PROVISIONAL ANSWER KEY

Question Paper Code: 8/2026/OL

Exam:BPHARM 2026 -2

Date of Test: 19-04-2026

1. The number of molecules of ethane (molar mass = 30) present in 3 g of pure ethane is

A) 6.023×10^{23} molecules

B) 6.023×10^{22} molecules

C) 6.023×10^{21} molecules

D) 6.023×10^{20} molecules

E) 6.023×10^{19} molecules

Correct Answer : Option B

2. The product of uncertainty in position and uncertainty in momentum is constant. This is known as

A) Hund's rule

B) Aufbau principle

C) Heisenberg's principle

D) Einstein's principle

E) Bohr's correspondence principle

Correct Answer : Option C

3. For a given sub-shell with azimuthal quantum number 'l' the number of magnetic quantum numbers possible is

A) $l(l+1)$

B) $l+1$

C) $2(l+1)$

D) $(l-1)$

E) $(2l+1)$

Correct Answer : Option E

4. The number of nodal surfaces present in '4s' orbital is

A) three

B) one

C) two

D) zero

E) four

Correct Answer : Option A

5. Americium belongs to

A) representative elements
B) chalcogens
C) lanthanoids
D) transition elements
E) actinoids

Correct Answer : Option E

6. Which one of the following is not isoelectronic with other isoelectronic species?

A) Ca^{2+}
B) O^{2-}
C) Mg^{2+}
D) Na^{+}
E) F^{-}

Correct Answer : Option A

7. Among the noble gas elements the one with the highest electron gain enthalpy is

A) helium
B) radon
C) krypton
D) xenon
E) neon

Correct Answer : Option E

8. What is the shape of chlorine trifluoride?

A) Tetrahedral
B) T-shape
C) Trigonal planar
D) Seasaw
E) Square pyramidal

Correct Answer : Option B

9. Which of the following molecule does not have zero dipole moment?

A) Nitrogen trifluoride
B) Boron trifluoride
C) Carbon tetrachloride
D) Beryllium difluoride
E) Methane

Correct Answer : Option A

10. The bond order in NO^{+} ion is

A) 3
B) 2
C) 1
D) 2.5
E) 1.5

Correct Answer : Option A

11. The first law of thermodynamics can be stated as
A) the energy of an open systemonly is constant.
B) the energy of isolatedand open systemsis constant.
C) the energy of closed and open systems is constant.
D) the energy of an isolated system only is constant.
E) the energy of a closed system only is constant.

Correct Answer : Option D

12. In a free expansion of a gas
A) heat absorbed is zero.
B) work done is zero.
C) initial pressure is zero.
D) internal energy change is zero.
E) external pressure is zero.

Correct Answer : Option E

13. Which of the following bond has the lowest mean bond enthalpy?
A) Br-Br
B) Cl-Cl
C) F-F
D) H-H
E) I-I

Correct Answer : Option D

14. For the homogenous equilibrium $N_{2(g)} + 3H_{2(g)} \leftrightharpoons 2NH_{3(g)}$, the equilibrium constants K_P and K_C are related as
A) $K_P = K_C (RT)^2$
B) $K_P = K_C (RT)^{-2}$
C) $K_P = K_C (RT)^{-3}$
D) $K_P = K_C (RT)^3$
E) $K_P = K_C (RT)$

Correct Answer : Option B

15. Consider the equilibrium reaction, $X(g) + Y(g) \rightleftharpoons W(g) + Z(g)$. The equilibrium constant K_C for the reaction is 2.0×10^2 at 300 K and it decreases with increase in temperature. Which of the following is true for the reaction?

