

FINAL ANSWER KEY

Question Paper Code: 10/2025/OL

Exam:KEAM 2025 BPHARM-2

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1. What is the value of the sum of 12.1100 +18.0 +1.012 as per the rule of significant figures?

- A) 31.1220
- B) 31.122
- C) 31.12
- D) 31.1
- E) 31

Correct Answer : Option D

2. In which of the following spectral region Balmer series lines are observed for atomic hydrogen?

- A) Visible
- B) Ultraviolet
- C) Microwave
- D) Infrared
- E) Radiowave

Correct Answer : Option A

3. The product of uncertainty in position (Δx) and uncertainty in velocity (Δv) has the unit of

- A) $m s^{-1}$
- B) $m s^{-2}$
- C) $m^2 s$
- D) $m^{-2} s^{-1}$
- E) $m s^{-2} s$

Correct Answer : Option D

4. The inert gas element with the largest positive electron gain enthalpy is

- A) *He*
- B) *Ne*
- C) *Kr*
- D) *Ar*
- E) *Rn*

Correct Answer : Option B

5. The IUPAC name of element with atomic number 105 is

- A) Mendeleevium
- B) Nobelium
- C) Lawrencium
- D) Rutherfordium
- E) Dubnium

Correct Answer : Option E

6. In which one of the following compounds, there is complete octet of central atom?

- A) BF_3
- B) BeH_2
- C) SCl_2
- D) $AlCl_3$
- E) $LiCl$

Correct Answer : Option C

7. Which one of the following molecule/ion has square planar shape?

- A) SF_4
- B) NH_4^+
- C) CH_2Cl_2
- D) CH_4
- E) XeF_4

Correct Answer : Option E

8. Which of the following relationship is correct?

- A) $C_p + C_v = R$
- B) $C_p / C_v = R$
- C) $C_p - C_v = R$
- D) $C_v / C_p = R$
- E) $C_v - C_p = R$

Correct Answer : Option C

Consider the following thermodynamic properties of a system:

9. (i) Volume (ii) Pressure (iii) Density (iv) Heat capacity
The extensive property/properties of the system is/are

- A) (ii) and (iv)
- B) (iv) only
- C) (i), (ii) and (iii)
- D) (i) and (iv)
- E) (iii) and (iv)

Correct Answer : Option D

10. An aqueous solution of which of the following has the highest pH value?

- A) 0.10 M HCl
- B) 0.50 M H_2SO_4
- C) 0.10 M $NaOH$
- D) 0.5 M HCl
- E) 0.01 M $NaOH$

Correct Answer : Option C

In the following reaction, the change in oxidation state of Magnesium is

11. $3Mg_{(s)} + N_{2(g)} \xrightarrow{\Delta} Mg_3N_{2(s)}$

- A) 0 to + 2
- B) 0 to + 3
- C) 0 to + 4
- D) 0 to + 6
- E) 0 to - 2

Correct Answer : Option A

The resistance of 0.10 M KCl solution when measured with a conductivity cell at 298 K is

12. 100Ω . If the conductivity of 0.10 M KCl solution is $1.29 Sm^{-1}$, what is the value of cell constant of the same solution at 298 K?

- A) $1.29 m^{-1}$
- B) $1.29 \times 10^{-2} m^{-1}$
- C) $0.129 cm^{-1}$
- D) $1.29 cm^{-1}$
- E) $0.129 m^{-1}$

Correct Answer : Option D

N_2 exerts a partial pressure of 7.648 bar when dissolved in 1 litre of water at 298 K. What

13. is the mole fraction of N_2 at same temperature? (Henry's law constant (K_H) for N_2 at 298 K = 76.4 k bar)

- A) 10^{-5}
- B) 10^{-3}
- C) 10^{-4}
- D) 10^{-6}
- E) 10^{-2}

Correct Answer : Option C

- 14.** An example of pseudo first order reaction is
- A) Thermal decomposition of N_2O_5
 - B) Inversion of cane sugar
 - C) Decomposition of gaseous NH_3 on hot Pt surface
 - D) Radioactive decay of ${}^{226}_{88}R$
 - E) Hydrogenation of ethene

Correct Answer : Option B

- 15.** For a first order reaction with rate constant 'k', the slope of the line obtained by plotting $\log \left(\frac{[R_o]}{[R]} \right)$ vs time is
- A) $(k / 2.303)$
 - B) $k \times 2.303$
 - C) $(-k / 2.303)$
 - D) $(2.303 / k)$
 - E) $(-2.303 / k)$

