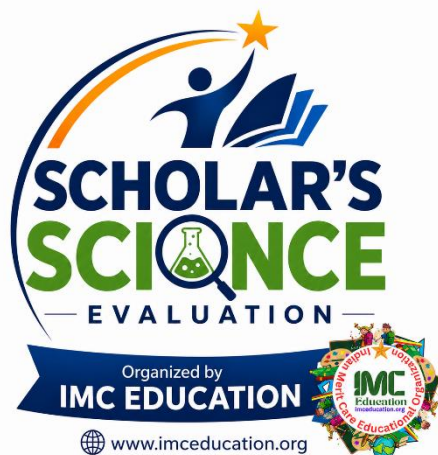


# Sample Questions For Class XII (SEM 3)



**Subjects: Physics, Chemistry, Mathematics, Biology**

**Total No. of Questions: 50**

**\*each of the questions will carry 2 marks.**

**\*\* no marks will be deducted for wrong answer.**

**Duration of the Exam: 1hr**

**\*each of the students will be provided a QUESTION- ANSWER BOOKLET where they will answer and submit to the invigilator at the end.**

 **PHYSICS (12 MCQs)**

1. The unit of magnetic flux is:

- A) Tesla
- B) Weber
- C) Henry
- D) Gauss

👉 **Answer: B**

2. The time period of a simple pendulum depends on:

- A) Mass
- B) Length
- C) Amplitude
- D) Shape

👉 **Answer: B**

3. Kirchhoff's current law is based on:

- A) Energy conservation
- B) Charge conservation
- C) Momentum conservation
- D) Ohm's law

👉 **Answer: B**

4. The speed of light in vacuum is:

- A)  $3 \times 10^6$  m/s
- B)  $3 \times 10^8$  m/s
- C)  $3 \times 10^5$  km/s
- D) Both B & C

👉 **Answer: D**

5. The focal length of a plane mirror is:

- A) Infinite
- B) Zero
- C) Positive
- D) Negative

👉 **Answer: A**

6. Which particle has no charge?

- A) Proton
- B) Electron
- C) Neutron
- D) Alpha particle

👉 **Answer: C**

7. The SI unit of capacitance is:

- A) Farad
- B) Ohm
- C) Volt
- D) Ampere

👉 **Answer: A**

8. In photoelectric effect, kinetic energy depends on:

- A) Intensity
- B) Frequency
- C) Distance
- D) Time

👉 **Answer: B**

9. A convex lens always forms:

- A) Virtual image
- B) Real image

C) Both real and virtual

D) No image

👉 **Answer: C**

10. The resistance of a conductor increases with:

- A) Temperature
- B) Length
- C) Area
- D) Both A & B

👉 **Answer: D**

11. Unit of power is:

- A) Joule
- B) Watt
- C) Newton
- D) Volt

👉 **Answer: B**

12. The phenomenon of interference proves light is:

- A) Particle
- B) Wave
- C) Quantum
- D) Photon

👉 **Answer: B**

 **CHEMISTRY (13 MCQs)**

13. The atomic number represents:

- A) Neutrons
- B) Protons
- C) Electrons + Neutrons
- D) Mass

👉 Answer: B

14. Which bond is strongest?

- A) Ionic
- B) Covalent
- C) Hydrogen
- D) Van der Waals

👉 Answer: B

15. The oxidation number of oxygen in  $H_2O_2$  is:

- A) -2
- B) -1
- C) 0
- D) +2

👉 Answer: B

16. Avogadro number is:

- A)  $6.022 \times 10^{23}$
- B)  $3 \times 10^8$
- C)  $1.6 \times 10^{-19}$
- D) 22.4

👉 Answer: A

17. The gas constant R equals:

- A)  $8.314 \text{ J/mol} \cdot \text{K}$
- B)  $1.38 \times 10^{-23}$
- C)  $6.023 \times 10^{23}$
- D) 0.082

👉 Answer: A

18. Which is a noble gas?

- A) Nitrogen
- B) Oxygen
- C) Argon
- D) Hydrogen

👉 Answer: C

19. The pH of acidic solution is:

- A)  $>7$
- B)  $=7$
- C)  $<7$
- D) 14

👉 Answer: C

20. Catalyst increases:

- A) Activation energy
- B) Rate of reaction
- C) Equilibrium constant
- D) Temperature