A) $\Delta H < 0$

B) $\Delta G < 0$

C) $\Delta S < 0$

D) $\Delta H > 0$

E) $\Delta S > 0$

Correct Answer : Option A

16. The oxidation numbers of carbon and hydrogen in methane are respectively

A) +4 and +1

B) +4 and 0

C) -4 and +1

D) -4 and -1

E) +4 and -1

Correct Answer : Option C

17. The standard EMF of the following cell $Mg(s)\,|\,Mg^{+2}\,(0.01M)\,\|\,Ag^{+}(0.0001M)\,|\,Ag(s)$ is 3.17 V at 25^0C. The EMF of the cell at the same temperature is (2.303RT/F at 25^0C is 0.06V)

A) 3.17 V

B) 2.81 V

C) 3.35 V

D) 6.70 V

E) 3.0 V

Correct Answer : Option E

18. The mass of Al deposited when 2 ampere current is passed through a solution of $Al_2(SO_4)_3$ for 1 hour is (F = 96500 C)

A) 0.67 g

B) 1.34 g

C) 0.134 g

D) 0.355 g

E) 0.067 g

Correct Answer : Option A

19. Hypertonic solution contains

A) high molecular weight solutes

B) low molecular weight solutes

C) higher than 0.9% mass/volume of NaCl

D) less than 0.9% mass/volume of NaCl

E) high osmotic pressure

Correct Answer : Option C

20. Molal boiling point elevation is the least for the solvent

A) water

B) ethanol

C) benzene

D) carbon tetrachloride

E) cyclohexane

Correct Answer : Option A

21. The decomposition of H_2O_2 in the presence of I^- in alkaline medium has the rate law

A) $-d[H_2O_2]/dt = k[H_2O_2]$

B) $-d[H_2O_2]/dt = k[H_2O_2]\,[OH^-]$

C) $-d[H_2O_2]/dt = k[H_2O_2]\,[I^-]$

D) $-d[H_2O_2]/dt = k[H_2O_2]½\,[I^-]$

E) $-d[H_2O_2]/dt = k[H_2O_2]\,[I^-]½$

Correct Answer : Option C

22. The rate equation for the reaction xA + yB → mC + nD is rate = k $[A]^{1/2}$ $[B]^{3/2}$. What is the total order of the reaction?

A) 2.0

B) 1.5

C) 1.0

D) 0.5

E) 2.5

Correct Answer : Option A

23. The rate constant of a reaction at 500K is 0.02 and it increased to 0.07 at 700K. The E_a value of the reaction is about
[Given: R=8.3 J K^{-1} mol^{-1} and log (7/2) = 0.544]

A) 180.1 kJ mol^{-1}

B) 36.2 kJ mol^{-1}

C) 54.6 kJ mol^{-1}

D) 42.8 kJ mol^{-1}

E) 18.2 kJ mol^{-1}

Correct Answer : Option E

24. Which of the following pair of lanthanide elements have the same atomic radii?

A) Lanthanum and Lutetium

B) Samarium and Gadolinium

C) Praseodymium and Holmium

D) Terbium and Cerium

E) Promethium and Dysprosium

Correct Answer : Option B

25. When $KMnO_4$ is heated to 513K the products formed are K_2MnO_4 , O_2 and

A) MnO

B) Mn_2O_3

C) Mn_2O_7

D) MnO_2

E) Mn_3O_4

Correct Answer : Option D

26. Which of the following pair of transition metal ions are diamagnetic?

A) Ti^{2+} and Mn^{2+}

B) Mn^{2+} and Ni^{2+}

C) V^{2+} and Cr^{2+}

D) Co^{2+} and Ni^{2+}

E) Sc^{3+} and Zn^{2+}

Correct Answer : Option E

27. The hybridisation involved in nickel of the complex ion $[Ni(CN)_4]^{2-}$ is

A) sp^3

B) d^2sp^3

C) dsp^2

D) sp^3d

E) sp^2

Correct Answer : Option C

28. Which of the following is a didentate ligand?

A) Ethane-1, 2-diamine

B) Chloro

C) Cyanido

D) Ammine

E) EDTA

Correct Answer : Option A

29. When 0.25 g of an organic compound is completely oxidised with excess oxygen, 0.22 g of CO_2 is produced. What is the percentage of carbon in the compound?

