



National
Infotech Sec. School



+2 ENTRANCE EXAM 2082

SET-I

Attempt All the Questions

Full Marks : 100

Time : 2Hrs. 15 Minutes



PHYSICS

- [illegible]

- 13. A student wants to form image at the distance of 10 cm of an object placed at 20 cm. Which one of the following options can be chosen by him to get image as required?**
- Either convex lens of focal length 6.66 cm or concave lens of focal length 20 cm.
 - Either convex lens of focal length 20 cm or concave lens of focal length 6.66 cm.
 - Only by convex lens.
 - Only by concave lens.
- 14. The converging power of cornea of a healthy adult person is**
- 35 D
 - 43 D
 - 55 D
 - 65 D
- 15. What is the unit of refractive index?**
- m/s
 - Hertz
 - Candela
 - No unit
- 16. Maxwell's right hand grip rule is used to find**
- Strength of electromagnet
 - Nature of Pole of electromagnet
 - Strength of induced current
 - Types of transformer
- 17. The frequency of Direct Current (D.C.) is**
- 0 Hz
 - 1.5 Hz
 - 3 Hz
 - 12 Hz
- 18. Potential determines the**
- Direction of field intensity
 - Magnitude of field intensity
 - Direction of flow of electric charge
 - Types of current
- 19. Which one of the following factor doesn't affect strength of induced current?**
- Strength of magnet
 - Speed of rotation of armature
 - Distance between magnet and coil
 - Material of magnet
- 20. A student finds a transformer of which ratio of input voltage to output voltage is 4:5. What should be the ratio of its primary coil to secondary coil?**
- 4:5
 - 5:4
 - 6:5
 - 5:6

CHEMISTRY

- 21. The number of sub-shells contained by M-shell is**
- One
 - Two
 - Three
 - Four
- 22. The electronic configuration of valence shell of halogen family can be denoted by**
- ns^2np^3
 - ns^2np^4
 - ns^2np^5
 - ns^2np^6
- 23. Which one represents the correct order of increase in chemical reactivity of non-metal?**
- $C < N < O$
 - $Mg < Al < Si$
 - $Na < Li < K$
 - $Be < Mg < Ca$
- 24. Which one of the following compounds can be used to neutralize acidity of human stomach?**
- NaOH
 - HCl
 - H_2SO_4
 - $Mg(OH)_2$
- 25. Which one of the following is the largest group in modern periodic table?**
- 1
 - 3
 - 5
 - 7
- 26. Which one of the following element was named 'Eka-Aluminium' by Mendeleev?**
- Germanium
 - Gallium
 - Vanadium
 - Chromium
- 27. Dry ice is**
- Solid form of CO_2 at $-78^\circ C$
 - Solid form of NH_3 at $-78^\circ C$
 - Solid form of CO_2 at $-98^\circ C$
 - Solid form of NH_3 at $-98^\circ C$

28. Which one of the following compounds can be used for blue printing of map?

- a) Carbon dioxide b) Ammonium hydroxide c) Blue vitriol d) Ammonia

29. Which of the following process can be done to convert carbonate ores to their oxide?

- a) Calcination b) Roasting c) Smelting d) Reduction

30. '-CHO' is a functional group of

- a) Aldehyde b) Ketone c) Carboxylic acid d) Ether

31. What is I.U.P.A.C. name of following compound?

- a) Glycol b) Ethane-2,2-diol c) Ethane-1,1-diol d) Ethane-1,2-diol

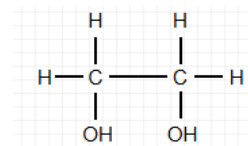


Fig: Q.no.31

32. Which of the following compounds is used to ripen fruit?

- a) Calcium carbide b) Calcium carbonate c) Sodium sulphate d) Sodium carbonate

33. Sodium pyrophosphate is a type of

- a) Insecticide b) Fertilizer c) Soap d) Detergent

34. Which one of the following can be used as an anti-Cancer medicine?

- a) Reetha b) Peena c) Sajiban d) BHC

35. Which one of the following compound can be used as a coolant in petroleum industries?

- a) Propane b) Propene c) Butane d) Butene

36. Anode is

- a) Negatively charged electrode c) Positively charged electrode
b) Charge less electrode d) None

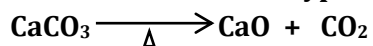
37. Metallurgy stands for

- a) Allergy from a metal c) Extraction of metals from their own ores
b) Study of properties of metal d) All of above

38. What will form if CO₂ is treated with NH₃ under high temperature and high pressure?

- a) Urea and Water c) Ammonium carbonate
b) Ammonium carbonate and water d) They don't react together

39. Study the given equation and find out the type of chemical reaction it is.



- a) Synthesis reaction c) Displacement reaction
b) Decomposition reaction d) Catalytic reaction

40. Which one of the following statement is not true about elements of same group?

- a) All of the elements have same atomic radius.
b) All of them have same valence electrons.
c) All of them are of same block.
d) All of them have different chemical reactivity.