👉 Answer: B

21. Which is an alkali metal?

- A) Na
- B) Mg
- C) Ca
- D) Al

👉 Answer: A

22. Benzene is:

- A) Saturated
- B) Unsaturated
- C) Aromatic
- D) Alkane

👉 Answer: C

23. The valency of carbon is:

- A) 2

B) 3

C) 4

D) 5

👉 Answer: C

24. Which acid is present in vinegar?

- A) Citric
- B) Acetic
- C) Formic
- D) Sulfuric

👉 Answer: B

25. Electrolysis involves:

- A) Chemical to electrical
- B) Electrical to chemical
- C) Heat to electrical
- D) Light to chemical

👉 Answer: B

 **BIOLOGY (12 MCQs)**

26. The powerhouse of cell is:

- A) Nucleus
- B) Mitochondria
- C) Ribosome
- D) Golgi body

👉 Answer: B

27. Blood group is determined by:

- A) Protein
- B) Gene
- C) Hormone

D) Enzyme

👉 **Answer: B**

**28.** Which organ detoxifies chemicals?

- A) Kidney
- B) Liver
- C) Lung
- D) Heart

👉 **Answer: B**

**29.** The site of protein synthesis is:

- A) Nucleus
- B) Ribosome
- C) Cytoplasm
- D) Lysosome

👉 **Answer: B**

**30.** Plants prepare food by:

- A) Respiration
- B) Photosynthesis
- C) Transpiration
- D) Digestion

👉 **Answer: B**

**31.** Which vitamin prevents scurvy?

- A) A
- B) B
- C) C
- D) D

👉 **Answer: C**

**32.** The normal human body temperature is:

- A) 35°C
- B) 36°C
- C) 37°C
- D) 38°C

👉 **Answer: C**

**33.** Which blood cells fight infection?

- A) RBC
- B) WBC
- C) Platelets
- D) Plasma

👉 **Answer: B**

**34.** Insulin is secreted by:

- A) Liver
- B) Kidney
- C) Pancreas
- D) Heart

👉 **Answer: C**

**35.** The basic unit of heredity is:

- A) Cell
- B) Gene
- C) Chromosome
- D) DNA

👉 **Answer: B**

**36.** Which part of brain controls balance?

- A) Cerebrum
- B) Cerebellum

C) Medulla

D) Spinal cord

👉 **Answer: B**

**37.** The largest organ in human body is:

- A) Brain
- B) Skin
- C) Liver
- D) Heart

👉 **Answer: B**

### 📖 MATHEMATICS (13 MCQs)

**38.** If  $f(x) = \sin x$ , then  $f'(x) =$

- A)  $\cos x$
- B)  $-\cos x$
- C)  $\sin x$
- D)  $-\sin x$

👉 **Answer: A**

**39.**  $\lim_{x \rightarrow 0} (\sin x)/x =$

- A) 0
- B) 1
- C)  $\infty$
- D) -1

👉 **Answer: B**

**40.** The integral of  $x \, dx$  is:

- A)  $x^2$
- B)  $x^2/2$

- C)  $x$   
D)  $2x$

👉 Answer: B

41. If determinant  $\neq 0$ , system is:

- A) No solution  
B) Unique solution  
C) Infinite solution  
D) Undefined

👉 Answer: B

42. The derivative of  $e^x$  is:

- A)  $e^x$   
B)  $x e^x$   
C)  $e$   
D) 1

👉 Answer: A

43.  $\sin 90^\circ =$

- A) 0  
B) 1  
C) -1  
D)  $\frac{1}{2}$

👉 Answer: B

44. The equation of a line is:

- A)  $ax^2+bx+c$   
B)  $ax+by+c=0$   
C)  $x^3+y^3$   
D)  $\sin x$

👉 Answer: B

45. The probability lies between:

- A) -1 to 1  
B) 0 to 1  
C) 1 to 2  
D) 0 to  $\infty$

👉 Answer: B

46. The value of  $\tan 45^\circ$  is:

- A) 0  
B) 1  
C)  $\sqrt{3}$   
D)  $\infty$

👉 Answer: B

47. If A is a square matrix, then  $|A|$  denotes:

- A) Trace  
B) Determinant  
C) Inverse  
D) Rank

👉 Answer: B

48. The solution of  $\log_{10}100$  is:

- A) 1  
B) 2  
C) 10  
D) 100

👉 Answer: B

49. The number of permutations of  $n$  objects is:

- A)  $n$

- B)  $n^2$   
C)  $n!$   
D)  $n^n$

👉 Answer: C

### 📖 PHYSICS (25 MCQs)

1. The dimensional formula of electric field is:

- A)  $ML^2T^{-3}A^{-1}$   
B)  $MLT^{-3}A^{-1}$   
C)  $MLT^{-2}A^{-1}$   
D)  $ML^2T^{-2}A^{-1}$

👉 Ans: C

2. Two charges  $q$  and  $4q$  are placed at distance  $r$ . Force becomes same if distance is:

- A)  $r/2$   
B)  $r$   
C)  $2r$   
D)  $4r$

👉 Ans: C

3. The unit of permittivity is:

- A) F/m  
B) N/C  
C)  $C^2/Nm^2$   
D) Both A & C

👉 Ans: D

4. Potential inside a conductor is:

- A) Zero
- B) Constant
- C) Infinite
- D) Variable

👉 Ans: B

5. In a potentiometer, potential gradient depends on:

- A) Current
- B) Length
- C) Resistance
- D) All

👉 Ans: D

6. Self-inductance depends on:

- A) Geometry
- B) Medium
- C) Turns
- D) All

👉 Ans: D

7. Energy stored in capacitor  $\propto$

- A) V
- B)  $V^2$
- C)  $1/V$
- D)  $\sqrt{V}$

👉 Ans: B

8. In AC, average power is zero when phase difference:

- A) 0

B)  $\pi/2$

C)  $\pi$

D)  $2\pi$

👉 Ans: B

9. RMS value of AC is:

- A) Peak
- B)  $\text{Peak}/\sqrt{2}$
- C)  $\text{Peak} \times \sqrt{2}$
- D) Zero

👉 Ans: B

10. Magnetic field inside solenoid is:

- A) Zero
- B) Constant
- C) Varying
- D) Infinite

👉 Ans: B

11. Lenz's law is based on:

- A) Energy conservation
- B) Charge conservation
- C) Momentum
- D) Force

👉 Ans: A

12. Drift velocity  $\propto$

- A)  $1/E$
- B) E
- C)  $\sqrt{E}$
- D)  $E^2$

👉 Ans: B

13. Work function depends on:

- A) Intensity
- B) Frequency
- C) Material
- D) Temperature

👉 Ans: C

14. De Broglie wavelength  $\propto$

- A) Momentum
- B)  $1/\text{Momentum}$
- C) Energy
- D) Frequency

👉 Ans: B

15. Nuclear radius  $\propto$

- A) A
- B)  $A^2$
- C)  $A^{(1/3)}$
- D)  $\sqrt{A}$

👉 Ans: C

16. Half-life independent of:

- A) Initial amount
- B) Temperature
- C) Pressure
- D) All

👉 Ans: D

17. Binding energy per nucleon highest for:

- A) H
- B) Fe

- C) U  
D) He

👉 Ans: B

18. Optical fiber works on:

- A) Reflection  
B) Refraction  
C) Total internal reflection  
D) Diffraction

👉 Ans: C

19. Fringe width  $\propto$

- A)  $\lambda$   
B)  $1/\lambda$   
C)  $d$   
D)  $1/D$

👉 Ans: A

20. Brewster angle when reflected light is:

- A) Parallel  
B) Perpendicular  
C) Polarized  
D) Refracted

👉 Ans: C

21. Power factor =

- A)  $\sin\theta$   
B)  $\cos\theta$   
C)  $\tan\theta$   
D)  $\cot\theta$

👉 Ans: B

22. Eddy current minimized by:

- A) Thick core  
B) Laminated core  
C) High voltage  
D) Low current

👉 Ans: B

23. In semiconductor, conductivity increases with:

- A) Temperature  
B) Pressure  
C) Volume  
D) Density

👉 Ans: A

24. P-N junction acts as:

- A) Amplifier  
B) Rectifier  
C) Capacitor  
D) Inductor

👉 Ans: B

25. Logic gate AND output 1 when:

- A) Any input 1  
B) Both 1  
C) Both 0  
D) Any 0

👉 Ans: B

26. Order of reaction determined by:

- A) Stoichiometry  
B) Experiment  
C) Temperature  
D) Pressure

👉 Ans: B

27. Rate constant unit (1st order):

- A)  $s^{-1}$   
B)  $\text{mol}^{-1}$   
C) s  
D) mol

👉 Ans: A

28. Activation energy lowered by:

- A) Catalyst  
B) Temperature  
C) Pressure  
D) Concentration

👉 Ans: A

29.  $\Delta G < 0$  means:

- A) Non-spontaneous  
B) Spontaneous  
C) Equilibrium  
D) Reversible

👉 Ans: B

30. pH of strong acid:

- A) High  
B) Low  
C) Neutral

👉 CHEMISTRY (25 MCQs)

