

**Entrance Exam -XI
Model Question-2079**

Instructions:

- **Do not write on this question paper.**
- There are altogether 100 questions. For every correct answer, the candidates will be awarded with **1 full mark**.
- There won't be any **negative marking in case of wrong answers**.
- **Overwriting is strictly prohibited**. If found doing so, the particular answer will be considered wrong.
- Use of **pencil and calculator is forbidden**.
- Read the questions carefully. Indicate the correct answer by shading the circle under the options **a, b, c, or d** on the given answer sheet.
- **Shading should start from the centre of the circle towards the periphery.**
- **Use black pen only.**

Example

The founding Father of SOS Children's Villages International is:

- a. Hermann Gmeiner b. Mahatma Gandhi c. Nelson Mandela d. Fidel Castro

The correct answer is 'a'.

a	b	c	d
☒	☐	☐	☐

SET-

1. **Choose the odd one:**

a. acceleration b. gravitational field strength

c. acceleration due to gravity d. gravitational potential
2. **The work done to project a body with velocity v in air is W , how much more work is necessary to double its velocity?**

a. W b. $2W$ c. $3W$ d. $4W$
3. **A wooden cube supporting 200g just floats in water. When the mass is removed cube rises by 2cm, the side of the cube is:**

a. 5cm b. 10cm c. 15cm d. 20cm
4. **The equivalent resistance of two wires when connected in series is $9\ \Omega$ and when the wires are connected in parallel the equivalent resistance is $2\ \Omega$. The resistance of the wires are:**

a. $7\ \Omega$ and $2\ \Omega$ b. $4\ \Omega$ and $5\ \Omega$ c. $6\ \Omega$ and $3\ \Omega$ d. $1\ \Omega$ and $8\ \Omega$
5. **The intensity of sound increases at night due to:**

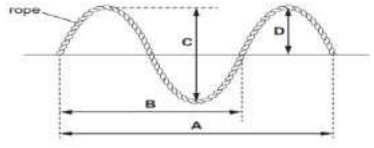
a. increase in density of air b. decrease in density of air

c. low temperature d. all of the above
6. **Two substance having specific heat $C_1\text{cal/gm}^\circ\text{C}$ and $C_2\text{cal/gm}^\circ\text{F}$. Then which of the following relation is valid?**

a. $C_1 = C_2$ b. $C_1 < C_2$ c. $C_1 \leq C_2$ d. $C_1 > C_2$
7. **Which sets of planets among the following are inner planets?**

a. Mercury, Mars, Earth and Jupiter b. Mars, Venus, Earth and Mercury

c. Mars, Venus, Uranus and Earth d. Jupiter, Saturn, Uranus and Neptune

8. **Myopic eye of a person having far point 75 cm be cured by using:**
 a. convex lens of focal length 50 cm
 b. concave lens of focal length 25 cm
 c. concave lens of focal length 75 cm
 d. convex lens of focal length 37.5 cm
9. **The diagram represents a wave travelling along a rope. Which labelled arrow indicates the amplitude of the wave?**
 a. A
 b. B
 c. C
 d. D
- 
10. **Two quantities A and B have different dimensions. Which mathematical operation given below is physically meaningful?**
 a. A/B
 b. $A+B$
 c. $A-B$
 d. all (a, b and c)
11. **Two planets of equal density have radii of R and 2R. Then the ratio of acceleration due to gravity on their surfaces will be**
 a. 1:1
 b. 1:2
 c. 1:3
 d. 1:4
12. **An object of 2500g has the volume of 0.5litre. Its density in SI unit is**
 a. 5kg/m^3
 b. 5000g/litre
 c. 500 kg/m^3
 d. 5000 kg/m^3
13. **Which of the following can't be resultant of 6 N and 8N?**
 a. 15 N
 b. 6 N
 c. 2 N
 d. 10 N
14. **A weightless rubber balloon has 100 gm of water in it. Its weight in the water will be**
 a. 100 gm
 b. 50 gm
 c. 200 gm
 d. Zero
15. **The length of day due to earth's atmosphere is:**
 a. shorter
 b. longer
 c. shorter in winter and longer in summer
 d. remains unchanged
16. **Which of the following is a secondary air pollutant?**
 a. ozone
 b. carbon dioxide
 c. carbon monoxide
 d. sulphur dioxide
17. **Which is correct about traits chosen by Mendel?**
 a. constricted pod is dominant
 b. inflated pod is recessive
 c. green pod is dominant
 d. terminal pod is dominant
18. **The term mutation was coined by:**
 a. Carl Correns
 b. Tschermak
 c. Hugo de Vries
 d. T.H. Morgan
19. **Regeneration of plant cell to give rise to new plant is called:**
 a. totipotency
 b. budding
 c. reproduction
 d. pluripotency
20. **The endosperm cells in angiosperm are:**
 a. haploid
 b. diploid
 c. triploid
 d. tetraploid
21. **Klinefelter's syndrome is:**
 a. due to XXY chromosome
 b. due to XXX chromosomes
 c. due to XYY chromosomes
 d. due to XXYY chromosome
22. **The ecosystem having ecological pyramid of biomass inverted is:**
 a. grassland ecosystem
 b. desert ecosystem
 c. forest ecosystem
 d. pond ecosystem

