

FINAL ANSWER KEY

Question Paper Code: 10/2026/OL

Exam: BPHARM 2026 -3

Date of Test: 20-04-2026

1. The percentage composition of carbon in methane is

- A) 20 %
- B) 25 %
- C) 75 %
- D) 80 %
- E) 33.3 %

Correct Answer : Option A

2. Which of the following d-orbital does not have four lobes?

- A) d_{xy}
- B) d_{yz}
- C) d_{xz}
- D) dx^2-y^2
- E) d_z^2

Correct Answer : Option E

3. Which of the following statement is incorrect?

- A) The square of the wave function at a point gives the probability density of the electron at that point.
- B) For 1s orbital the probability density is maximum at the nucleus and it increases sharply as we move away from it.
- C) For 2s orbital the probability density first decreases sharply to zero and again starts increasing.
- D) Node is the region where the probability density function of electron reduces to zero.
- E) The number of nodes for 3s orbital is 2.

Correct Answer : Option B

4. The set of elements which has exceptional electronic configurations not obeying Aufbau principle is

- A) K, Ca, Cr & Cu
- B) Ca, Cr, Nb & Cu
- C) Ca, Cr, Ag & Cu
- D) Cr, Cu, Ag & Ru
- E) Na, Rh, Cr & Cu

Correct Answer : Option D

5. The correct increasing order of the ionic radii of the isoelectronic species O^{2-} , N^{3-} , F^- , Mg^{2+} , Na^+ and Al^{3+} is
- $O^{2-} < N^{3-} < F^- < Mg^{2+} < Na^+ < Al^{3+}$
 - $Al^{3+} < N^{3-} < F^- < Mg^{2+} < Na^+ < O^{2-}$
 - $Al^{3+} < Mg^{2+} < Na^+ < F^- < O^{2-} < N^{3-}$
 - $F^- < O^{2-} < N^{3-} < Al^{3+} < Mg^{2+} < Na^+$
 - $O^{2-} < N^{3-} < F^- < Mg^{2+} < Al^{3+} < Na^+$

Correct Answer : Option C

6. The IUPAC symbol of the element with atomic number 110 is
- Unh
 - Uun
 - Uue
 - Unq
 - Uus

Correct Answer : Option B

Four elements and their electronegativity values (Pauling Scale) are given below. Match the element with its electronegativity value.

- | 7. Atom | Electronegativity value |
|---------|-------------------------|
| Rb | (a) 1.0 |
| Na | (b) 0.8 |
| I | (c) 3.0 |
| Cl | (d) 2.5 |
| | (e) 0.9 |
- (i)-(b), (ii)-(e), (iii)-(d), (iv)-(c)
 - (i)-(e), (ii)-(d), (iii)-(b), (iv)-(c)
 - (i)-(b), (ii)-(c), (iii)-(d), (iv)-(e)
 - (i)-(c), (ii)-(d), (iii)-(e), (iv)-(b)
 - (i)-(c), (ii)-(d), (iii)-(a), (iv)-(b)

Correct Answer : Option A

8. The number and type of bonds between nitrogen and three oxygen atoms in HNO_3 by Lewis representation is
- one pi (π) and 3 sigma (σ) bonds
 - one pi (π) and 2 sigma (σ) bonds
 - two pi (π) and 3 sigma (σ) bonds
 - one pi (π) and 4 sigma (σ) bonds
 - two pi (π) and 2 sigma (σ) bonds

Correct Answer : Option D

9. Which of the following set of compounds does not follow octet rule?

- A) SCl_2 , PF_5 and SF_6
- B) CH_4 , PF_5 and SF_6
- C) PF_5 , H_2SO_4 and SF_6
- D) PF_5 , H_2SO_4 and SCl_2
- E) SCl_2 , H_2SO_4 and SF_6

Correct Answer : Option C

10. Which of the following statement is NOT the postulate of VSEPR theory?

- A) Where two or more resonance structures can represent a molecule, the VSEPR model is not applicable to any such structure.
- B) A multiple bond is treated as if it is a single electron pair and the two or three electron pairs of a multiple bond are treated as a single super pair.
- C) The shape of a molecule depends upon the number of valence shell electron pairs around the central atom.
- D) Pairs of electrons in the valence shell repel one another since their electron clouds are negatively charged.
- E) The valence shell is taken as a sphere with the electron pairs localising on the spherical surface at maximum distance from one another.