BIOLOGY

41. Why are club mosses more advanced than the mosses?

- a) Club moss grows on the land
- b) Club moss is sporophyte
- c) Xylem and Phloem tissue are found in club moss
- d) Sporophyte is dominant in alternation of generation

42. Which one of the following sub-phylum is not considered as Protochordates?

- a) Hemichordata
- b) Urochordata
- c) Cephalochordata
- d) Vertebrata

43. Which one of the following is true fish?

- a) Sea-horse
- b) Jelly fish
- c) Devil fish
- d) Star fish

44. Which one of the following is written correctly?

- a) Homo sapiens
- b) Homo sapiens
- c) Homo sapiens
- d) homo sapiens

45. Which one of the following characteristics of Pteridophyte is different from other non-flowering plants?

- a) Presence of vascular bundle
- b) Presence of chlorophyll
- c) Having thallus body
- d) Absence of cell wall

46. Which one of the following castes of Honey Bee doesn't have father but have grandfather?

- a) Queen Bee
- b) Worker Bee
- c) Drone Bee
- d) All of the above

47. Melittology stand for

- a) Study of insect
- b) Study of arthropods
- c) Study of silk worm
- d) Study of apis

48. Worker bee works as a nurse at the age of

- a) 1-3 Days
- b) 4-6 Days
- c) 7-11 Days
- d) 12-17 Days

49. Which one of the following is a structural unit of DNA?

- a) Nucleoside
- b) Nucleotide
- c) Gene
- d) Chromatid

50. If there is no DNA transcription in a cell, which process is affected?

- a) Photosynthesis
- b) Protein synthesis
- c) Sexual reproduction
- d) Cell division

51. In IVF, IV stands for

- a) Intrinsic value
- b) Internal Value
- c) Glass
- d) International Value

52. Name the scientist and domestic animals on which experiment of artificial insemination was done successfully.

- a) Darwin and Horse
- b) Mendel and Pea
- c) Spallanzani and Dog
- d) Lamarck and Giraffe

53. How many types of genotypically plant are produced in F₁ generation of monohybrid cross?

- a) 1
- b) 2
- c) 3
- d) 4

54. Which one of the following blood vessels can be taken as a graft in by-pass surgery?

- a) Saphenous vein
- b) Hepatic vein
- c) Renal vein
- d) Hepatic artery

55. A person has neither antigen nor RH-factor. It means its blood group is

- a) AB +ve b) AB -ve c) O +ve d) O -ve

56. The function of mitral valve is

- a) To allow flow of blood from left atrium to left ventricle.
b) To block flow of blood from left ventricle to left atrium.
c) To allow flow of blood from right atrium to right ventricle.
d) To prevent flow of blood from right ventricle to right atrium.

57. A patient of hyperuricemia is adviced to take cherry in every diet because

- a) It contains anthomyosin c) It contains anthocyanin
b) It contains anthoxanthin d) It contains chlorophyll

58. Identify the given blood cell in figure:

- a) Monocyte c) Lymphocyte
b) Basophil d) Neutrophil



Fig: Q.no.58

59. In chickenpox, neem powder paste is applied to the affected parts and neem leaves are spread on the bed. It helps to heal chickenpox. What property in neem helps to do so?