Correct Answer : Option A

- 16.** The outer electronic configuration of ground state chromium is
- A) $3d^64s^0$
 - B) $3d^54s^1$
 - C) $3d^44s^2$
 - D) $4d^64s^0$
 - E) $4d^44s^2$

Correct Answer : Option B

- 17.** The first transition series metal with the highest melting point is
- A) Iron
 - B) Vanadium
 - C) Chromium
 - D) Manganese
 - E) Copper

Correct Answer : Option C

- 18.** Which of the following $3d$ metal forms only dihalide?
- A) Titanium
 - B) Vanadium

- C) Copper
- D) Chromium
- E) Zinc

Correct Answer : Option E

19. When potassium permanganate is heated to 513 K it forms

- A) Mn_2O_3 and O_2
- B) MnO_2 and K_2O
- C) Mn_2O_3 , MnO_2 and K_2O
- D) K_2MnO_4 , MnO_2 and O_2
- E) k_2MnO_4 and O_2

Correct Answer : Option D

20. Which of the following lanthanoid has the outer electronic configuration $4f^7 6s^2$ in its ground state?

- A) Neodymium
- B) Gadolinium
- C) Europium
- D) Promethium
- E) Samarium

Correct Answer : Option C

21. Which of the following statement is INCORRECT?

- A) The actinoids show in general +3 oxidation state.
- B) Actinoids are less reactive metals.
- C) The magnetic properties of actinoids are more complex than those of lanthanoids.
- D) Hydrochloric acid attacks actinoids.
- E) Nitric acid slightly attacks actinoids.

Correct Answer : Option B

When $CoCl_3$ solution is treated with excess ammonia, a violet coloured complex is formed

22. which conducts current. Also, it gives one mole of $AgCl$ when treated with $AgNO_3$. What is the chemical formula of the complex?

- A) $[CoCl_2(NH_3)_4]Cl$
- B) $[CoCl_3(NH_3)_3]$
- C)



Correct Answer : Option A

23. The IUPAC name of the following complex $[Cr(H_2O)_3(NH_3)_3]Cl_3$ is

- A) Triamminetriaquachromium(III) chloride
- B) Triaquatriamminechromium(III) chloride
- C) Triaquatriamminechromium(II) chloride
- D) Triamminetriaquachromium(II) chloride
- E) Triaquatriamminechromium(III) trichloride

Correct Answer : Option A

24. $[Fe(H_2O)_5(ONO)]Cl$ and $[Fe(H_2O)_5(NO_2)]Cl$ are the examples of

- A) Solvate isomerism
- B) Geometrical isomerism
- C) Linkage isomerism
- D) Ionisation isomerism
- E) Coordination isomerism

Correct Answer : Option D

25. Which of the following complex ion is diamagnetic?

- A) $[MnCl_6]^{3-}$
- B) $[Fe(CN)_6]^{3-}$
- C) $[Co(C_2O_4)_3]^{3-}$
- D) $[FeF_6]^{3-}$
- E) $[CoF_6]^{3-}$

Correct Answer : Option C

26. Which one of the following is an example of heterocyclic aromatic compound?

- A) Phenol
- B) Aniline
- C) Toluene
- D) Naphthalene

E) Furan

Correct Answer : Option E

27. Which of the following functional groups will show $-R$ effect?

- A) $-OH$
- B) $-OCH_3$
- C) $-NH_2$
- D) $-NO_2$
- E) $-NHCOCH_3$

Correct Answer : Option D

28. When bromoethane is treated with metallic Na in dry ethereal solution, n-butane is formed. This reaction is known as

- A) Kolbe's reaction
- B) Wurtz reaction
- C) Williamson reaction
- D) Fittig reaction
- E) Friedel-Crafts reaction

