# PROVISIONAL ANSWER KEY

Question Paper Code: 10/2025/OL
Exam:KEAM 2025 BPHARM-2
Date of Test: 24-04-2025

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

**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 ) Mendelevium
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 ) $Cp + Cv = R$
B ) $Cp \,/\, Cv = R$
C ) $Cp - Cv = R$
D ) $Cv \,/\, Cp = R$
E ) $Cv - Cp = R$

**Correct Answer :** Option C

**9.** Consider the following thermodynamic properties of a system:
(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 )** $0.10\ \text{M}\ HCl$

**B )** $0.50\ \text{M}\ H_2SO_4$

**C )** $0.10\ \text{M}\ NaOH$

**D )** $0.5\ MHCl$

**E )** $0.01\ MNaOH$

**Correct Answer :** Option C

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

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

**A )** $0\ to + 2$

**B )** $0\ to + 3$

**C )** $0\ to + 4$

**D )** $0\ to + 6$

**E )** $0\ \ to - 2$

**Correct Answer :** Option A

**12.** The resistance of 0.10 M KCl solution when measured with a conductivity cell at 298 K is 100 Ω. 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

**13.** $N_2$ exerts a partial pressure of 7.648 bar when dissolved in 1 litre of water at 298 K. What 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 $([R_o] / [R])$ $vs$ 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 )** $3d^6 4s^0$

**B )** $3d^5 4s^1$

**C )** $3d^4 4s^2$

**D )** $4d^6 4s^0$

**E )** $4d^4 4s^2$

**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

**22.** When $CoCl_3$ solution is treated with excess ammonia, a violet coloured complex is formed 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 )

$[CoCl(NH_3)_5]Cl_2$

**D )** $[Co(NH_3)_6]Cl_3$

**E )** $[Co(NH_3)_4]Cl_3$

**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 reagant is

**A )** $Con.HNO_3 + ZnCl_2$

**B )** $Con.HCl + ZnCl_2$

**C )** $Con.H_2SO_4 + ZnCl_2$

**D )** $\text{Acetic acid} + ZnCl_2$

**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

**41.** 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

**A )** Benzene
**B )** Benzene diazonium bromide
**C )** Phenol
**D )** Bromobenzene
**E )** Chlorobenzene

**Correct Answer :** Option D

**42.** Carbylamine is obtained when aniline is

**A )** heated with Con.$H_2SO_4$
**B )** treated with $NaNO_2\ /\ HCl$
**C )** heated with $CHCl_3$ and ethanolic $KOH$
**D )** treated with $CHCl_3$ and $HCl$
**E )** treated with $HCl$

**Correct Answer :** Option C

**43.** The following amines are having same molecular masses.
(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

**A )** (i) > (ii) > (iii)
**B )** (ii) > (iii) > (i)
**C )** (iii) > (i) > (ii)
**D )** (ii) > (i) > (iii)
**E )** (i) > (iii) > (ii)

**Correct Answer :** Option A

**44.** Which of the following vitamin deficiency causes convulsions?

**A )** Riboflavin
**B )** Thiamine
**C )** Ascorbic acid
**D )** Pyridoxine
**E )** Vitamin D

**Correct Answer :** Option D

**45.** Which of the following amino acid is optically inactive?

**A )** Glycine
**B )** Alanine
**C )** Valine
**D )** 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

**47.** If a moving body changes its position from $x_1$ to $x_2$ in a time interval $\Delta t$ , 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 ($g = 10ms^{-2}$ )

**A )** $10\ \mathrm{m}\, s^{-1}$
**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 ($g = 10m\ s^{-2}$ )

**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

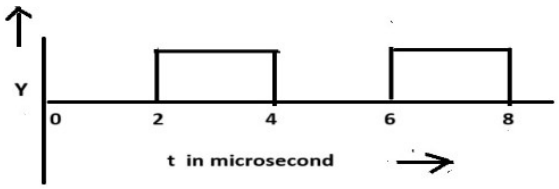
**Correct Answer :** Option A

**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

**61.** 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 )** $\alpha$ - decay
**B )** $\beta$ - 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