23. **Desert biomes do not support vegetation because they lack:**
 a. favorable temperature b. enough light c. sufficient water d. sufficient nutrients
24. **Which of the following were first formed?**
 a. eobionts b. coacervates c. genes d. cells
25. **Islets of Langerhans are found in:**
 a. kidney b. liver c. pancreas d. stomach
26. **Progesterone is a:**
 a. carbohydrate b. steroid c. protein d. sterol
27. **Carbonic anhydrase is active in:**
 a. RBC b. WBC c. platelets d. blood plasma
28. **The muscle coordination is done by:**
 a. cerebellum b. cerebrum c. pons d. medulla
29. **In earthworm, genital papillae occur in segments:**
 a. 16 and 17 b. 16 and 18 c. 17 and 19 d. 17 and 18
30. **Which of the following is hermaphrodite?**
 a. *Ascaris* b. *Taenia* c. *Labeo* d. *Periplaneta*
31. **Which of the following is having strongest covalent bond?**
 a. H - Cl b. Cl - Cl c. C - Cl d. Na - Cl
32. **$\text{C}_2\text{H}_6(\text{g}) + \text{O}_2 \rightarrow \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$ In this equation, the ratio of coefficients of CO_2 & H_2O is:**
 a. 1:1 b. 2:3 c. 3:2 d. 1:3
33. **In solids, the constituent particles may be:**
 a. atoms b. ions c. molecules d. either of the above
34. **Alum is a water purifier because it:**
 a. softens hard water b. coagulates the impurities
 c. destroys the pathogenic bacteria d. gives taste
35. **Which of the following imparts brick red colour to the flame?**
 a. Ca b. Ba c. Sr d. None
36. **Formation of soap involves:**
 a. hydrolysis b. polymerization c. esterification d. condensation
37. **Which is a natural polymer?**
 a. Polythene b. PVC c. Teflon d. Protein
38. **In a crystal, the atom are located at the position of:**
 a. maximum P.E. b. minimum P.E. c. zero P.E. d. infinite P.E.
39. **Which metal can't be obtained by the electrolysis of its aqueous solution?**
 a. Cu b. Mg c. Cr d. Ni
40. **One gram of hydrogen contains how many molecules:**
 a. 6.023×10^{23} b. 6.023×10^{26} c. 3.01×10^{23} d. 3.02×10^{25}

Read the following passage and answer Q. no 41 to 45.

Today, bicycles are elegantly simple machines that are common around the world. Many people ride bicycles for recreation, whereas others use them as a means of transportation. The first bicycle, called a *draisienne*, was invented in Germany in 1818 by Baron Karl de Drais de Sauerbrun. Because it was made of wood, the *draisienne* wasn't very durable nor did it have pedals. Riders moved it by pushing their feet against the ground.

In 1839, Kirkpatrick Macmillan, a Scottish blacksmith, invented a much better bicycle. Macmillan's machine had tires with iron rims to keep them from getting worn down. He also used foot-operated cranks, similar to pedals, so his bicycle could be ridden at a quick pace. It didn't look much like the modern bicycle, though, because its back wheel was substantially larger than its front wheel. Although Macmillan's bicycles could be ridden easily, they were never produced in large numbers.

In 1861, Frenchman Pierre Michaux and his brother Ernest invented a bicycle with an improved crank mechanism. They called their bicycle a *vélodipède*, but most people called it a "bone shaker" because of the jarring effect of the wood and iron frame. Despite the unflattering nickname, the *vélodipède* was a hit. After a few years, the Michaux family was making hundreds of the machines annually, mostly for fun-seeking young people.