Correct Answer : Option B

29. Which of the following compound does not exhibit aromaticity?

- A) Cyclohexene
- B) Benzene
- C) Thiophene
- D) Pyridine
- E) Naphthalene

Correct Answer : Option A

30. The *ortho* - , *para* - directing and deactivating group in aromatic electrophilic substitution reaction is

- A) $-CH_3$
- B) $-OH$
- C) $-Cl$
- D) $-NO_2$
- E) $-COOH$

Correct Answer : Option C

31. The hydrocarbon that forms disodium salt with excess metallic sodium is

- A) ethane
- B) ethene

- C) benzene
- D) propyne
- E) ethyne

Correct Answer : Option E

32. Which of the following compound will have highest boiling point ?

- A) CH_3F
- B) CH_3CH_2F
- C) CH_3Cl
- D) CH_3I
- E) CH_3Br

Correct Answer : Option E

33. When chlorobenzene is treated with acetyl chloride in the presence of anhydrous $AlCl_3$, 4-Chloroacetophenone is formed as the major product. It is an example of

- A) Nucleophilic substitution
- B) Electrophilic substitution
- C) Free radical substitution
- D) Nucleophilic addition
- E) Electrophilic addition

Correct Answer : Option B

34. An optically active compound among the following is

- A) 1-Chlorobutane
- B) neo-Pentyl chloride
- C) Isobutyl chloride
- D) tert-Butyl chloride
- E) 2-Chlorobutane

Correct Answer : Option E

35. Phenetole is

- A) Ethoxybenzene
- B) Methoxyethane
- C) Methoxybenzene
- D) 1-Methoxypropane
- E) 2-Methoxypropane

Correct Answer : Option A

36. Acetone can be converted into 2-methylpropan-2-ol using

- A) Pd / H_2

- B) $B_2H_6 / H_2O_2, NaOH$
- C) CH_3MgI / H_2O
- D) $LiAlH_4$
- E) $NaBH_4$

Correct Answer : Option C

37. Which of the following is the weakest acid?

- A) Phenol
- B) *p*-Nitrophenol
- C) *p*-Cresol
- D) Ethanol
- E) *m*-Cresol

Correct Answer : Option D

38. Lucas reagent is

- A) *Con.* $HNO_3 + ZnCl_2$
- B) *Con.* $HCl + ZnCl_2$
- C) *Con.* $H_2SO_4 + ZnCl_2$
- D) Acetic acid + $ZnCl_2$
- E) Oleium + $ZnCl_2$

Correct Answer : Option B

39. Which of the following carboxylic acid is used in the manufacture of nylon-6,6?

- A) Ethanedioic acid
- B) Propanedioic acid
- C) Butanedioic acid
- D) Pentanedioic acid
- E) Hexanedioic acid

Correct Answer : Option E

40. The reagent/s employed in Etard reaction is/are

- A) $Cl_2 / h\nu, H_3O^+$
- B) $CrO_2Cl_2 / CS_2, H_3O^+$
- C) $CO, HCl, \text{anhydrous } AlCl_3 / CuCl$
- D) $SnCl_2, HCl$
- E) DIBAL-H

Correct Answer : Option B

- Nitrobenzene is treated with Sn / HCl to give a compound (X) which on treatment with $NaNO_2$ and HCl at 278 K gives compound (Y). When the compound (Y) is treated with Cu / HBr , compound 'Z' is obtained. The compound 'Z' is
- Benzene
 - Benzene diazonium bromide
 - Phenol
 - Bromobenzene
 - Chlorobenzene

Correct Answer : Option D

42. Carbylamine is obtained when aniline is
- heated with $Con.H_2SO_4$
 - treated with $NaNO_2 / HCl$
 - heated with $CHCl_3$ and ethanolic KOH
 - treated with $CHCl_3$ and HCl
 - treated with HCl

Correct Answer : Option C

- The following amines are having same molecular masses.
43. (i) $n - C_4H_9NH_2$ (ii) $(C_2H_5)_2NH$ (iii) $C_2H_5N(CH_3)_2$
- The correct order of boiling point of the above amines is
- (i) > (ii) > (iii)
 - (ii) > (iii) > (i)
 - (iii) > (i) > (ii)
 - (ii) > (i) > (iii)
 - (i) > (iii) > (ii)

Correct Answer : Option A

44. Which of the following vitamin deficiency causes convulsions?
- Riboflavin
 - Thiamine
 - Ascorbic acid
 - Pyridoxine
 - Vitamin D

Correct Answer : Option D

45. Which of the following amino acid is optically inactive?
- Glycine
 - Alanine
 - Valine
 - Leucine

E) Arginine

Correct Answer : Option A

46. The value of one barn in SI unit is

- A) $10^{-28}m^2$
- B) $10^{-20}m^2$
- C) $10^{-16}m^2$
- D) $10^{-32}m^2$
- E) $10^{-15}m^2$