- a) Anti-inflammatory property c) Anti-microbial property
b) Anti-oxidant property d) Anti-pyretic property

60. Blood sugar level can be decreased because of excessive use of

- a) Gurjo b) Turmeric c) Calamus d) Asuro

MATHS

61. P and Q are subsets of universal set U. If the set Q is a subset of P. Then,

- a) $n(P \cup Q)$ has the minimum value c) $n(P \cup Q) = n(P)$ and $n(P \cap Q) = n(Q)$
b) $n(P \cap Q)$ has the maximum value d) All of them

62. The population of a city is increased from 8000 to 9261 in 3 years. Then, the rate of growth of the population is

- a) 2.1% b) 4% c) 5% d) 3.5%

63. If three hemi-spheres having radii r_1 , r_2 and r_3 are melted together to form a new hemi-sphere then, the radius of new hemi-sphere is

- a) $r = r_1 + r_2 + r_3$ c) $r = \sqrt{r_1^2 + r_2^2 + r_3^2}$
b) $r = \sqrt[3]{r_1^3 + r_2^3 + r_3^3}$ d) $r = r_1^3 + r_2^3 + r_3^3$

64. How many terms of the sequence -12, -9, -6, -3..... must be taken to make the sum 54?

- a) 14 b) 12 c) 13 d) 11

65. If $a^x \cdot a^{y+1} = a^7$ and $a^{2y} \cdot a^{3x+5} = a^{20}$. Then, the value of x^2y is

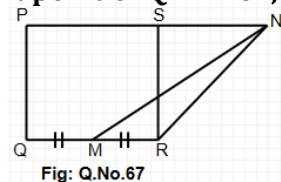
- a) 27 b) 26 c) 28 d) None

66. A number between 10 and 100 is three times the sum of its digits. If 45 is added to the number then digits are interchanged. Then, the number is

- a) 72 b) 62 c) 26 d) 27

67. In the given figure, PQRS is a square whose perimeter is 60 cm and M is the midpoint of QR. Then, the area of ΔMRN is

- a) $\frac{225}{4} \text{ cm}^2$ b) $\frac{225}{2} \text{ cm}^2$ c) 225 cm^2 d) 450 cm^2



68. In the adjoining figure, find the values of x and y.

- a) $140^\circ, 30^\circ$
b) $140^\circ, 40^\circ$
c) $35^\circ, 70^\circ$
d) $140^\circ, 70^\circ$

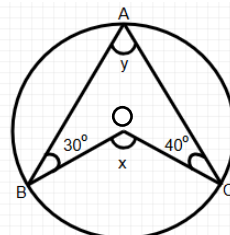


Fig: Q.No.68

69. A cricketer has a certain average in 9 innings. In the tenth innings, he scores 60 runs, which increases his overall average by 5 runs. What is his old average?

- a) 4 b) 6 c) 10 d) 8

70. The probability of solving a mathematical problem by Bidhya is $\frac{1}{3}$ and the probability of solving the same problem by Pravash is $\frac{1}{4}$. Then, the probability that none of them can solve the problem is

- a) $\frac{2}{3}$ b) $\frac{1}{2}$ c) $\frac{3}{4}$ d) None

71. If the function $f: A \rightarrow B$ is defined by $f = \{(-2, 4), (-1, 1), (0, 0), (1, 1), (2, 4)\}$. Then, the inverse of f is:

- a) $\{(4, -2), (1, -1), (0, 0), (1, 1), (4, 2)\}$
b) $\{(4, -2), (1, -1), (1, 1), (4, 2), (0, 0)\}$
c) $\{(-2, 4), (-1, 1), (0, 0), (1, 1), (2, 4)\}$
d) Does not exist

72. If a polynomial $p(x) = 2x^3 + 3x^2 + kx + 4$ leaves a remainder $2(4-k)$ when divided by $(x-2)$. Then, the value of k is

- a) -6 b) 2 c) 6 d) 5

73. The vertex of the parabola $y = ax^2 + bx + c$, $a \neq 0$ is

- a) $\left(\frac{-b}{2a}, \frac{-b^2}{4a}\right)$ b) $\left(\frac{-b}{2a}, \frac{b^2}{4a}\right)$ c) $\left(\frac{-b}{2a}, \frac{4ac-b^2}{4a}\right)$ d) $\left(\frac{-b}{2a}, \frac{4ac+b^2}{4a}\right)$

74. For what values of x, the matrix $\begin{bmatrix} 6 & 4 \\ x-1 & x \end{bmatrix}$ has no inverse?

- a) 2 b) $\frac{1}{2}$ c) $-\frac{1}{2}$ d) -2

75. If one end of the diameter of a circle $x^2 + y^2 - 7x - 4y + 13 = 0$ is (5, 3). Then, the coordinates of the other end of the diameter is

- a) $\left(\frac{7}{2}, 2\right)$ b) (1, 2) c) $\left(2, \frac{7}{2}\right)$ d) (2, 1)

