *y,* then $\dfrac{x+y}{x-y}$ is equal to

   (1) $\dfrac{1+y}{1-y^2}$ (2) $\dfrac{1+y^2}{1-y}$

   (3) $\dfrac{1+y^2}{1-y^2}$ (4) $\dfrac{1+y}{1-y}$

50. If $\dfrac{a}{b}$ and $\dfrac{c}{d}$ are two unequal fractions, then which of the following is false?

   (1) $\dfrac{a}{b}-\dfrac{c}{d}\neq 0$ (2) $\dfrac{a}{b}+\dfrac{c}{d}=\dfrac{bc+da}{bd}$

   (3) $\dfrac{a}{b}-\dfrac{c}{d}=\dfrac{c}{d}-\dfrac{a}{b}$ (4) $\dfrac{a}{b}\times\dfrac{c}{d}=\dfrac{a}{d}\times\dfrac{c}{b}$

51. If the difference of two supplementary angles is one-fifth of two right angles, then the measure of the larger angle is

   (1) 108°   (2) 72°

   (3) 63°   (4) 99°

52. In the given figure, if *AB = AQ,* then the value of *x* is
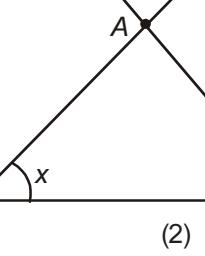
   (1) 62°   (2) 57°

   (3) 114°   (4) 66°

53. Which of the following equations represents the statement, "Three subtracted from two-fifths of *p* is three"?

   (1) $3-\dfrac{2}{5}p=3$ (2) $3p-\dfrac{2}{5}=3$

   (3) $\dfrac{2}{5}p-3=3$ (4) $\dfrac{2}{5}-3p=3$

54. Which of the following is negative?

   (1) $-\left(\dfrac{1}{6}-\dfrac{5}{6}\right)$ (2) $\left(\dfrac{-4}{-9}\right)\div\left(\dfrac{-9}{-4}\right)$

   (3) $-\left(-\dfrac{4}{7}+\dfrac{1}{7}\right)$ (4) $\left(\dfrac{3}{-8}\right)\times\left(\dfrac{-4}{-3}\right)$

55. After 35 years, Rohan will be 8 times as old as he is now. The present age of Rohan is

   (1) 5 years   (2) 7 years

   (3) 4 years   (4) 8 years

56. The price of book *A* is three times more than that of book *B.* If the price of *B* is increased by 20% and that of *A* is reduced to 60%, then the percentage decrease in the sum of the prices of the books *A* and *B* is

   (1) 4%   (2) 24%

   (3) 8%   (4) 28%

Space for Rough Work

57. In the given figure, if *BC || DE,* then the value of *y* is
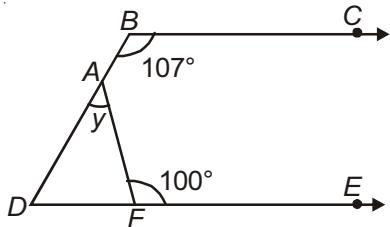
    (1) 107°   (2) 27°

    (3) 100°   (4) 73°

58. If $\dfrac{p}{q}$ is a rational number, then which of the following is not always true?

    (1) *p* and *q* are integers

    (2) $q \neq 0$

    (3) *p* − *q* is a natural number

    (4) *p* + *q* is an integer

59. Which of the following is not equivalent to $\dfrac{2}{5}$?

    (1) $\dfrac{12}{30}$ (2) $\dfrac{34}{85}$

    (3) $\dfrac{54}{135}$ (4) $\dfrac{62}{165}$

60. The monthly salary of a man is ₹ 1600 and he spends $\dfrac{5}{8}$ of it. When his income is increased by $\dfrac{1}{4}$ of his present salary and his expenditure also increases by $\dfrac{1}{4}$ of his present expenditure, then his savings

    (1) Increase by ₹ 650

    (2) Decrease by ₹ 650

    (3) Increase by ₹ 150

    (4) Decrease by ₹ 150

SECTION-C : MENTAL ABILITY

61. In the figure given below, box 'a' has 2 coins, box 'b' has 3 coins, box 'c' has 5 coins, box 'd' has 7 coins box 'e' has 11 coins and so on. How many coins will be in box 'i'?

a	b	c
d	e	f
g	h	i

    (1) 21   (2) 27

    (3) 23   (4) 29

62. Which number is one half of one fourth of one fifth of 560?

    (1) 14   (2) 7

    (3) 28   (4) 12

63. '?' can be replaced by

    1, 2, 4, 6, 10, ?, 16, 18

    (1) 11   (2) 12

    (3) 13   (4) 15

64. If 52 = 3 and 86 = 2, then 92 = ?

    (1) 11   (2) 5

    (3) 7   (4) 9

65. In the given figure, the maximum number of triangles is

    (1) 9

    (2) 6

    (3) 8

    (4) 10
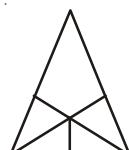
Space for Rough Work

66. Find the missing number.

    27, 9, 3, 1, ?