Correct Answer : Option A

11. An ideal gas is allowed to expand from 1 L to 10 L against a constant external pressure of 1 bar. The work done is [1 bar = 100 J]

- A) -9.0 kJ
- B) -0.9 kJ
- C) +10.0 kJ
- D) +0.1 kJ
- E) -2.0 kJ

Correct Answer : Option B

12. For the equilibrium $A \rightleftharpoons B$ what is the value of $\log_{10}K$ at 298 K? ($\Delta_r H^\circ = -54.07 \text{ kJ mol}^{-1}$, $\Delta_r S^\circ = 10 \text{ JK}^{-1}$ and $2.303 RT = 5705$)

- A) 10
- B) 5
- C) 90
- D) 95
- E) 100

Correct Answer : Option A

13. Which of the following statement is incorrect?

- A) Melting of a solid is endothermic, so all enthalpies of fusion are positive.

- B) The magnitude of enthalpy change depends on the strength of the intermolecular interactions in the substance undergoing the phase transformations.
- c) Sublimation is a direct conversion of a solid into its vapour.
- D) The formation of calcium carbonate from calcium oxide and carbon dioxide is an endothermic reaction.
- E) The reference state of an element is its most stable state of aggregation at 25°C and 1 bar pressure.

Correct Answer : Option D

- 14.** At equilibrium, $[N_2] = 1.5 \times 10^{-3}M$, $[O_2] = 2 \times 10^{-3}M$ and $[NO] = 3 \times 10^{-3}M$ at 800 K in a closed vessel. The K_c for the equilibrium $N_2(g) + O_2(g) \rightleftharpoons NO(g)$ at 800 K is
- A) 1.0
 - B) 0.3
 - C) 2.0
 - D) 4.0
 - E) 3.0

Correct Answer : Option E

- 15.** In which of the following equilibrium reaction, pressure does not influence the equilibrium at constant temperature?
- A) $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$
 - B) $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$
 - C) $PCl_2(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$
 - D) $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$
 - E) $2N_2O_5(g) \rightleftharpoons 4NO_2(g) + O_2(g)$

Correct Answer : Option A

- 16.** The oxidation number of oxygen in O_2 , O_2F_2 and RbO_2 are respectively
- A) 0, +1, +2
 - B) 0, +2, -1/2
 - C) 0, +1, -1/2
 - D) 0, 0, +1/2
 - E) 0,-1, -1/2

Correct Answer : Option C

- 17.** Using stock notation, match the oxidation number against metal in its compound.

Compound	Oxidation Number of the metal
MnO	(a) IV
MnO ₂	(b) II
Fe ₂ O ₃	(c) I

Tl₂O (d) III

- A) (i)-(b), (ii)-(a), (iii)-(d), (iv)-(c)
- B) (i)-(b), (ii)-(d), (iii)-(a), (iv)-(c)
- C) (i)-(c), (ii)-(a), (iii)-(d), (iv)-(b)
- D) (i)-(d), (ii)-(a), (iii)-(b), (iv)-(c)
- E) (i)-(b), (ii)-(d), (iii)-(a), (iv)-(c)

Correct Answer : Option A

18. 100 cm³ of an aqueous solution of a protein contains 1.5 g of the protein. The osmotic pressure of such a solution at 300 K is found to be 4.5×10^{-3} bar. The molar mass of the protein is

[R = 0.083 lit atm mol⁻¹ K⁻¹]

