



NATIONAL INFOTECH SECONDARY SCHOOL

+2 ENTRANCE EXAM -2081

SET – I

TIME: 2:15 Hrs.

FM: 100

Attempt all the question

PHYSICS

1. **S.I. unit of force is**
 - a. newton
 - b. kg m/s^2
 - c. kg ms^{-2}
 - d. All of them
2. **Force of gravitation is always**
 - a. Attractive in nature
 - b. Repulsive in nature
 - c. May be attractive or repulsive
 - d. None
3. **The force of gravitation acting between two bodies A & B is 4N on lunar surface. Both bodies are kept in water at same distance, then the force of gravitation between them**
 - a. remain same
 - b. will be more than 4N
 - c. will be less than 4N
 - d. None
4. **At what height acceleration due to gravity will be $\frac{1}{3}$ rd of earth surface if its radius is R?**
 - a. 2R
 - b. $\sqrt{2}R$
 - c. R^2
 - d. $\sqrt{3}R$
5. **An ice block of density 0.9 g/cm³ is kept on water surface. What its percentage part remains inside the water?**
 - a. 10%
 - b. 90%
 - c. 60%
 - d. 40%
6. **Which one of the following factors doesn't affect up thrust acting on body?**
 - a. Density of liquid
 - b. Volume of displaced liquid
 - c. Depth of liquid
 - d. Immersed volume of body.
7. **Weight is added at bottom of hydrometer or, lactometer because :-**
 - a. It can displace liquid equal to its weight.
 - b. It can float vertically straight to get uniform reading.
 - c. It should get sink.
 - d. None of them.



What will the reading of weighing machine of B?

- a. 40N
 - b. 50N
 - c. 30N
 - d. 60N
9. **What amount of heat energy is required to boil 10 kg of water at 48°C?**
 - a. $2.184 \times 10^6 \text{J}$
 - b. $2.184 \times 10^3 \text{J}$
 - c. $2.184 \times 10^5 \text{J}$
 - d. $2.184 \times 10^8 \text{J}$
10. **Bottle of cold drink is not filled completely because**
 - a. its volume is increased as it cools down.
 - b. its volume is decreased as it cools down.
 - c. its mass is increased as it cools down.
 - d. its mass is decreased as it cools down.
11. **At what temperature water has highest density?**
 - a. 0°C
 - b. 4°C
 - c. 10°C
 - d. 17°C
12. **A light ray 'x' is focused on surface 'PQ' to pass from medium 'A' to 'B'. A is denser medium & B is rarer medium. If 'c' stands for its usual meaning which one represent refracted ray of x**
 - a. M
 - b. N
 - c. O
 - d. P
13. **Nyctalopia is caused by**
 - a. Disorder of eye lens
 - b. Disorder of ciliary muscle
 - c. Disorder of optic nerves
 - d. Disorder of rod cell.

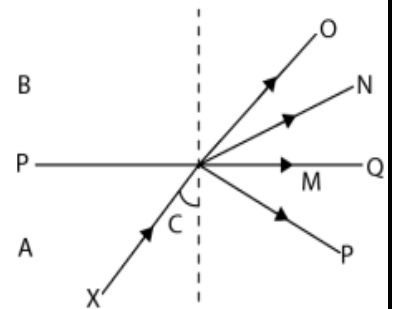


Figure Q. 12

14. Which defect of vision is shown in figure?

- a. Myopia
- c. Astigmatism

- b. Hypermetropia
- d. Cataract

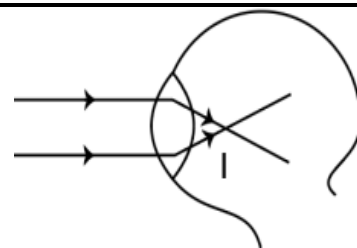


Figure Q. 14

15. Cladding is used in optic fiber

- a. to create denser medium
- c. to cover optic fiber

- b. to create rarer medium
- d. to make dispersion of light

16. A person wants to play a radio of '12v' from its main supply of current in its home. Which type of transfer & what will be ratio of primary windings to secondary windings?