D) 14

👉 Ans: B

31. Buffer solution resists:

- A) Temperature
- B) pH change
- C) Pressure
- D) Volume

👉 Ans: B

32. Oxidation is:

- A) Gain  $e^-$
- B) Loss  $e^-$
- C) Gain H
- D) Loss O

👉 Ans: B

33. Coordination number:

- A) Bonds
- B) Ligands
- C) Atoms attached
- D) Both B & C

👉 Ans: D

34. Hybridization  $dsp^2$  gives:

- A) Tetrahedral
- B) Square planar
- C) Linear
- D) Octahedral

👉 Ans: B

35. Crystal lattice energy depends on:

- A) Charge
- B) Size
- C) Distance
- D) All

👉 Ans: D

36. Colligative property depends on:

- A) Nature
- B) Number of particles
- C) Mass
- D) Volume

👉 Ans: B

37. Osmotic pressure  $\propto$

- A) T
- B) Concentration
- C) Both
- D) None

👉 Ans: C

38. Strongest acid:

- A) HCl
- B) HF
- C) HI
- D) HBr

👉 Ans: C

39. Electronegativity highest:

- A) F
- B) O
- C) Cl

D) N

👉 Ans: A

40. Aromatic compound must follow:

- A) Huckel rule
- B) Octet rule
- C) Aufbau
- D) Pauli

👉 Ans: A

41. Benzene stability due to:

- A) Resonance
- B) Induction
- C) Hyperconjugation
- D) Bonding

👉 Ans: A

42.  $SN_1$  reaction:

- A) One step
- B) Two step
- C) Three step
- D) None

👉 Ans: B

43.  $SN_2$  reaction:

- A) Unimolecular
- B) Bimolecular
- C) Radical
- D) Ionic

👉 Ans: B

44. Markovnikov rule:

- A) More substituted
- B) Less substituted
- C) Random
- D) No rule

👉 Ans: A

45. Alcohol oxidation gives:

- A) Alkane
- B) Aldehyde
- C) Ether
- D) Alkene

👉 Ans: B

46. Ketone reduction gives:

- A) Alcohol
- B) Acid
- C) Alkane
- D) Ester

👉 Ans: A

47. Polymerization type of PVC:

- A) Addition
- B) Condensation
- C) Both
- D) None

👉 Ans: A

48. Enzyme nature:

- A) Protein
- B) Lipid
- C) Carbohydrate

D) Vitamin

👉 Ans: A

49. Vitamin C is:

- A) Water soluble
- B) Fat soluble
- C) Both
- D) None

👉 Ans: A

50. Green chemistry aims:

- A) Pollution
- B) Reduction
- C) Increase waste
- D) None

👉 Ans: B

### 🧪 BIOLOGY (25 MCQs)

51. DNA replication enzyme:

- A) RNA polymerase
- B) DNA polymerase
- C) Ligase
- D) Helicase

👉 Ans: B

52. Transcription produces:

- A) DNA
- B) RNA
- C) Protein

D) Lipid

👉 Ans: B

53. Translation occurs in:

- A) Nucleus
- B) Ribosome
- C) Cytoplasm
- D) Both B & C

👉 Ans: D

54. Genetic code is:

- A) Overlapping
- B) Non-overlapping
- C) Ambiguous
- D) Variable

👉 Ans: B

55. Codon codes for:

- A) Protein
- B) Amino acid
- C) DNA
- D) Lipid

👉 Ans: B

56. Mutation causes:

- A) Variation
- B) Stability
- C) Death
- D) None

👉 Ans: A

57. Mendel's law:

- A) Segregation
- B) Independent assortment
- C) Both
- D) None

👉 Ans: C

58. Blood clotting factor:

- A) RBC
- B) WBC
- C) Platelets
- D) Plasma

👉 Ans: C

59. Heart pacemaker:

- A) AV node
- B) SA node
- C) Bundle
- D) Nerve

👉 Ans: B

60. Oxygen transported by:

- A) Plasma
- B) Hemoglobin
- C) Platelets
- D) WBC

👉 Ans: B

61. Neuron transmits:

- A) Blood
- B) Impulse
- C) Oxygen

D) Hormone

👉 Ans: B

62. Reflex action controlled by:

- A) Brain
- B) Spinal cord
- C) Heart
- D) Kidney

👉 Ans: B

63. Hormone secreted by thyroid:

- A) Insulin
- B) Thyroxine
- C) Adrenaline
- D) Estrogen

👉 Ans: B

64. Photosynthesis pigment:

- A) Chlorophyll
- B) Hemoglobin
- C) Carotene
- D) Xanthophyll

👉 Ans: A

65. ATP is:

- A) Energy currency
- B) Protein
- C) Lipid
- D) DNA

👉 Ans: A

66. Krebs cycle occurs in:

- A) Cytoplasm
- B) Mitochondria
- C) Nucleus
- D) Ribosome

👉 Ans: B

67. Enzyme activity depends on:

- A) Temperature
- B) pH
- C) Substrate
- D) All

👉 Ans: D

68. Immunity type:

- A) Innate
- B) Acquired
- C) Both
- D) None

👉 Ans: C

69. Antibody produced by:

- A) RBC
- B) WBC
- C) Platelets
- D) Plasma

👉 Ans: B

70. Virus is:

- A) Living
- B) Non-living
- C) Both

D) Borderline

👉 **Ans: D**

71. Ecosystem includes:

- A) Biotic
- B) Abiotic
- C) Both
- D) None

👉 **Ans: C**

72. Food chain starts with:

- A) Herbivore
- B) Carnivore
- C) Producer
- D) Decomposer

👉 **Ans: C**

73. Nitrogen fixation by:

- A) Bacteria
- B) Plants
- C) Animals
- D) Virus

👉 **Ans: A**

74. Transpiration occurs through:

- A) Roots
- B) Stomata
- C) Stem
- D) Flower

👉 **Ans: B**

75. Xylem transports:

- A) Food
- B) Water
- C) Hormone
- D) Oxygen

👉 **Ans: B**

### 📖 MATHEMATICS (25 MCQs)

76. If  $y = x^3$ ,  $dy/dx =$

- A)  $3x^2$
- B)  $x^2$
- C)  $2x$
- D)  $3x$

👉 **Ans: A**

77.  $\int e^x dx =$

- A)  $e^x$
- B)  $e^x + C$
- C)  $x e^x$
- D)  $\ln x$

👉 **Ans: B**

78.  $\lim_{x \rightarrow \infty} (1/x) =$

- A) 1
- B) 0
- C)  $\infty$
- D) -1

👉 **Ans: B**

79.  $\sin^2\theta + \cos^2\theta =$

- A) 0
- B) 1
- C) 2
- D)  $\theta$

👉 **Ans: B**

80.  $\tan \theta =$

- A)  $\sin/\cos$
- B)  $\cos/\sin$
- C)  $\sec/\cos$
- D)  $\cot/\sin$

👉 **Ans: A**

81. If determinant = 0  $\rightarrow$

- A) Unique
- B) Infinite
- C) No solution
- D) Both B & C

👉 **Ans: D**

82. Derivative of  $\ln x =$

- A)  $1/x$
- B)  $x$
- C)  $\ln x$
- D)  $e^x$

👉 **Ans: A**

83.  $\int dx/x =$

- A)  $\ln|x| + C$
- B)  $x$
- C)  $e^x$

D)  $x^2$ 

👉 Ans: A

84. Probability always:

A)  $\leq 1$ B)  $\geq 1$ 

C) Negative

D) Infinite

👉 Ans: A

85. Standard deviation  $\geq$ 

A) 0

B) 1

C) -1

D)  $\infty$ 

👉 Ans: A

86. Vector magnitude:

A) Scalar

B) Vector

C) Both

D) None

👉 Ans: A

87. Dot product gives:

A) Scalar

B) Vector

C) Matrix

D) Tensor

👉 Ans: A

88. Cross product gives:

A) Scalar

B) Vector

C) Both

D) None

👉 Ans: B

92. If  $A \times B = 0 \rightarrow$ A)  $A = 0$ B)  $B = 0$ 

C) Parallel

D) Perpendicular

👉 Ans: D

93. If  $A \cdot B = 0 \rightarrow$ 

A) Parallel

B) Perpendicular

C) Equal

D) None

👉 Ans: B

94.  $e^0 =$ 

A) 0

B) 1

C) e

D)  $\infty$ 

👉 Ans: B

95.  $\log_{10} 1 =$ 

A) 0

B) 1

C) 10

D) -1

👉 Ans: A

96. Number of combinations:

A)  $nCr$ B)  $nPr$ C)  $n!$ D)  $n^2$ 

👉 Ans: A

97. Maximum value of  $\sin \theta =$ 

A) 1

B) 0

C) -1

D) 2

👉 Ans: A

98. Range of  $\cos \theta =$ A)  $[-1, 1]$ B)  $[0, 1]$ C)  $[1, \infty]$ D)  $(-\infty, \infty)$ 

👉 Ans: A

99. Mean of distribution:

A)  $\Sigma x/n$ B)  $\Sigma x^2$ C)  $\sqrt{x}$ D)  $x^2$ 

👉 Ans: A