- A) 8.3×10^5 g mol⁻¹
- B) 4.15×10^4 g mol⁻¹
- C) 8.3×10^3 g mol⁻¹
- D) 8.3×10^4 g mol⁻¹
- E) 4.15×10^4 g mol⁻¹

Correct Answer : Option D

19. Which of the following statement is incorrect?

- A) Colligative properties are used to determine the molar mass of solutes and solvent.
- B) Azeotropes arise due to very large deviations from Raoult's law.
- C) The colligative properties of solutions are independent of their chemical identity of solute.
- D) Osmotic pressure is a colligative property.
- E) The colligative properties of solutions depend on the number of solute particles.

Correct Answer : Option A

20. The salt which has van't Hoff factor (i) as 1.82 in 0.001 m aqueous solution is

- A) K₂SO₄
- B) MgSO₄
- C) KCl
- D) NaCl
- E) HCl

Correct Answer : Option B

21. A first order reaction is completed 99% in 20 minutes at 300 K. What is the half-life period of the reaction at the same temperature?

- A) 2 min
- B) 1 min
- C) 3 min

- D) 0.5 min
- E) 0.4 min

Correct Answer : Option A

22. At 300 K a first order reaction is 50 % completed in 10 minutes. What is the rate constant value of the reaction at this temperature? ($\log 2 = 0.3$)

- A) $1.15 \times 10^{-1} \text{ s}^{-1}$
- B) $2.15 \times 10^{-1} \text{ s}^{-1}$
- C) $1.15 \times 10^{-2} \text{ s}^{-1}$
- D) $2.15 \times 10^{-3} \text{ s}^{-1}$
- E) $1.15 \times 10^{-3} \text{ s}^{-1}$

Correct Answer : Option E

23. For the elementary reaction, $M \rightarrow N$, the rate of disappearance of 'M' increases by a factor of 8 upon doubling the concentration of M. The order of the reaction with respect to M is

- A) 1
- B) 2
- C) 3
- D) 4
- E) 5

Correct Answer : Option C

24. The pair of elements that has similar atomic radii is

- A) Mo and W
- B) Ti and La
- C) Ag and Ni
- D) Mn and Os
- E) V and W

Correct Answer : Option A

25. Which of the following lanthanide ion is coloured?

- A) La^{3+}
- B) Lu^{3+}
- C) Gd^{3+}
- D) Sm^{3+}
- E) Yb^{2+}

Correct Answer : Option D

26. A compound of manganese that has intense colour, diamagnetic and temperature dependent weak paramagnetic. What is the compound?

- A) K_2MnO_4
- B) MnO_2
- C) $KMnO_4$
- D) MnO
- E) Mn_2O_3

Correct Answer : Option C

27. Which one of the statements is not the limitation of valence bond theory of complexes?

- A) It does not give a quantitative interpretation of the thermodynamic stabilities.
- B) It does not give quantitative interpretation of magnetic properties..
- C) It explains the colour exhibited by coordination compounds.
- D) It does not distinguish between weak and strong ligands.
- E) It does not make exact predictions regarding the tetrahedral structures of 4-coordinated complexes.

Correct Answer : Option C

28. The IUPAC name of the complex $[Co(NH_3)_5ONO]Cl_2$ is

- A) Pentaamminenitritocobalt (III) chloride
- B) Pentaamminenitritocobalt (II) chloride
- C) Pentaamminenitrocobalt (III) chloride
- D) O-Nitritopentaammincobalt (III) chloride
- E) Pentaamminemononitritocobalt (III) chloride

Correct Answer : Option A

Which of the following method/s is/are used in the estimation of nitrogen in organic compounds?