Ten years later, James Starley, an English inventor, made several innovations that revolutionized bicycle design. He made the front wheel many times larger than the back wheel, put a gear on the pedals to make the bicycle more efficient, and lightened the wheels by using wire spokes. Although this bicycle was much lighter and less tiring to ride, it was still clumsy, extremely top-heavy, and ridden mostly for entertainment.

It wasn't until 1874 that the first truly modern bicycle appeared on the scene. Invented by another Englishman, H. J. Lawson, the safety bicycle would look familiar to today's cyclists. The safety bicycle had equal-sized wheels, which made it much less prone to toppling over. Lawson also attached a chain to the pedals to drive the rear wheel. By 1893, the safety bicycle had been further improved with air-filled rubber tires, a diamond-shaped frame, and easy braking. With the improvements provided by Lawson, bicycles became extremely popular and useful for transportation. Today, they are built, used, and enjoyed all over the world.

41. There is enough information in this passage to show that

- a. several people contributed to the development of the modern bicycle.
- b. only a few *vélodipèdes* built by the Michaux family are still in existence.
- c. for most of the nineteenth century, few people rode bicycles just for fun.
- d. bicycles with wheels of different sizes cannot be ridden easily.

42. This passage was most likely written in order to

- a. persuade readers to use bicycles for transportation.
- b. describe the problems that bicycle manufacturers encounter.
- c. compare bicycles used for fun with bicycles used for transportation.
- d. tell readers a little about the history of the bicycle.

43. Macmillan added iron rims to the tires of his bicycle to

- a. add weight to the bicycle.
- b. make the tires last longer.
- c. make the ride less bumpy.
- d. make the ride less tiring.

44. As it is used in the sentence, the underlined word *revolutionized* most nearly means

- a. cancelled.
- b. became outdated.
- c. changed drastically.
- d. exercised control over.

45. Which of the following statements from the passage represents the writer's opinion?

- a. The safety bicycle would look familiar to today's cyclists.
- b. Two hundred years ago, bicycles didn't even exist.
- c. The Michaux brothers called their bicycle a *vélodipède*.
- d. Macmillan's machine had tires with iron rims.

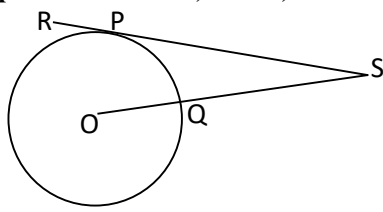
46. It was so cold that I decided to wear a thick sweater my coat.

- a. inside
- b. under
- c. around
- d. into

47. **Plenty of mangoes and bananas available in this season.**
 a. is b. are c. has been d. is being
48. **I must get - I can't use the internet at all.**
 a. my computer fix b. fixed my computer c. my computer fixed d. my computer to fix
49. **Nothing happened at the meeting, it?**
 a. didn't b. does c. did d. isn't
50. **.....the beaten track, the Hotel is nevertheless very easy to get to.**
 a. In spite of b. Although c. However d. Moreover
51. **He wouldn't be able to climb that high even if he which window was her room.**
 a. knew b. had known c. was knowing d. has known
52. **The audience who left the theater early complained that their money had been wasted, would never be reimbursed.**
 a. of which b. where c. what d. which
53. **He resented his father him no money in the will.**
 a. leaving b. to leave c. having left d. to leaving
54. **Which one of the following sentences is CORRECT?**
 a. The salad was fresh, crisp, and tasted delicious. b. The salad was fresh, crisp, and delicious.
 c. The salad was fresh, crispness and delicious. d. The salad was freshly made, crispy and tastes delicious.
55. **I have patience left, so you need to stop complaining.**
 a. a little b. little c. a few d. few
56. **I failed all my finals, I the whole weekend instead of partying.**
 a. should have been studying b. could have been studying
 c. shall have been studying d. will have been studying
57. **This problem by our specialists at the moment. We hope to find a solution soon.**
 a. is discussed b. is being discussed c. has been discussed d. will have been discussed
58. **She said, "Let's make direct and indirect speech easy." In other words,**
 a. She suggested that they should make direct and indirect speech easy.
 b. She said that they should make direct and Indirect speech easy.
 c. She said that lets make direct and Indirect speech easy.
 d. She told making direct and indirect speech easy.
59. **Harry his friends that night so he his parents he was going to be late.**
 a. meets / had told b. will meet / will tell c. was meeting / told d. would meet / is going to tell
60. **Such is human nature that many people don't value things they possess until they've lost them.**
 a. a b. an c. the d. none of these
61. **The Yes/No question of the statement 'No one worships the setting sun.' is**
 a. Does anyone worship the setting sun? b. Does someone worship the setting sun?
 c. Does one worship the setting sun? d. Does no one worship the setting sun?