A) 40 %
B) 24 %
C) 48 %
D) 30 %
E) 18 %

Correct Answer : Option B

30. When ethene is treated with H_2 in the presence of a catalyst, ethane is formed. This reaction is an example of

A) substitution reaction
B) elimination reaction
C) oxidation reaction
D) addition reaction
E) rearrangement reaction

Correct Answer : Option D

31. Eclipsed and staggered forms of n-butane are

A) chain isomers
B) position isomers
C) rotamers
D) geometrical isomers
E) metamers

Correct Answer : Option C

32. The most acidic hydrogen is present in

A) propene
B) 1, 3-butadiene
C) 2-butyne
D) propyne
E) n-butane

Correct Answer : Option D

33. Which of the following organic halogen compound has high reactivity towards S_N1 mechanism?

A) Chloroethane
B) Iodoethane
C) Chlorobenzene

D) 2-Chloropropane

E) Benzyl chloride

Correct Answer : Option E

34. Grignard reagent is prepared by the action of ----- on bromoethane in ----- medium.

A) Na, H_2O

B) Mg, H_2O

C) Mg, dry ether

D) Na, dry ether

E) Cu, H_2O

Correct Answer : Option C

35. The compound with the lowest pKa value is

A) ethanol

B) phenol

C) *p*-nitrophenol

D) *o*-cresol

E) *p*-cresol

Correct Answer : Option C

36. 2-Bromopropane reacts with Mg in dry ether to give a product which on treatment with HCHO forms an addition product. The addition product on hydrolysis forms

A) 1-butanol

B) 2-butanol

C) 2-propanol

D) 2-methyl-1-propanol

E) 2-methyl-2-propanol

Correct Answer : Option D

37. Intramolecular hydrogen bond is present in

A) phenol

B) *o*-nitrophenol

C) *p*-nitrophenol

D) *o*-cresol

E) *p*-cresol

Correct Answer : Option B

38. Which of the following undergoes haloform reaction?

A) Benzophenone

B) 2, 2-Dimethylpropanal

C) Methanal

D) Propanone
E) Propanal

Correct Answer : Option D

39. Benzaldehyde reacts with HNO_3/H_2SO_4 at 273-283 K to give
A) benzoic acid
B) *m*-nitrobenzoic acid
C) *m*-nitrobenzaldehyde
D) *o*-nitrobenzaldehyde
E) *o*-nitrobenzoic acid

Correct Answer : Option C

40. The common name of propanedioic acid is
A) succinic acid
B) malonic acid
C) glutaric acid
D) oxalic acid
E) adipic acid

Correct Answer : Option B

41. An aliphatic amine reacts with Hinsberg's reagent to give a product insoluble in NaOH. The amine is
A) ethanamine
B) N-methylethanamine
C) benzenamine
D) N, N-diethylethanamine
E) p-toludine

Correct Answer : Option B

42. When ethanamide is treated with Br_2 and NaOH in ethanolic solution we get
A) ethanamine
B) bromoethanamide
C) bromoethane
D) methanamine
E) 2-bromoethanamine

Correct Answer : Option D

43. Benzenamine reacts with ethanoic anhydride to give
A) benzamide
B) N-phenylbenzamide
C) N-phenylethanamide

D) *o*-aminoacetophenone

E) *p*-ethylbenzamide

Correct Answer : Option C

44. Glucose reacts with HNO_3 to give

A) gluconic acid

B) saccharic acid

C) adipic acid

D) glyceric acid

E) tartaric acid

Correct Answer : Option B

45. Which of the following is a sulphur containing α-amino acid?

A) Glutamine

B) Asparagine

C) Threonine

D) Serine

E) Cysteine

Correct Answer : Option E

46. The value of the measurement $14.0 \times 10^{-5} + 8.3 \times 10^{-3}$ with respect to significant figures is

A) 8.4×10^{-3}

B) 2.43×10^{-3}

C) 8.314×10^{-3}

D) 8.44×10^{-3}

E) 8.440×10^{-3}

Correct Answer : Option A

47. The displacement of a particle moving along x-axis is given as $\left(x = \frac{3}{4}t^2 - 12t + 3\right)$m. . The particle will come to rest in

A) 4 s

B) 5s

C) 16 s

D) 8 s

E) 6s

Correct Answer : Option D

48. If the magnitude of the vector $\vec{P} = x\hat{i} + 0.8\hat{j} + 0.6\hat{k}$ is 2, then the value of x is

A) $\sqrt{5}$

B) 2

C) 3

D) $\sqrt{3}$

E) $\sqrt{2}$

Correct Answer : Option D

49. The linear speed of a stone revolving 5 times in a circle of 4 cm radius in 2 minute is (in cms^{-1})

A) $\frac{\pi}{4}$

B) $\frac{2\pi}{4}$

C) $\frac{\pi}{2}$

D) $\frac{3\pi}{4}$

E) $\frac{\pi}{3}$

Correct Answer : Option E

50. When two perpendicular forces 3 N and 4 N act on a body at rest, it is accelerated to 2 $ms^{-2.}$ The mass of the body is