    (1) 3   (2) 9

    (3) $\dfrac{1}{3}$ (4) $\dfrac{1}{9}$

67. A number series is given below with one wrong term. Find the wrong term.

    95, 47, 23, 10, 5, 2

    (1) 23   (2) 5

    (3) 10   (4) 47

68. Find the water image of PQRST

    (1) ꟼOᴚꙄꞱ

    (2) ꟼQᴚꙄꞱ

    (3) ꟼOᴚꙄꞱ

    (4) ꟼQᴚꙄꞱ

Directions (Q.69 & Q.70): In each of the following questions, if mathematical operations are applied in the sequence of 'BAMDOS' (where B = Bracket, A = Addition, M = Multiplication, D = Division, O = Of, S = Subtraction), then solve the questions.

69. 24 ÷ 3 + 1 × 3 − 1

    (1) 26   (2) 1

    (3) 10   (4) 27

70. 15 + 3 ÷ 2 × 3

    (1) 3   (2) $\dfrac{15}{2}$

    (3) 17   (4) $\dfrac{39}{2}$

71. Find the water image of

    (1)   (2)

    (3)   (4)
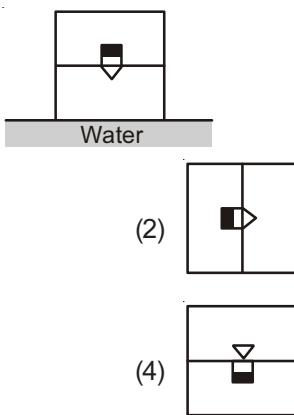
72. Find the missing character.

    (1) 21   (2) 22

    (3) 20   (4) 19
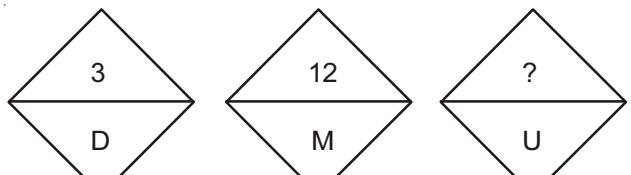
73. Arun walks 6 metres straight towards North, then turns to his right and walks 8 metres. How far is he now from his starting point and in which direction is he facing?

    (1) 10 m, West   (2) 14 m, West

    (3) 10 m, East   (4) 14 m, East

74. Find the missing number.

1	4	4
1	6	9
1	?	6

    (1) 8   (2) 0

    (3) 4   (4) 9

Space for Rough Work

75. If 5 = 23 and 9 = 79, then 12 = ?

   (1) 145　　　　　　　　(2) 142

   (3) 144　　　　　　　　(4) 146

76. Find the mirror image of

   (1)　　　　　　　　(2)

   (3)　　　　　　　　(4)
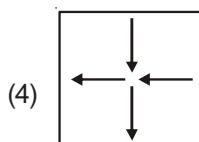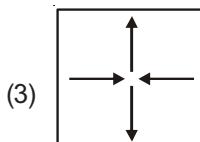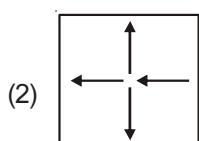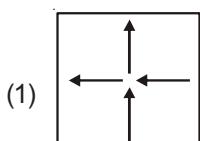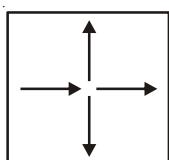
77. In a cricket match, Sehwag scores more than Virat, Yuvraj scores equal to Raina, Raina scores more than Sachin and Virat scores more than Yuvraj. Who scored highest?

   (1) Virat　　　　　　　(2) Sachin

   (3) Sehwag　　　　　　(4) Raina

78. In the given series, find the missing figure.

   (1)　　　　　　　　(2)

   (3)　　　　　　　　(4)
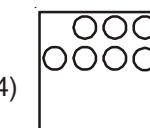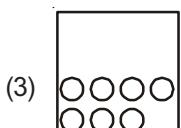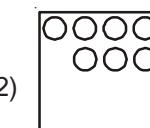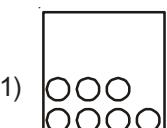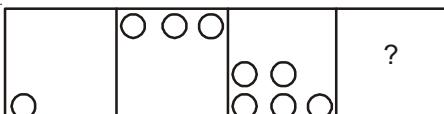
Directions (Q.79 & Q.80): Read the following information carefully and answer the questions.

E, D, C, B and A are sitting around a circular table, facing the centre, in the sequence of 'BDAEC' in clockwise direction.

79. If you move in clockwise direction, then 'C' is sitting at _____ position, with respect to 'B'.

   (1) Fourth　　　　　　(2) Fifth

   (3) Second　　　　　　(4) First

80. If you move in counter clockwise direction, then 'E' is sitting at _____ position, with respect to D.

   (1) First　　　　　　　(2) Fifth

   (3) Second　　　　　　(4) Fourth

❑　❑　❑

Space for Rough Work