- 29.** (i) Carius method
(ii) Dumas method
(iii) Silver salt method
(iv) Kjeldhal method
- A) (i) only
 - B) (ii) and (iii)
 - C) (iii) and (iv)
 - D) (ii) and (iv)
 - E) (i) and (iii)

Correct Answer : Option D

30. On treating the sodium fusion extract with sodium nitroprusside, the blood red colour is formed due to the formation of

- A) PbS
- B) $NaCN$
- C) SCN

- D) $[\text{Fe}(\text{SCN})]^{2+}$
E) $[\text{Fe}(\text{CN})_5\text{NOS}]^{4-}$

Correct Answer : Option D

31. Which one of the following reaction is called Kolbe's method?

- A) Hydrogenation of propyne with Pt/Pd/Ni
B) Chlorination of chloroform.
C) Treatment of alkyl halides with sodium metal in dry ethereal solution.
D) Electrolysis of an aqueous solution of potassium carboxylates.
E) Isomerization of n-hexane to 2-methylpentane in presence of anhy. AlCl_3 / HCl.

Correct Answer : Option D

32. Dodecane, a constituent of kerosene oil on heating to 973 K in the presence of nickel gives

- A) pentane and hexane
B) hexane and butane
C) heptane and pentene
D) heptene and pentane
E) heptane and pentane

Correct Answer : Option C

33. Heating of 2-chloro-1-phenyl butane with EtOK/EtOH gives 'X' as the major product. The reaction of 'X' with HBr gives 'Y' as the major product. The 'Y' is

- A) 1-bromo-2-phenyl butane
B) 1-bromo-1-phenyl butane
C) 3-bromo-1-phenyl butane
D) 1-phenyl -1-butene
E) 2-phenyl but-1-ene

Correct Answer : Option B

34. The boiling points of organohalogen compounds are comparatively higher than the corresponding hydrocarbons because of

- A) electrostatic attraction
B) covalent bonding
C) weak dipole-dipole interaction
D) dipole-induced dipole interaction
E) strong dipole-dipole interaction and van der Waals forces of attraction

Correct Answer : Option E

35. The O-H bond length in methanol is

- A) 109 pm
B) 136 pm

- C) 96 pm
- D) 141 pm
- E) 142 pm

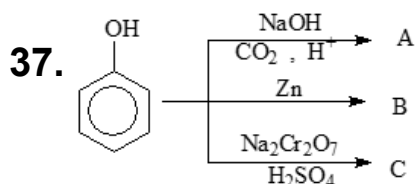
Correct Answer : Option C

36. Which of the following reaction is reversible?

- A) Acid catalysed esterification of acetic acid with methanol.
- B) Reaction between phenol and acid chloride in presence of pyridine.
- C) Acid catalysed reaction between acetic anhydride and salicylic acid.
- D) Dehydration of tertiary butyl alcohol with 20% H_3PO_4 at 358 K.
- E) Dehydration of ethanol with H_2SO_4 at 443 K.

Correct Answer : Option A

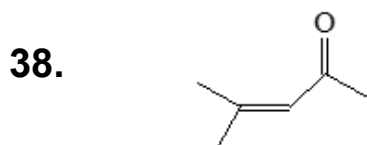
The products A, B & C from the following reactions are respectively



- A) aspirin, salicylic acid and benzene
- B) 2-hydroxybenzoic acid, salicylaldehyde and quinol
- C) salicylic acid, quinone and cyclohexanone
- D) salicylaldehyde, benzene and cyclohexanol
- E) 2-hydroxybenzoic acid, benzene and benzoquinone

Correct Answer : Option E

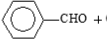
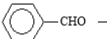
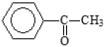
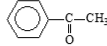
The IUPAC name of the following compound is



- A) 2-Methylpent-2-en-2-one
- B) 3-Methylpent-2-en-2-one
- C) 4-Methylpent-2-en-3-one
- D) 4-Methylpent-3-en-2-one
- E) 1,1-Dimethylbuten-2-one