A) 1.5 kg

B) 2.5 kg`

C) 3 kg

D) 3.5 kg

E) 2 kg

Correct Answer : Option B

51. A ball falling from a height of 20 m hits a floor and bounces back to a height of 17 m. The percentage of energy lost by the ball during the impact is

A) 7.5

B) 10

C) 15

D) 5

E) 20

Correct Answer : Option C

52. A spring of spring constant *k* is cut into *n* pieces of equal length. The force constant of any one of the pieces is

A) $\frac{n^2}{k}$

B) $\frac{k}{n}$

C) nk^2

D) $\frac{n}{k}$

E) nk

Correct Answer : Option E

53. When the total external force acting on a moving system is zero, the velocity of the center of mass

A) remains constant

B) becomes zero

C) increases

D) becomes infinity

E) decreases

Correct Answer : Option A

54. In a steam engine, the flywheel is used to resist

A) the slight increase or decrease of the speed of the vehicle

B) the sudden increase or decrease of the speed of the vehicle

C) the sudden stoppage of the vehicle

D) only the sudden increase of the speed of the vehicle

E) only the slight decrease of the speed of the vehicle

Correct Answer : Option B

55. When a satellite moves from the farthest stable orbit to the nearest stable orbit towards the earth, its gravitational potential energy

A) increases

B) becomes zero

C) remains constant

D) decreases

E) first increases then decreases

Correct Answer : Option D

56. Which one is INCORRECT?

A) Stress is not a vector.

B) Young’s modulus is applicable only for solids

C) Compressibility is relevant for solids, liquids and gases

D) Elastomers have larger Young’s modulus than metals

E) Tension per unit area is equal to the tensile stress

Correct Answer : Option D

57. Two different syringes having radii in the ratio 1: 5 are applied with same pressure. The forces acting on these syringes are in the ratio

A) 5 : 1

B) 1 : 10

C) 1 : 25

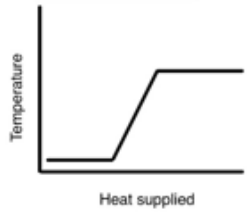
D) 25 : 1

E) 1 : 5

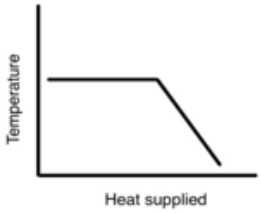
Correct Answer : Option C

58. Heat supplied to a block of ice at 0^oC converts it into steam at 100^oC . The curve that represents this change of state is

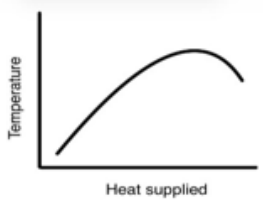
A)



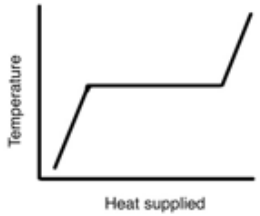
B)



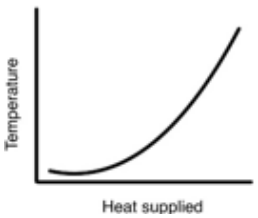
C)



D)



E)



Correct Answer : Option A

59. If the diatomic molecule is non-rigid, then its molar specific heat capacity at constant volume is

A) $\frac{5}{2}R$

B) $\frac{7}{2}R$

C) $\frac{1}{2}R$

D) $\frac{9}{2}R$

E) $\frac{3}{2}R$

Correct Answer : Option B

60. The displacement and acceleration of a particle oscillating simple harmonically are respectively 3.0 m and 48.0 ms^{-2}. The angular frequency of the particle is (in s^{-1})

A) 6

B) 3

C) 5

D) 2

E) 4

Correct Answer : Option E

61. An organ pipe open at both the ends has its fundamental frequency 200 Hz. If one end of it is closed and the other end is kept open, the frequencies produced by it are

A) 200 Hz, 400 Hz, 600 Hz, 800 Hz….