- a. Step down transformer & ratio 55:3
- c. Step up transformer & ratio 55:3

- b. Step down transformer & ratio 3:55
- d. Step up transformer & ratio 3:55

17. Which one of the following factor doesn't affect strength of electromagnet?

- a. Number of turns of coil
- c. By direction of current

- b. Strength of current
- d. All of the above

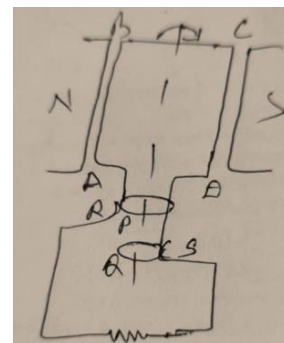


Figure Q. 18

18. Name the instrument shown in figure.

- a. D.C. Motor
- c. D.C. generator

- b. A.C. Motor
- d. A.C. generator

19. Which one of the following Phenomena can't be done by key hole surgery?

- a. Gall stone
- c. Myeloid

- b. Biopsy
- d. Cindery stone

20. A particular type of optical instrument is kept in black box. Its incident rays & reflected rays are given in figure. Identify the instrument kept in box.

- a. Convex lens
- c. Plano-convex lens

- b. Concave lens
- d. Prism

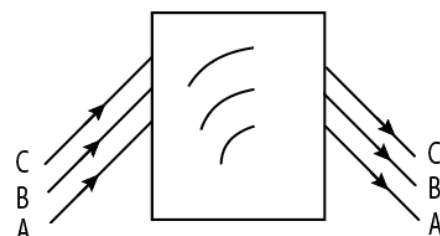


Figure Q. 20

CHEMISTRY

21. Mendeleev's periodic table is based on

- a. Atomic mass
- b. Atomic number
- c. No. of Neutron
- d. No. of electron

22. Which one of the following has least ionization Potential

- a. Sodium
- b. Potassium
- c. Lithium
- d. Cesium

23. Electronic configuration of any element is $1S^2, 2S^2 2P^6, 3S^2 3P^2$. It means it falls to

- a. 3rd period & 13 group
- b. 2nd period & 14 group
- c. 3rd period & 14 group
- d. 3rd period & 15 group

24. Which one of the following statement is right?

- a. Reactivity of metal is decreased as increase in size of atom.
- b. Metallic properties decrease as we move from left to right in a period.
- c. Non-metallic properties decrease as we move from left to right in a period.
- d. Reactivity of non-metal increase as we move from top to bottom in a non-metallic group.

25. Which one of the following statement is not correct about catalyst?

- a. It doesn't take part in chemical reaction.
- b. It takes part in chemical reaction.
- c. It changes rate of chemical reaction.
- d. Its amount remains same as a result of chemical reaction.

43. A moss plant is shown in figure, identify its classification & label A & B.

- a. Bryophyta, A – Gametophyte , B – Sporophyte
- b. Tracheophyta, A – Sporophyte, B – Gametophyte
- c. Algae, A – Sporophyte , B – Gametophyte
- d. Bryophyta, A – Sporophyte , B – Gametophyte

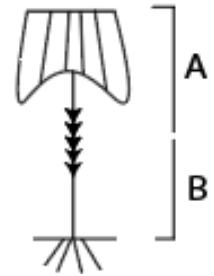


Figure Q. 43

44. To which kingdom do organisms having cell walls belong?

- a. monera , Fungus, animalia
- b. Fungus , Plantae , Protista
- c. Fungus, Plantae, animalia
- d. Fungus, Plantae, monera

45. Which one of the following group of plants is called amphibian plants?

- a. Algae
- b. Bryophyta
- c. Pteridophyta
- d. Gymnosperm

46. Nereis belong to phylum

- a. Annelida,
- b. Arthropoda
- c. Mollusca
- d. Echinodermata

47. Abhinash observed a plant & found some of the characteristics as below:

- i) Vascular bundles are scattered in stem
- ii) Having adventitious root
- iii) Having trimerous flower.

It means this plant can be kept in

- a. Bryophyta
- b. Pteridophyta
- c. Gymnosperm
- d. Angiosperm

48. Which one of the following castes of honey bee develops by parthenogenesis?

- a. Worker Bee
- b. Drone
- c. Queen Bee
- d. Queen & Worker Bee

49. Absconding is the process of

- a. Shifting of all members of honey bee from one place to another.
- b. Separation of honey bee because of multiple Queen Bee
- c. Sudden death of Queen Bee.
- d. process to leave comb by Queen Bee & Drone Bee for copulation

