Talent Search Exam. 2023

for class-IX

Duration:1:30Hr **Max. Marks 240**

INSTRUCTIONS

A. General :

1. This booklet is your Question Paper. DO NOT break seal of Booklet until the invigilator instructs to do so. Total Questions to be Attempted 60: **Physics : 10, Chemistry : 10, Biology : 10, Mathematics : 20 & MAT : 10 Questions.**

2. The Answer Sheet is provided to you separately which is a machine readable Optical Response Sheet (ORS). You have to mark your answers in the ORS by darkening bubble, as per your answer choice, by using black & blue ball point pen.

3. Things NOT ALLOWED in EXAM HALL : Blank Paper, clipboard, log table, slide rule, calculator, camera, mobile and any electronic or electrical gadget. If you are carrying any of these then keep them at a place specified by invigilator at your own risk.

4. Do not use white-fluid or any other rubbing material on answer sheet. Before handing over the answer sheet to the invigilator, candidate should check that **Roll No, Test code and Book Code** have been filled and marked correctly. Immediately after the prescribed examination time is over, the **Answer sheet is to be returned to the invigilator.**

B. Filling the Answer Sheet :

5. On Side-1 of Answer Sheet write your Name and Roll Number in the respective boxes. Do not write anything on Side-2.

6. **Marking Scheme:**
a. If darkened bubble is RIGHT answer : 4 Marks.
b. If no bubble is darkened in any question: No Mark.
c. If darkened bubble is WRONG answer: –1 Mark (Minus One Mark).

7. Think wisely before darkening bubble as there is negative marking for wrong answer

PROCEDURE OF FILLING UP THE ANSWER IN ANSWER SHEET

Name of the candidate (In Capital Letters)

Roll Number

I have read all the instruction and shall abide by them.

.....

(Signature of the candidate)

I have verified all the information filled in by the candidate.

.....

(Signature of the Invigilator)

You can never quit. Winners never quit, and quitters never win.

1. A body of mass '*m*' kg starts from rest and travels a distance of '*s*' *m* in '*t*' seconds. The force acting on it is.

   (a) $\frac{2ms}{t^2}N$ (b) $\frac{ms}{t}N$

   (c) $\frac{ms^2}{2t}N$ (d) $\frac{ms^2}{t}N$

2. A car travelling on a straight track moves with uniform velocity of v_1 for some time and with uniform velocity of v_2 for the next equal time. Average velocity of the car is

   (a) $\sqrt{v_1 v_2}$ (b) $\left(\frac{1}{v_1}+\frac{1}{v_2}\right)^{-1}$

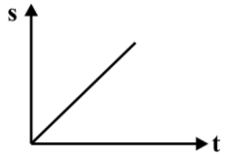
   (c) $\frac{v_1+v_2}{2}$ (d) $2\left(\frac{1}{v_1}+\frac{1}{v_2}\right)^{-1}$

3. A 100 m long train is moving with a uniform velocity of 45 km/h. The time taken by the train to cross a bridge of length 1km is

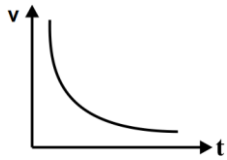
   (a) 58 s (b) 68 s

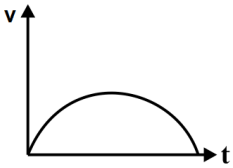
   (c) 78 s (d) 88 s

4. Which of the following graph represents uniformly accelerated motion?

   (a) 

   (b) 

   (c) 

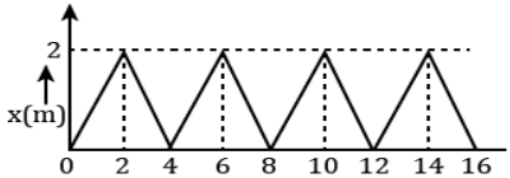
   (d) 

5. A player caught a cricket ball of mass 150 g moving at a rate of 20 ms^{-1}. If the ball catching process is completed in 0.1s, the force on the blow exerted by the ball on the hand of the player is equal to

   (a) 30 N (b) 300 N

   (c) 150 N (d) 3 N

6. The figure shows the position-time ($x - t$) graph of one-dimensional motion of a body of mass 0.4 kg. The magnitude of each impulse is

   (a) 0.2 Ns (b) 0.4 Ns

   (c) 0.8 Ns (d) 1.6 Ns

7. A machine gun fires a bullet of mass 40 g with a velocity 1,200 ms^{-1}. The man holding it, can exert a maximum force of 144 N on the gun. How many bullets can he fire per second at the most?