Correct Answer : Option D

39. Match the following:

Reaction	Type of reaction
(i)  + Con. NaOH $\xrightarrow{\Delta}$	(a) Oxidation
(ii)  $\xrightarrow[273-283\text{ K}]{\text{HNO}_3 / \text{H}_2\text{SO}_4}$	(b) Reduction
(iii)  $\xrightarrow{\text{NaOX}}$	(c) Disproportionation
(iv)  $\xrightarrow[\text{HCl}]{\text{Zn-Hg}}$	(d) Electrophilic substitution
	(e) Addition

- A) (i)-(b), (ii)-(a), (iii)-(d), (iv)-(c)
 B) (i)-(b), (ii)-(a), (iii)-(d), (iv)-(e)
 C) (i)-(c), (ii)-(a), (iii)-(d), (iv)-(b)
 D) (i)-(c), (ii)-(d), (iii)-(a), (iv)-(b)
 E) (i)-(c), (ii)-(e), (iii)-(a), (iv)-(b)

Correct Answer : Option D

40. The HVZ reaction involves the

- A) conversion of carboxylic acid into primary alcohol
 B) conversion of carboxylic acid into α -halo acid
 C) conversion of acetic acid into acetamide
 D) conversion of acetic acid into methane
 E) conversion of acetic acid into acetyl chloride

Correct Answer : Option B

41. Which one of the following compounds is strongly basic in aqueous medium?

- A) Benzenamine
 B) N-ethylethanamine
 C) Phenylmethanamine
 D) N,N-Dimethylbenzenamine
 E) Ammonia

Correct Answer : Option B

42. The correct formula of Hinsberg's reagent is

- A) $\text{C}_6\text{H}_5\text{SO}_2\text{Cl}$
 B) $\text{C}_6\text{H}_5\text{SOCl}$
 C) $\text{C}_6\text{H}_5\text{SOCl}_2$
 D) $\text{C}_6\text{H}_5\text{SO}_3\text{Cl}$
 E) $\text{C}_6\text{H}_5\text{SO}_2\text{Cl}_2$

Correct Answer : Option A

43. Which of the following reaction yieldstarry oxidation products?

- A) Sulphonation of aniline
- B) Nitration of aniline
- C) Friedel-Crafts alkylation aniline
- D) Friedel-Crafts alkylation of aniline
- E) Bromination of aniline

Correct Answer : Option B

44. Which of the following is a water insoluble carbohydrate?

- A) Sucrose
- B) Maltose
- C) Amylose
- D) Amylopectin
- E) Lactose

Correct Answer : Option D

45. Which of the following set of amino acids have one letter code as F and Q ?

- A) Glutamine and Leucine
- B) Arginine and Leucine
- C) Phenylalanine and Tryptophan
- D) Glutamic acid and Proline
- E) Phenylalanine and Glutamine

Correct Answer : Option E

46. The displacement of a particle is given by $x = at + bt^{\frac{3}{2}}$ where t has dimensions, T and a and b are constants. The dimensions of $\frac{b}{a}$ are:

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

Correct Answer : Option E

47. The velocity (v) – time (t) graph of a particle cuts the time axis, then the particle

- A) has maximum displacement at that instant
- B) reverses its direction of motion at that instant
- C) has a constant velocity throughout its motion
- D) has maximum acceleration at that point
- E) has maximum velocity at that instant

Correct Answer : Option B

Two particles A and B at rest initially, start to move simultaneously along the same straight line, A with constant velocity 5 ms^{-1} and B with constant acceleration, 2 ms^{-2} . Then the time after which B overtakes A is

- A) 5 s
- B) 10 s
- C) 15 s
- D) 20 s
- E) 25 s

Correct Answer : Option A

49. A particle of mass m tied to a string of length r is whirled in a vertical circle. Its minimum speed at the bottom is

- A) $\frac{\sqrt{gr}}{2}$
- B) $\sqrt{9gr}$
- C) $\sqrt{3gr}$
- D) $\sqrt{2gr}$
- E) $\sqrt{5gr}$