76. If $\sin \theta + \cos \theta = \frac{1}{\sqrt{2}}$, ($0^\circ \leq \theta \leq 360^\circ$) then, the value of θ will be

- a) $105^\circ, 345^\circ$ b) $135^\circ, 315^\circ$ c) $45^\circ, 135^\circ$ d) None

77. The vectors $(\vec{p} + 2\vec{q})$ and $(5\vec{p} - 4\vec{q})$ are perpendicular to each other, where $\vec{p}$ and $\vec{q}$ are unit vectors. Then, the angle between $\vec{p}$ and $\vec{q}$ is

- a) 30° b) 60° c) 90° d) None

78. Which of the following matrix represents the rotation through $+90^\circ$ about origin?

- a) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ b) $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$ c) $\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$ d) $\begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$

79. If the inversion of a point A (4, 4) with respect to a circle having center at origin is A'(8, 8). Then, the radius of the circle is
- a) 8 b) 6 c) 16 d) 4
80. The standard deviation of a set of observations is always
- a) 0 b) Positive c) Negative d) All of them

ENGLISH

81. She bought ___ ewe from Mustang last week.
- a) a b) an c) the d) no article
82. By next year, he ___ in this company for 10 years.
- a) works b) will work c) will have worked d) worked
83. Everyone likes mangoes, ___?
- a) do they b) don't they c) doesn't she d) does he
84. The book ___ by the teacher.
- a) wrote b) is written c) is writing d) has write
85. They are watching a movie. (Choose passive)
- a) A movie is watched by them. c) A movie is being watched by them.
b) A movie watched them. d) A movie is watching them.
86. He said, "I am busy." (Indirect)
- a) He said that he is busy. c) He said that he was busy
b) He says that he was busy. d) He said that he busy.
87. She said to me, "Do you like music?" (Indirect)
- a) She asked me do I like music. c) She asked me if I liked music.
b) She told me if I liked music. d) She asked me if you liked music.
88. I met a woman ___ son is a doctor.
- a) who b) whose c) which d) whom
89. If I were rich, I ___ travel the world.
- a) will b) would c) can d) have
90. If he had seen me, he ___ stopped.
- a) will have b) would have c) would d) had
91. She is fond ___ music.
- a) of b) in c) about d) to
92. He walked ___ the river.
- a) to b) into c) along d) onto
93. She was made ___ the homework again.
- a) to do b) did c) doing d) do
94. She goes to school on time. Identify the object
- a) She b) goes c) school d) none of them
95. Choose the correct SVO structure.
- a) Reads she book b) She book reads c) She reads a book d) Reads a book she

Reading Comprehension

Education is constantly evolving to meet the needs of modern society. In the past, students mainly learned in classrooms using chalkboards, textbooks, and face-to-face instruction. Today, technology has transformed how people learn. Online classes, educational apps, and digital tools are widely used in schools and homes. These innovations make learning more flexible and accessible, especially for students living in remote areas or those with physical challenges.

Another important change in education is the focus on creativity and critical thinking. Earlier systems often emphasized memorization, but now schools encourage students to solve problems, think independently, and work in teams. Teachers also play a more supportive role, guiding students rather than simply giving information.

Despite progress, challenges remain. Many children around the world still lack access to quality education because of poverty, war, or natural disasters. Gender inequality is also a serious issue in some regions, preventing girls from attending school. Governments and organizations are working together to improve education for all.

Education is not just about earning degrees; it helps people understand the world, make informed decisions, and live better lives. A well-educated population contributes to national development, peace, and progress. Therefore, improving education should be a priority for every country.

Multiple-Choice Question (MCQ)

96. What is the main purpose of the text?

- a) To describe the history of education
- b) To highlight changes and challenges in education
- c) To compare schools in different countries
- d) To promote online learning only

97. Which of the following is a modern tool used in education?

- a) Chalkboard
- b) Blackboard
- c) Educational apps
- d) Maps and globes

98. What do modern schools focus more on today?

- a) Memorization
- b) Critical thinking and creativity
- c) Copying from books
- d) Punishment and discipline

99. Why do some children still lack education?

- a) Because they dislike learning
- b) Due to poverty, war, or disasters
- c) Because schools are boring
- d) Because textbooks are hard

100. How does education help a country?

- a) By producing athletes
- b) By supporting national development and peace
- c) By encouraging traveling
- d) By reducing food prices