   (a) One (b) Four

   (c) Two (d) Three

8. A ball of mass 0.2 kg is thrown vertically upwards by applying a force by hand. If the hand moves 0.2 m while applying the force and the ball goes upto 2 m height further, find the magnitude of the force. Take g = 10 ms^{-2}.

   (a) 20 N (b) 22 N

   (c) 4 N (d) 16 N

9. The mass of moon is 1% of mass of earth. The ratio of gravitational pull of earth on moon and that of moon on earth will be

   (a) 1 : 1 (b) 1 : 10

   (c) 1 : 100 (d) 2 : 1

10. Two balls, each of radius *R*, equal mass and density are placed in contact, then the force of gravitation between then is proportional to

    (a) $F \propto \frac{1}{R^2}$ (b) $F \propto R$

    (c) $F \propto R^4$ (d) $F \propto \frac{1}{R}$

11. Magnesium ribbon on burning in air produces

    (a) magnesium oxide, water and light

    (b) magnesium oxide and heat

    (c) magnesium oxide, heat and light

    (d) magnesium oxide, water and heat

12. What is the principles behind the process of centrifugation?

    (a) Particles are separated based on the difference in colour

    (b) Denser particles are forced to the bottom and lighter particles stay at the top when spun rapidly

    (c) Lighter particles are forced to the bottom and denser particles stay at the top when spun rapidly

    (d) Particles are separated based on the difference in temperature

13. The empirical formula and molecular mass of a compound are CH_2O and 180g respectively. What will be the molecular formula of the compound?

    (a) $C_9H_{18}O_9$ (b) CH_2O

    (c) $C_6H_{12}O_6$ (d) $C_2H_4O_2$

14. The colour of vapours formed on sublimation of iodine solid is

    (a) Purple (violet) (b) Colourless

    (c) Yellow (d) Orange

15. Which are the favourable conditions for liquefaction of petroleum gas:

    (a) High pressure, high temperature

    (b) Low pressure, low temperature

    (c) High pressure, low temperature

    (d) Low pressure, High temperature

16. Which of the following represents a correct chemical formula?

    (a) CaCl (b) $BiPO_4$

    (c) $NaSO_4$ (d) NaS

17. The formula of ammonium sulphate is:

    (a) $NHSO_4$ (b) NH_4SO_2

    (c) $NHSO_3$ (d) $(NH_4)_2SO_4$

18. Which of the following will show the "Tyndall effect"?
(a) Salt solution
(b) Milk and starch solution
(c) Copper sulphate solution
(d) None of them

19. 15 g of common salt is dissolved in a solution of 300 mL, calculate the Mass by volume percentage (w/v%).
(a) 5 g/mL (b) 4.75 g/mL
(c) 10.5 g/mL (d) 20 g/mL

20. The solubility of a substance in a solvent depends on
(a) Temperature
(b) Pressure
(c) Nature of solute and solvent
(d) All of the above

21. Centrioles are associated with-
(a) DNA synthesis (b) Reproduction
(c) Spindle formation (d) Respiration

22. What is PET?
(a) Polyster
(b) Polyester & Terylene
(c) Polyethylene Terephthalate
(d) Polyethylene Terylene

23. Which of the following process does not require energy for transporation of molecules across the membrane?
(a) Facilitated diffusion
(b) Osmosis
(c) Diffusion
(d) All (a), (b) and (c) are correct

24. Vineet takes concentrated solution of salt, after sometime, he starts vomiting. Which among this phenomenon is responsible for such a situation?
(a) Endosmosis (b) Reverse osmosis
(c) Exosmosis (d) Osmosis

25. Which of these cells have a single chromosome?
(a) Karyon (b) Eukaryotic cell
(c)Prokaryotic cell (d) All of the above

26. Select the odd one out
(a) Plasma membranes contain chitin sugar in plants
(b) The movement of water across a semi permeable is affected by the amount of substances dissolved in it
(c) Molecules soluble in organic solvents can easily pass through the membrane
(d) Membranes are made of organic molecules like proteins and lipids

27. Which of these organelle contain its own genetic materials?
(a) Plastids
(b) Mitochondria
(c) Both (a) & (b) are correct
(d) None of the above

28. Ciliated epithelium is present in
(a) Trachea
(b) uterus
(c) Tongue
(d) Question does not provide sufficient data or is vague

29. When boiled in water, collagen changes into
(a) Reticulin (b) Myosin
(c) Elastin (d) Gelatin

30. Which of the following statements is correct?
(a) Cell growth in animals is less uniform as compared to plants
(b) Animals have more dead tissues as compared to plants
(c) There is demarcation of dividing and non-diving regions in animals
(d) Some tissues in plants divide throughout the life