B) 200 Hz, 300 Hz, 400 Hz, 500 Hz….

C) 100 Hz, 300 Hz, 500 Hz, 700 Hz….

D) 100 Hz, 200 Hz, 300 Hz, 400 Hz….

E) 200 Hz, 250 Hz, 300 Hz, 350 Hz….

Correct Answer : Option C

62. If the potential difference between two points separated by a distance in a uniform electric field of 800 NC^{-1} is 16 V, then the distance of separation (in cm) is

A) 2.0

B) 3.0

C) 1.5

D) 2.5

E) 1.0

Correct Answer : Option A

63. When filled with a dielectric, the capacitance C of a capacitor changes by 2C. Then the dielectric constant of the dielectric is

A) 1

B) 4

C) 5

D) 3

E) 2

Correct Answer : Option D

64. The drift velocity of electrons in a linear conductor of given length under a potential can be doubled by

A) decreasing the potential 4 times
B) increasing the potential 2 times
C) decreasing the potential 8 times
D) increasing the potential 4 times
E) decreasing the potential 2 times

Correct Answer : Option B

65. When an electric potential of 200 V is maintained between the ends of a conductor, a current of 3 A flows through it. The amount of heat energy dissipated in the time interval 25 s is

A) 3 kJ
B) 22.5 kJ
C) 7.5 kJ
D) 6 kJ
E) 15 kJ

Correct Answer : Option E

66. In a cyclotron, the frequency of revolution of a charged particle of energy E moving in a magnetic field is f . If the energy of the charged particle in it is doubled, then the frequency of revolution of the charged particle is

A) f
B) $\frac{f}{2}$
C) $2f$
D) $\frac{f}{4}$
E) $4f$

Correct Answer : Option A

67. Among the following magnetic materials, the diamagnetic material is

A) gadolinium
B) sodium
C) bismuth
D) calcium
E) iron

Correct Answer : Option C

68. If an *emf* of 2 V is induced in a coil in 6 s, then the change of flux (in Wb) in the coil during the time is

A) 3
B) 24
C) 6
D) 18
E) 12

Correct Answer : Option E

69. If the force due to sun's radiation on surface area of cm^2 is about 9×10^{-9} N, then the radiation pressure of the sun's radiation(in Nm^{-2})is

A) 1.8×10^{-6}
B) 4.5×10^{-6}
C) 3.6×10^{-6}
D) 2.45×10^{-6}
E) 1.2×10^{-6}

Correct Answer : Option B

70. 5 thin lenses each of 20 cm focal length are placed in contact with each other. The net power of this lens combination is

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

Correct Answer : Option D

71. In Young's double slit experiment, monochromatic light of 500 nm falls on the slits separated by a distance of 2 mm. If the screen is 2 m away from the source, then the fringe width is

A) 5 mm
B) 2.0 mm
C) 0.5 mm
D) 2.5 mm
E) 1.5 mm

Correct Answer : Option C

72. The work function of a material that has the threshold frequency of 5×10^{14}Hz is ($h = 6.626 \times 10^{-34}$ Js)

A) 3.09eV
B) 5.35eV
C) 4.14eV
D) 2.07 eV

E) 1.03eV

Correct Answer : Option D

73. The energy of the electron in third excited state of the hydrogen atom is

A) -0.54 eV
B) -1.51 eV
C) -13.6 eV
D) -3.4 eV
E) -0.85 eV

Correct Answer : Option E

74. The expected mass of $^{12}_{6}C$ nucleus is
(Mass of neutron is 1.00866 u; Mass of proton is 1.00727 u)

A) 8.0637 u
B) 12.0956 u
C) 6.0478 u
D) 2.0159 u
E) 10.0797 u

Correct Answer : Option B

75. If the voltage applied to a diode having forward bias resistance of 1 Ω is changed from 0.6 V to 0.9 V, the change in current in it is

A) 300 mA
B) 250 mA
C) 400 mA
D) 450 mA
E) 750 mA

Correct Answer : Option A