Correct Answer : Option A

If a moving body changes its position from x_1 to x_2 in a time interval

47. Δt , then $\frac{x_2 - x_1}{\Delta t}$ is defined as

- A) average acceleration
- B) average velocity
- C) instantaneous acceleration
- D) instantaneous velocity
- E) average displacement

Correct Answer : Option B

48. A car at rest is accelerated at $2ms^{-2}$ for 1 minute and then retarded at $2ms^{-2}$ for 1 minute to attain rest. The distance travelled by the car is

- A) 3600 m
- B) 1800 m
- C) 9600 m
- D) 4800 m
- E) 7200 m

Correct Answer : Option E

49. If the forces acting on two bodies of masses 2 kg and 3 kg are same, then the ratio of their respective accelerations is

- A) 1 : 1
- B) 1 : 2
- C) 2 : 3
- D) 3 : 2
- E) 4 : 9

Correct Answer : Option D

50. The area under the curve drawn between the force F and time t is

- A) torque
- B) impulse
- C) work done
- D) power
- E) kinetic energy

Correct Answer : Option B

51. A rain drop of mass 10 g falls from a height of 50 m from rest. If the loss of energy due to air resistance is 3 J , then the velocity of the drop on striking the ground is ($g = 10\text{ms}^{-2}$)

- A) 10 m s^{-1}
- B) 5 ms^{-1}
- C) 30 ms^{-1}
- D) 40 ms^{-1}
- E) 20 ms^{-1}

Correct Answer : Option E

52. A lift with a load of 1000 kg is moving up against the frictional force 2000 N . If the power delivered to it by the operating motor is 36000 W , then the speed of the lift is ($g = 10\text{ms}^{-2}$)

- A) 2 ms^{-1}
- B) 4 ms^{-1}
- C) 3 ms^{-1}
- D) 6 ms^{-1}
- E) 10 ms^{-1}

Correct Answer : Option C

53. The CORRECT statement for a rigid body rotating about a fixed axis with angular velocity ω is

- A) ω is directed perpendicular to the axis of rotation
- B) all the particles move with same speed
- C) ω is a scalar quantity
- D) ω has no direction
- E) different particles move in different circles

Correct Answer : Option E

54. If the moment of inertia of a circular disc about its central axis is I , then that for the same disc about its diameter is

- A) I
- B) $2I$
- C) $4I$

- D) $\frac{I}{2}$
- E) $\frac{I}{4}$

Correct Answer : Option D

- 55.** The line that joins any planet to the sun sweeps out equal areas in equal intervals of time. This statement is
- A) Kepler's first law
 - B) law of periods
 - C) law of gravitation
 - D) Kepler's second law
 - E) Newtons third law

Correct Answer : Option D

- 56.** Young's modulus and shear modulus can be defined only in
- A) solids and liquids
 - B) liquids
 - C) gases
 - D) gases and liquids
 - E) solids

Correct Answer : Option E

- 57.** If T and η are the surface tension and coefficient of viscosity of a liquid, then with the increase of temperature
- A) both T and η increase
 - B) both T and η decrease
 - C) both T and η remain constant
 - D) T increases but η decreases
 - E) T decreases but η increases

Correct Answer : Option B

- 58.** The speed of water flowing out from the small opening at a depth of h from the surface of water in a large tank is
- A) \sqrt{gh}
 - B) $\sqrt{4gh}$
 - C) gh
 - D) $2gh$
 - E) $\sqrt{2gh}$

Correct Answer : Option E

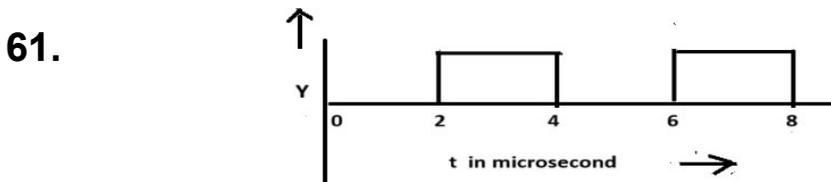
59. For a diatomic gas molecule the value of C_v in $Jmol^{-1}K^{-1}$ is ($R = 8.2 Jmol^{-1}K^{-1}$)
- A) 20.5
 - B) 41
 - C) 10.25
 - D) 12.3
 - E) 28.7