[Mathematics]

31. $\sqrt{(1\times2\times3\times4)+1}=5, \sqrt{(2\times3\times4\times5)+1}=11,$ $\sqrt{(3\times4\times5\times6)+1}=19$ etc, the value of $\sqrt{(50\times51\times52\times53)+1}$ is
(a) 2415 (b) 2651
(c) 2165 (d) 2225

32. Find the value of y in terms of x in given equation $8x-7y=12$
(a) $\frac{8x+12}{7}$ (b) $\frac{8x-12}{7}$
(c) $\frac{-8x+12}{7}$ (d) $\frac{-8x-12}{7}$

33. If $x=\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$ and $y=\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ the value of x^2+xy+y^2 is:
(a) 99 (b) 100
(c) 1 (d) 0

34. The value of the expression $\sqrt{\frac{1}{\sqrt{2}+1}+\frac{1}{\sqrt{3}+\sqrt{2}}+\frac{1}{\sqrt{4}+\sqrt{3}}+...\text{upto 99 terms}}$ is equal to:
(a) 9 (b) 3
(c) 1 (d) 0

35. If $2^{2008}-2^{2007}-2^{2006}+2^{2005}=k.2^{2005}$ then the value of k is equal to
(a) 2 (b) 3
(c) 4 (d) 5

36. Simplify the value of $\frac{3.75\times3.75+1.25\times1.25-2\times3.75\times1.25}{3.75\times3.75-1.25\times1.25}$
(a) 5.0 (b) 0.5
(c) 2.5 (d) 1.5

37. If $f\left(2x+\frac{1}{x}\right)=x^2+\frac{1}{4x^2}+1(x\neq0)$, the value of $f(x)$ is
(a) $4x^2$ (b) $\frac{1}{4}\left(2x+\frac{1}{x}\right)^2$
(c) $\frac{1}{4}x^2$ (d) $4\left(2x+\frac{1}{x}\right)^2$

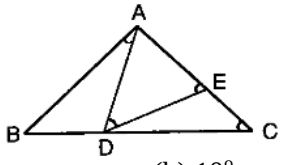
38. If $a+b+c=0$, then the value of
$\frac{(a+b)^2}{ab}+\frac{(b+c)^2}{bc}+\frac{(c+a)^2}{ca}$ is
(a) 1 (b) 2
(c) 3 (d) – 3

39. If the abscissa of any point is zero then that point will lie:
(a) on X-axis (b) on Y-axis
(c) at origin (d) none of these

40. 3 years ago the sum of ages of father and his son was 40 years. After 2 years, the sum of ages of the father and his son will be:
(a) 40 (b) 46
(c) 50 (d) 60

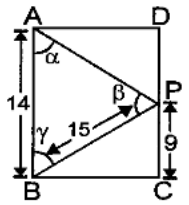
41. A father is 7 times as old as his son. Two years ago, the father was 13 times as old as his son. Father's present age is
(a) 24 years (b) 28 years
(c) 30 years (d) 32 years

42. Triangle ABC is isosceles with AB = AC. The measure of angle BAD is 30^o and AD = AE. The measure of angle EDC, is:



(a) 5^o (b) 10^o
(c) 15^o (d) 20^o

43. In a rectangle ABCD, as shown in figure, a point P is taken on the side CD such that PC = 9, BP = 15 and AB = 14 then the correct relation between angles of ΔAPB is:



(a) $\alpha > \beta > \gamma$ (b) $\alpha > \gamma > \beta$
(c) $\beta > \gamma > \alpha$ (d) $\gamma > \alpha > \beta$

44. In a ΔPQR, PS is bisector of $\angle P$ and $\angle Q = 70^o$ $\angle R = 30^o$, then
(a) QS > PQ > PR (b) QS < PQ < PR
(c) PQ > QS > SR (d) PQ < QS < SR

45. It is not possible to construct a triangle when its sides are:
(a) 8.3 cm, 3.4 cm, 6.1 cm
(b) 5.4 cm, 2.3 cm, 3.1 cm
(c) 6 cm, 7 cm, 10 cm
(d) 3 cm, 5 cm, 5 cm

46. If $x=(7+4\sqrt{3})$, then the value of $\sqrt{x}+\frac{1}{\sqrt{x}}$ is:
(a) 8 (b) 6
(c) 5 (d) 4

47. $2^{73}-2^{72}-2^{71}$ is the same as:
(a) 2^{69} (b) 2^{70}
(c) 2^{71} (d) 2^{72}