62. We didn't know that a second bridge ----, otherwise we would have gone through the new one.
 a. have been built b. is built c. had been built d. would be built
63. She showed a blatant disregard for the rules. The best definition for the underlined word is
 a. obvious b. hidden c. last-minute d. rebellious
64. Choose the word which is most opposite in meaning to the word Embrace.
 a. disobey b. contradict c. reject d. obscure
65. Planet is to Tennis ball as Dice is to
 a. Football b. Sugar cubes c. The Sun d. Gamble
66. 'One who abandons his religious faith' is called
 a. Apostate b. Prostate c. Profane d. Agnostic
67. Which is the correct option?
 a. An ambush of tigers. b. A streak of tigers. c. A herd of tigers. d. Options a and b.
68. There are mountain peaks in world that have a height of more than 8,000 m.
 a. 8 b. 10 c. 12 d. 14
69. The book Prayogshalaw was written by
 a. Yug Pathak b. Sudheer Sharma c. Jitendra Sahayogee d. GobindaMainali
70. The 2019 Women's World Cup football was held in
 a. England and Wales b. Belgium c. France d. Brazil
71. If x is a non-zero rational number and xy is irrational, then y must be:
 a. a rational number b. an irrational number c. non zero d. an integer.
72. The line through the points (a, b) and (-a, -b) passes through the point:
 a. (1, 1) b. (3a, -2b) c. (a^2 , a b) d. none of these.
73. The equation $y - y_1 = m(x - x_1)$ for different m and (x_1, y_1) fixed represents:
 a. a family of parallel lines b. a single line
 c. a family of lines which are not concurrent d. a family of concurrent lines.
74. The equation $x^2 - 5xy + 6y^2 = 0$ represents a:
 a. circle b. pair of parallel straight lines.
 c. pair of perpendicular straight lines d. pair of non perpendicular intersecting straight lines.
75. The radius of the circle passing through the point (6,2) two of whose diameters are $x + y = 6$ and $x + 2y = 4$ is:
 a. 10 b. 6 c. 4 d. $2\sqrt{5}$.
76. The probability of a leap year selected at random that contains 53 Sunday is:
 a. $\frac{53}{366}$ b. $\frac{1}{7}$ c. $\frac{2}{7}$ d. $\frac{53}{365}$
77. $\cos 2\theta$ is not equal to, which of the followings:
 a. $2\cos^2 \theta - 1$ b. $1 - 2\sin^2 \theta$ c. $\frac{1 + \tan^2 \theta}{1 - \tan^2 \theta}$ d. $\frac{1 - \tan^2 \theta}{1 + \tan^2 \theta}$.