Correct Answer : Option A

60. A steel rod of length 1 m is clamped at its middle . If the fundamental frequency of vibrations is $3 kHz$, then the speed of sound in steel is
- A) $2000 ms^{-1}$
 - B) $6000 ms^{-1}$
 - C) $8000 ms^{-1}$
 - D) $4000 ms^{-1}$
 - E) $9000 ms^{-1}$

Correct Answer : Option B

The frequency of the periodic wave for the following figure is



- A) 1 MHz
- B) 0.25 MHz
- C) 0.5 MHz
- D) 0.1 MHz
- E) 0.05 MHz

Correct Answer : Option B

62. The electrostatic force between two point charges at a distance of separation d is F . If one of the charge is moved away by a distance $d/2$ then the force between them is
- A) $\frac{2}{3}F$
 - B) $\frac{9}{4}F$
 - C) $\frac{4}{9}F$
 - D) $\frac{3}{2}F$
 - E) $\sqrt{2}F$

Correct Answer : Option C

63. Which one of the following molecules is nonpolar?

- A) CO_2
- B) H_2O
- C) CH_3OH
- D) HCl
- E) $NaCl$

Correct Answer : Option A

64. The resistance of a wire of length l and cross sectional area A is R . The resistance of another wire of the same material of length $3l$ and cross sectional area $\frac{A}{3}$ is

- A) $3R$
- B) R
- C) $9R$
- D) $\frac{R}{3}$
- E) $\frac{R}{9}$

Correct Answer : Option C

65. The energy dissipated per unit time by a wire of resistance $2R$ connected to a battery of voltage $2V$ is

- A) $\frac{4V^2}{R}$
- B) $\frac{4V}{R}$
- C) $\frac{2V^2}{R}$
- D) $4VR^2$
- E) $4V^2R^2$

Correct Answer : Option C

66. The magnetic field at the centre of a current loop of radius r carrying a current I is

- A) $\frac{\mu_0 I}{2r}$
- B) $\frac{\mu_0 I}{r}$
- C) $\frac{\mu_0 I}{\pi r}$

- D) $\frac{\mu_0 I}{2\pi r}$
E) $\frac{2\mu_0 I}{r}$

Correct Answer : Option A

67. If a current of 1 A is passed through a 1 m long solenoid of 7000 turns , the magnetic field produced at the middle of the solenoid is
- A) $2.2 \times 10^{-3} T$
B) $4.4 \times 10^{-3} T$
C) $7.0 \times 10^{-4} T$
D) $8.8 \times 10^{-3} T$
E) $14.0 \times 10^{-4} T$

Correct Answer : Option D

68. The a.c circuit exhibiting the phenomenon of resonance has/have the circuit element(s)
- A) inductor and resistor
B) capacitor and resistor
C) inductor only
D) capacitor only
E) inductor and capacitor

Correct Answer : Option E

69. The vibrations of atoms and molecules produce electromagnetic radiation in the region of
- A) ultraviolet
B) infrared
C) visible light
D) microwaves
E) X – rays

Correct Answer : Option B

70. Monochromatic ray of light incident on a glass prism does not produce the phenomenon of
- A) dispersion
B) refraction
C) deviation
D) reflection
E) total internal reflection

Correct Answer : Option A

71. The simple microscope having a lens of focal length 5 cm gives the magnification of (least distance of distinct vision = 25 cm)
- A) 5
 - B) 6
 - C) 4
 - D) 10
 - E) 12

Correct Answer : Option B

72. If the threshold wavelength of a photoelectric material lies in the green light region, then which one of the following light will not emit photoelectrons?
- A) Ultraviolet
 - B) Blue
 - C) Violet
 - D) Orange
 - E) Indigo

Correct Answer : Option D

73. The process that releases neutrons from the nucleus is
- A) α - decay
 - B) β - decay
 - C) nuclear fusion
 - D) pair production
 - E) nuclear fission

Correct Answer : Option E

74. If the volume of nucleus having mass number 2 is V , then that for the nucleus having mass number 8 is
- A) $2V$
 - B) $3V$
 - C) $4V$
 - D) $6V$
 - E) $9V$

Correct Answer : Option C

75. If a diode is forward biased, then the
- A) p-n junction provides very low resistance
 - B) width of the depletion layer increases
 - C) potential barrier increases
 - D) amount of current flow is in the range of microampere
 - E) current flow is due to minority carriers only

Correct Answer : Option A