48. If $x+\frac{1}{x}=2$ then $\sqrt{x}+\frac{1}{\sqrt{x}}$ will be-
(a) $\sqrt{2}$ (b) 2
(c) $\sqrt{2}+1$ (d) 1

49. If $x+\frac{1}{x}=5$, then $x^3-5x^2+x+\frac{1}{x^3}-\frac{5}{x^2}+\frac{1}{x}=$ ..... :
(a) – 5 (b) 0
(c) 5 (d) 10

50. If $x=\frac{1}{1+\sqrt{2}}$, then value of x^2+2x+3 is:
(a) 3 (b) 0
(c) 4 (d) 1

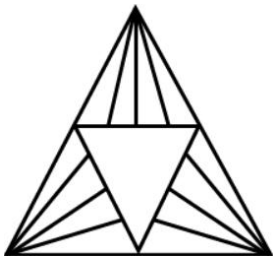
[Mat]

51. In the following question, a number series is given with one of the terms missing. Choose the correct alternative that will continue the same pattern and replace the question mark (?).
4, 7, 11, 18, 29, 47, ? , 123, 199
(a) 76 (b) 70
(c) 84 (d) 102

52. Alka is older than Mala. Gopal is older than Mala but younger than Alka. Kapil is younger than Ram and Mala. Mala is older than Ram.
Whose age is between Gopal and Ram?
(a) Mala (b) Kapil
(c) Alka (d) None of these

53. Amit walked 30 metres towards East, took a right turn and walked 40 metres. Then he took a left turn and walked 30 metres. In which direction is he now from the starting point?
(a) North-east (b) East
(c) South-east (d) South

54. Find the number of triangles in the diagram given below.



(a) 32 (b) 32
(c) 30 (d) 29

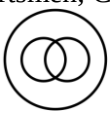
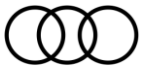
55. In a certain code language, 'CURATIVE' is written as 'BSVDDUHS'. How 'STEAMING' is to be written in the same code language?
(a) BFUTFMHL (b) TUFBFMHL
(c) BFUTLHMF (d) BFUTHOJN

56. Eight person A, B, C, D, E, F, G and H are sitting around a round table each facing the centre. D is second to the left of F and third to the right of H. A is second to the right of F and an immediate neighbor of H. C is second to the right of B and F is third to the right of B. G is not an immediate neighbor of F. In

the above information who is to the immediate left of A?

(a) H (b) E
(c) G (d) B

57. Identify the diagram that best represents the relationship among classes given below.
Sportsmen, Cricketers, Batsmen

(a)  (b) 

(c)  (d) 

58. Take the given statements as true and decide which of the conclusions logically follow from the statements.

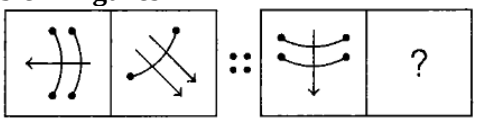
Statements:
All dogs are rats
All rats are crows
All crows are parrots

Conclusions:
I. All dogs are parrots
II. Some parrots are dogs
III. Some crows are dogs
IV. All rats are dogs.

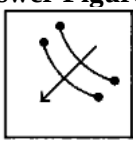
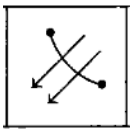
(a) I and II follow
(b) I, II and III follow
(c) Either II or IV follows
(d) Either I or II or III follows

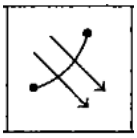
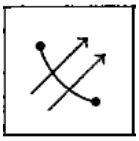
59. The second figure in the first part of the problem figures bears certain relationship to the first figure. Similarly, one of the figures of answer figures bears the same relationship to the first figure of the second part. You have to select a figure from the set of answer figures which would replace the question mark (?)

Problem Figures



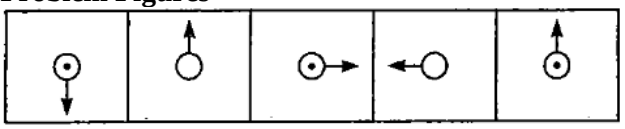
Answer Figures

(a)  (b) 

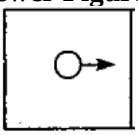
(c)  (d) 

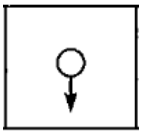
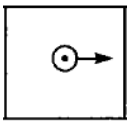
60. Select a figure from amongst the answer figures which will continue the same series as established by the five problem figures.

Problem Figures



Answer Figures

(a)  (b) 

(c)  (d) 

[For Rough Work]

[For Rough Work]

[For Rough Work]