50. Which castes of Honey bee take largest time to develop from egg to adult?

- a. Drone bee
- b. Worker bee
- c. Queen bee
- d. Worker & drone bee

51. If a nucleoside is deleted during DNA replication what happens to the organisms?

- a. Genetic disorder occurs.
- b. Its having Problem in cell division
- c. It brings a problem in reproduction
- d. The chromosome doesn't function

52. Mitosis is also called somatic cell division because

- a. It occurs only in somatic cell
- b. It doesn't occur in germ cell.
- c. Somatic cell can divide only by mitosis.
- d. It occurs in zygote

53. Which one of the following hybrid is different from others?

- a. Beefalo
- b. Mule
- c. Zebroid
- d. Liger

54. In which one of the following cross phenotypic & genotypic ratios will remain same?

- a. monohybrid cross
- b. Dihybrid cross
- c. Test cross
- d. None

55. Hysterosalpingography stands for

- a. A technic to find condition of female reproductive tract for conceiving
- b. A technic to find condition of male reproductive tract to discharge semen.
- c. A technic to find possibilities of heart attack
- d. A technic to find blockage of blood vessel

56. Which one of the following blood group is the most common?

- a. A b. B c. AB d. O

57. Assertion (A) & Reason (R) are given below. Study its & select best option.

Assertion (A) – O negative is universal donor

Reason (R) – It has neither antigen nor Rh- factor

- a. A is right R is false. b. A is wrong R is true
c. A is right R is true d. A & R both are wrong

58. MI Stands for

- a. Death of Cardiac muscles in a particular region
b. Clogging of coronary artery.
c. Slow rate of heart beat.
d. Rate of heart beat more than 100 beats / minute

59. Graveyard of R.B.C. is called

- a. Liver b. Heart c. Lung d. Kidney

60. One molecules of Haemoglobin can carry

- a. Two atoms of oxygen b. Two molecules of oxygen.
c. Four atoms of oxygen d. Four molecules of oxygen.

ENGLISH

Read the following text and select the correct option.

Time management is a crucial skill that can significantly impact an individual's success and productivity. It involves organizing and planning how to divide your time between various activities. Good time management allows individuals to work smarter, not harder, ensuring that they complete their tasks efficiently.

One of the primary benefits of effective time management is reduced stress. When you control your time and know what needs to be done, you can approach tasks with a clear mind and avoid last-minute rushes. This can lead to a more balanced and fulfilling life, as it allows for time to relax and engage in leisure activities.

Moreover, time management enhances your ability to prioritize tasks. By setting clear goals and deadlines, you can focus on what is most important and urgent. This prevents procrastination and ensures that essential tasks are completed on time. Additionally, effective time management can improve your decision-making skills. With a structured schedule, you have more time to evaluate options and make informed choices.

In today's fast-paced world, where distractions are abundant, mastering time management is more important than ever. Whether you are a student trying to juggle assignments and exams or a professional handling multiple projects, managing your time effectively can lead to greater success and satisfaction.

61. What is the primary benefit of effective time management mentioned in the passage?

- a) Increased income b) Reduced stress
c) Enhanced creativity d) Improved social skills

62. According to the passage, how does time management help with prioritizing tasks?

- a) It eliminates the need for deadlines.
b) It allows for more leisure activities.
c) It helps focus on important and urgent tasks.
d) It increases the number of tasks to be completed.

63. Why is time management particularly important in today's world, according to the passage?

- a) Because technology has made tasks easier
- b) Because distractions are abundant
- c) Because it increases income
- d) because social interactions are more demanding

64. What skill is improved through effective time management as per the passage?

- a) Writing skills
- b) Artistic skills
- c) Decision-making skills
- d) Athletic skills

65. What does the passage suggest is a result of avoiding last-minute rushes?

- a) Increased workload
- b) More time for relaxation and leisure
- c) Higher levels of anxiety
- d) Decreased productivity

66. Choose the correct article:

"He has been appointed ___ manager of the new project."

- a) a
- b) an
- c) the
- d) no article

67. Choose the correct article:

"Can you give me ___ advice on this matter?"

- a) a
- b) an
- c) the
- d) no article

68. Choose the correct form of the verb to complete the sentence:

"By the time she arrives, we ___ our dinner."

- a) will finish
- b) will have finished
- c) have finished
- d) had finished

69. Choose the correct form of the verb to complete the sentence:

"If he ___ harder, he would have passed the exam."

- a) studies
- b) had studied
- c) studies
- d) is studying

70. Choose the correct preposition to complete the sentence:

"He was accused ___ stealing the money."