78. $(\cos A + \cos B)^2 + (\sin A - \sin B)^2$ is equal to:
 a. $4\cos^2\left(\frac{A+B}{2}\right)$ b. $4\cos^2\left(\frac{A-B}{2}\right)$ c. $4\sin^2\left(\frac{A+B}{2}\right)$ d. $4\sin^2\left(\frac{A-B}{2}\right)$
79. The first, second and last terms of an AP are a, b and 2a respectively. The number of terms in the AP is:
 a. $\frac{b}{b-a}$ b. $\frac{b}{b+a}$ c. $\frac{a}{b-a}$ d. $\frac{a}{b+a}$
80. The area enclosed by the pair of lines $xy = 0$, the line $x = 4$ and $y = 5$ is
 a. 20 sq. units b. 10 sq units c. $\frac{5}{4}$ sq.units d. 0 sq.units
81. Let $A = \{1, 2, 3\}$ and $B = \{2, 4, 6\}$ then $f = \{(1, 2), (2, 4), (3, 6)\}$ is:
 a. one to one function from A to B. b. onto function from A to B.
 c. one to one and onto function from A to B. d. None of these.
82. Which of the following is false?
 a. Inscribed angles standing on the same arc of a circle are equal.
 b. The opposite angles of a cyclic quadrilateral are supplementary.
 c. Inscribed angle is double of the central angle standing on the same arc of a circle.
 d. Equal arcs subtend equal angles at the centre of a circle.
83. If a sphere and a right circular cone have the same radius and equal volume, what is the ratio of the height of the cylinder to its radius?
 a. 1:4 b. 4:1 c. $\pi : 3$ d. $3\pi : 4$.
84. The mean of a set of numbers is x. If each number is multiplied by λ , then the mean of the new numbers is
 a. x b. $x + \lambda$ c. λx d. none of these.
85. If in 2 years, under the same rate of interest, the simple interest is Rs. 40 and compound interest is Rs. 41 then the principal is:
 a. Rs. 500 b. Rs. 400 c. Rs. 800 d. Rs. 820
86. If $x^2 + y^2 = xy$, then $(x+y)^4 =$
 a. xy b. $x^2 y^2$ c. $9x^2 y^2$ d. $(x^2 + y^2)^2$
87. The age of B is half the sum of the ages of A and C. If B is 2 years younger than A and C is 32 years old, then the age of B must be:
 a. 28 years b. 30 years c. 34 years d. 36 years
88. If $\cos \alpha = \frac{1}{2}\left(a + \frac{1}{a}\right)$, then $\cos 2\alpha$ is equal to
 a. $\frac{1}{2}\left(a^2 - \frac{1}{a^2}\right)$ b. $\frac{1}{4}\left(a^2 + \frac{1}{a^2}\right)$ c. $\frac{1}{2}\left(a^2 + \frac{1}{a^2}\right)$ d. none of these.
89. The acute angle between the lines $x - y = 0$ and $y = 0$ is:
 a. 30° b. 45° c. 60° d. 75°
90. Which of the following matrix represents reflection in the line $y = x$?
 a. $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ b. $\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$ c. $\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}$ d. $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$

91. The length of perpendicular from the origin upon the line $\frac{x}{a} + \frac{y}{b} = 1$ is
- a. $\frac{a}{\sqrt{a^2 + b^2}}$ b. $\frac{-a}{\sqrt{a^2 + b^2}}$ c. $\frac{|ab|}{\sqrt{a^2 + b^2}}$ d. none of these.
92. The equation $y = x^2 + c$ represents a parabola with vertex (turning point) at
- a. (0, c) b. (0, -c) c. (0, 0) d. (c, 0)
93. The feasible region represented by $x+2y < 6$, $x > 0$, $y > 0$ contains which of the following point?
- a. (2,2) b. (1,1) c. (-1,-1) d. (0,-3)
94. Which of the following is false according to the law of indices?
- a. $(a^x)^y = a^{xy}$ b. $\left(\frac{a}{b}\right)^x = \frac{a^x}{b^x}$ c. $\left(\frac{a}{b}\right)^x = \left(\frac{b}{a}\right)^x$ d. $\left(\frac{a}{b}\right)^x = \left(\frac{b}{a}\right)^{-x}$
95. In the adjoining figure, O is the centre, RS is tangent to the circle at point P. If OS=20, PS=12, then the length of QS is
- a. 4 b. 8 c. 9 d. 10
- 
96. The quadratic equation whose roots are 7 and -5 is
- a. $x^2 - 2x - 35 = 0$ b. $x^2 + 2x - 35 = 0$ c. $(x-7)(x+5) = 1$ d. none of these
97. If $f(x) = \frac{x}{x-1}$, then $\frac{f(a)}{f(a+1)} =$
- a. $f(a^2)$ b. $f\left(\frac{a}{a+1}\right)$ c. $-f(a^2)$ d. 1
98. If $\begin{pmatrix} x & 3x \\ 4 & 4y \end{pmatrix} \begin{pmatrix} 2 \\ 1 \end{pmatrix} = \begin{pmatrix} 10 \\ 12 \end{pmatrix}$, then the values of x and y are respectively
- a. 1 and 2 b. 3 and 4 c. -1 and -2 d. 2 and 1
99. If C is the middle point of AB and P is any point outside AB, then
- a. $\vec{PA} + \vec{PB} = \vec{PC}$ b. $\vec{PA} + \vec{PB} = 2\vec{PC}$ c. $\vec{PA} + \vec{PB} + \vec{PC} = 0$ d. $\vec{PA} + \vec{PB} + 2\vec{PC} = 0$
100. Monthly salary of an employee is Rs. x which is increased by 20% and then decreased by 20%. If his final salary is Rs. y then
- a. $x - y = 4\%$ b. $x - y = 4\% \text{ of } x$
c. $y - x = 4\%$ d. $x - y = 1\% \text{ of } x$