Correct Answer : Option E

50. 0.2 kg ball strikes a wall with velocity 10 ms^{-1} and rebounds with 8 ms^{-1} . The impulse delivered by the ball is

- A) 0.4 Ns
- B) 3.6 Ns
- C) 1.4 Ns
- D) 1.8 Ns
- E) 16.0 Ns

Correct Answer : Option B

51. A particle moves under a force $F = 3x^2 \text{ N}$. The work done by the force on the particle in displacing it from $x=0$ to $x=2\text{m}$ is

- A) 12 J
- B) 3 J
- C) 6 J
- D) 8 J
- E) 15 J

Correct Answer : Option D

52. The power of a motor pump delivering water at a constant speed through a hose of radius r is P . If the radius of the hose is doubled, then the power of the pump becomes
- A) P
 - B) $2P$
 - C) $4P$
 - D) $8P$
 - E) $16P$

Correct Answer : Option C

53. Two particles of masses m and $2m$ kept 1 m apart are attracted to each other by gravitational force. The acceleration of their centre of mass is (G = gravitational constant)
- A) Gm
 - B) $2Gm$
 - C) $3Gm$
 - D) Gm^2
 - E) zero

Correct Answer : Option E

- If a thin uniform circular ring and a thin uniform circular disc have the same mass and
54. radius, then the ratio of their moments of inertia about their central axes normal to their planes is
- A) $3 : 2$
 - B) $2 : 3$
 - C) $1 : 4$
 - D) $1 : 2$
 - E) $2 : 1$

Correct Answer : Option E

55. The angular speed of a geostationary satellite (in rad h^{-1}) is
- A) $\frac{\pi}{365}$
 - B) $\frac{\pi}{24}$
 - C) $\frac{\pi}{12}$
 - D) $\frac{\pi}{30}$
 - E) $\frac{\pi}{18}$

Correct Answer : Option C

56. The terminal velocity of a small steel ball of radius r falling in a fluid is proportional to
- A) r

- B) r^3
- C) r^2
- D) $\frac{1}{r}$
- E) $\frac{1}{r^2}$

Correct Answer : Option C

57. Hydrostatic pressure at a depth of a liquid in a container depends on

- A) shape of container
- B) total volume of the liquid
- C) area of base of the container
- D) density of the liquid and the depth
- E) total mass of the liquid

Correct Answer : Option D

58. Carnot engine operates between temperatures, 600 K and 300 K. If it absorbs 1200 J of heat from source, the work done by the engine is

- A) 6000 J
- B) 3600 J
- C) 2400 J
- D) 1200 J
- E) 600 J

Correct Answer : Option E

59. The temperature at which the rms speed of oxygen molecules becomes equal to the rms speed of hydrogen molecules at 300 K is:

- A) 4800 K
- B) 2400 K
- C) 1200 K
- D) 600 K
- E) 300 K

Correct Answer : Option A

60. A particle executes SHM with a time period T . If its maximum acceleration is doubled keeping the amplitude constant, its new time period is

- A) T
- B) $2T$
- C) $\frac{T}{2}$
- D) $\frac{T}{\sqrt{2}}$
- E) $\sqrt{2}T$

Correct Answer : Option D

- 61.** A string of length L fixed at both ends vibrates in third harmonic. The distance between consecutive nodes is
- A) L
 - B) $\frac{L}{2}$
 - C) $\frac{L}{3}$
 - D) $\frac{2L}{3}$
 - E) $2L$

Correct Answer : Option C

- 62.** If the air-core medium is replaced by a dielectric of dielectric constant 'k' in an air-core parallel plate capacitor of capacitance 'C', its new capacitance becomes
- A) $\frac{C}{k}$
 - B) $\frac{C}{2k}$
 - C) C
 - D) Ck^2
 - E) Ck