- a) of
- b) for
- c) with
- d) about

71. Choose the correct preposition to complete the sentence:

"She is good ___ mathematics."

- a) at
- b) in
- c) with
- d) about

72. Choose the correct passive form of the sentence:

"The committee will review the applications next week."

- a) The applications are reviewed by the committee next week.
- b) The applications were reviewed by the committee next week.
- c) The applications will be reviewed by the committee next week.
- d) The applications have been reviewed by the committee next week.

73. Choose the correct passive form of the sentence:

"They had completed the project before the deadline."

- a) The project is completed before the deadline.
- b) The project was completed before the deadline.
- c) The project has been completed before the deadline.
- d) The project had been completed before the deadline.

74. Choose the correct indirect speech form of the sentence:

"She said, 'I will help you tomorrow.'"

- a) She said that she would help me tomorrow.
- b) She said that she will help me tomorrow.
- c) She said that she would help me the next day.
- d) She said that she will help me the next day.

75. Choose the correct indirect speech form of the sentence:

"He asked, 'Why didn't you attend the meeting?'"

- a) He asked why I didn't attend the meeting.
- b) He asked why I hadn't attended the meeting.
- c) He asked why I haven't attended the meeting.
- d) He asked why hadn't I attended the meeting.

76. Choose the correct tag question:

"Let's go for a walk, ___?"

- a) don't we
- b) won't we
- c) shall we
- d) will we

77. Choose the correct tag question:

"Everyone enjoyed the party, ___?"

- a) don't they
- b) didn't they
- c) won't they
- d) aren't they

78. Choose the correct relative pronoun to complete the sentence:

"He is the kind of person ___ everyone likes."

- a) who
- b) whom
- c) whose
- d) which

79. Choose the correct relative pronoun to complete the sentence:

"The city ___ I was born is famous for its history."

- a) which
- b) where
- c) that
- d) when

80. Identify the word with the different final sound:

- a) Rough
- b) Tough
- c) Cough
- d) Though

MATHS

81. A, B and C are the subsets of universal set U. If "A and B" and "B and C" are the overlapping sets and A and C are disjoint sets then write the formula of $n(A \cup B \cup C)$.

- a. $n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C)$
- b. $n(A) + n(B) + n(C) + n(A \cap B) + n(B \cap C)$
- c. $n(A) + n(B) + n(C) - n(A \cap B) + n(B \cap C)$
- d. $n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(C \cap A)$

82. What is the actual height of the given right circular cone?

- a. 8cm
- b. 9cm
- c. 10cm
- d. 12cm

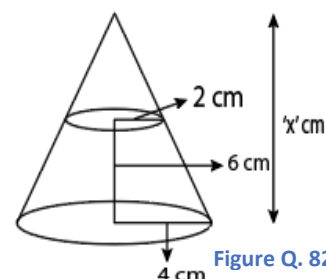


Figure Q. 82

83. What is the area of equilateral triangle $\triangle ABC$?

- a. $\frac{\sqrt{3}}{2} x^2 \text{ cm}^2$
- b. $\frac{x^2}{\sqrt{3}} \text{ cm}^2$
- c. $\frac{2x}{\sqrt{3}} \text{ cm}^2$
- d. $\frac{\sqrt{3}}{4} x^2 \text{ cm}^2$

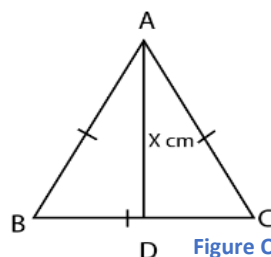


Figure Q. 83

84. Which of the following is true?

- a. $t_n = S_n + S_{n-1}$
- b. $t_n = S_n - S_{n-1}$
- c. $t_n = S_n - S_{n+1}$
- d. $t_n = S_n \cdot S_{n-1}$

85. If $a^2 = by + cz$, $b^2 = cz + ax$ and $c^2 = ax + by$ then what is the value of $\frac{x}{a+x} + \frac{y}{b+y} + \frac{z}{c+z}$

- a. 2
- b. 1
- c. 0
- d. $x + y + z$

86. In the given figure, D is mid-point of AB. If $3DE = BC = 24\text{cm}$ then find the area of $\triangle ABC$.

- a. 384 cm^2
- b. 148 cm^2
- c. 196 cm^2
- d. 192 cm^2

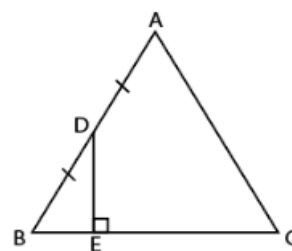


Figure Q. 86

87. Find the value of x in the figure.

- a. 60°
c. 40°

- b. 20°
d. 80°

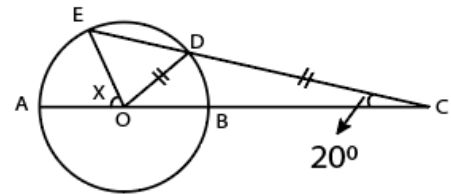


Figure Q. 87

88. Which of the following is true?

- a. Median = 2Mode - 3Mean b. Mean = 3Median - 2Mode
c. Mode = 3Median - 2Mean d. Mean = 3Median + 2Mode

89. The probability of solving a mathematical problem by two students A and B are $\frac{1}{3}$ and $\frac{1}{4}$ respectively.

If the problem is given to the both students, find the probability of solving.

- a. $\frac{1}{2}$ b. $\frac{7}{12}$ c. $\frac{5}{12}$ d. $\frac{1}{12}$

90. Solve :- $6^{x-5} + 6^{6-x} = 7$

- a. 5 b. 6
c. both (a) and (b) d. None of above

91. If $f(x) = 2x + 7$, find the value of $f^{-1}(x + 2)$.

- a. $\frac{x+5}{2}$ b. $\frac{x-5}{2}$ c. $\frac{x-7}{2}$ d. $x + 7$

92. Which of the following is equal to $2 \begin{vmatrix} a & c \\ b & d \end{vmatrix}$

- a. $\begin{vmatrix} 2a & 2c \\ 2b & 2d \end{vmatrix}$ b. $\begin{vmatrix} a & c \\ 2b & d \end{vmatrix}$ c. $\begin{vmatrix} 2a & c \\ b & d \end{vmatrix}$ d. $\begin{vmatrix} a & 2c \\ b & 2d \end{vmatrix}$

93. Equation of straight line perpendicular to $x - y = 0$ and through origin is

- a. $x + y = 0$ b. $y - x = 0$
c. $y = mx$ d. $mx + y = 0$

94. Equation of straight lines perpendicular to $ax^2 + 2hxy + by^2 = 0$ passing through origin is

- a. $bx^2 - 2hxy + ay^2 = 0$ b. $bx^2 + 2hxy + ay^2 = 0$
c. $bx^2 - 2hxy - ay^2 = 0$ d. $bx^2 + 2hxy - ay^2 = 0$

95. At what point circle $x^2 + y^2 + 2gx + 2fy + c = 0$ touches $x -$ axis.

- a. $(-g \pm \sqrt{g^2 - c}, 0)$ b. $(g \pm \sqrt{g^2 - c}, 0)$
c. $(f \pm \sqrt{f^2 - c}, 0)$ d. $(-f \pm \sqrt{f^2 - c}, 0)$

96. What is the value of $\cos 22^\circ 30'$ is

- a. $\frac{\sqrt{2-\sqrt{2}}}{2}$ b. $\frac{\sqrt{2+\sqrt{2}}}{4}$ c. $\frac{\sqrt{2-\sqrt{2}}}{4}$ d. $\frac{\sqrt{2+\sqrt{2}}}{2}$

97. In a $\triangle ABC$, $\sin 2A + \sin 2B + \sin 2C = \dots \dots \dots$

- a. $2\sin A \sin B \sin C$ b. $4\sin A \cos B \sin C$
c. $4\sin A \sin B \sin C$ d. $4\sin A \sin B \cos C$

98. If $\vec{a} + \vec{b} + \vec{c} = \vec{0}$ where $\vec{a}, \vec{b}$ and $\vec{c}$ are unit vectors then $\vec{a} \cdot \vec{b} = \dots \dots \dots$

- a. 0 b. -1 c. $-\frac{1}{2}$ d. $\frac{1}{2}$

99. Which of the following represents reflection in $x + y = 0$

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

100. Which of the following is formula to evaluate standard deviation for continuous series?

- a. $\sigma = \sqrt{\frac{\sum f(m-\bar{x})^2}{N}}$ b. $\sigma = \sqrt{\frac{\sum fm^2}{N} - \left(\frac{\sum fm}{N}\right)^2}$
c. both (a) and (b) d. None of above