Correct Answer : Option E

- 63.** Electric-flux through a closed surface depends on the
- A) shape of the surface
 - B) area of the surface
 - C) volume of the surface
 - D) electric field outside the surface
 - E) charge enclosed by the surface

Correct Answer : Option E

- 64.** If a current of 2 A flows through a wire of length 1 m for 1 min, the charge flowing through it during this time is
- A) 1 C
 - B) 2C
 - C) 10C
 - D) 60C
 - E) 120C

Correct Answer : Option E

65. If the length of a uniform metallic wire is halved and its radius is doubled, its resistivity is
- A) halved
 - B) unchanged
 - C) doubled
 - D) tripled
 - E) quadrupled

Correct Answer : Option B

66. A wire of length 0.5 m carrying current 4 A is placed perpendicular to a magnetic field of 0.2 T. The force exerted on the wire is
- A) 0.1 N
 - B) 0.2 N
 - C) 0.4 N
 - D) 0.6 N
 - E) 1.0 N

Correct Answer : Option C

67. If a bar magnet of magnetic moment M is cut into two equal parts perpendicular to its length then its new magnetic moment is
- A) M
 - B) $\frac{M}{2}$
 - C) $2M$
 - D) $\frac{M}{4}$
 - E) $4M$

Correct Answer : Option B

68. An AC circuit with $R = 2\pi^2 \Omega$ and $L = 0.02 \pi \text{ H}$ powered with an a.c. source of frequency 50 Hz has an impedance of
- A) $2\pi^2 \Omega$
 - B) $2\sqrt{2} \pi^2 \Omega$
 - C) 2Ω
 - D) $2\pi \Omega$
 - E) $\pi \Omega$

Correct Answer : Option B

69. If an EM wave travels in a medium with $\epsilon_r = 4$, $\mu_r = 1$, its speed (in ms^{-1}) in terms of c ($c =$ velocity of light in free space) is
- A) c
 - B) $2c$
 - C) $\frac{c}{2}$

D) $\frac{c}{3}$

E) $\frac{c}{4}$

Correct Answer : Option C

70. Light of wavelength 500 nm falls on a single slit of width 0.1 mm. The angular position of the first minimum is

A) $\sin^{-1}(0.05)$

B) $\sin^{-1}(0.2)$

C) $\sin^{-1}(0.5)$

D) $\sin^{-1}(0.005)$

E) $\sin^{-1}(0.0025)$

Correct Answer : Option D

71. An object is placed at 30 cm from a convex lens of focal length 20 cm. If the object is moved towards the lens by 5cm, then the image is shifted by

A) 1 cm

B) 40 cm

C) 4 cm

D) 10 cm

E) 12 cm

Correct Answer : Option B

If the stopping potential in a photoelectric experiment is measured to be 1.82 V, the **72.** maximum speed of the emitted electrons, in ms^{-1} , is
(mass of the electron = 9.1×10^{-31} kg)

A) 8.0×10^5

B) 2.3×10^5

C) 3.0×10^5

D) 7.3×10^6

E) 5.3×10^{11}

Correct Answer : Option A

73. If the binding energy per nucleon of a nucleus is 8.75 MeV and its mass number is 56, then total binding energy is

A) 8 MeV

B) 56 MeV

C) 490 MeV

D) 64 MeV

E) 504 MeV

Correct Answer : Option C

74. Pick out the wrong statement about Bohr atom model:

- A) Orbit of the electron is circular
- B) Model is applicable only for single electron systems
- C) Orbits of the electron are non-radiating
- D) Angular momentum of electron in an orbit is quantized.

- E) Model is applicable for many electron systems also

Correct Answer : Option E

75. In a pure semiconductor at thermal equilibrium:

- A) Number of electrons $>$ number of holes
- B) Number of electrons $=$ number of holes
- C) Number of holes $>$ number of electrons
- D) Only electrons are charge carriers

- E) Only holes are charge carriers

Correct Answer : Option B