FINAL ANSWER KEY

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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) 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 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 ($g = 10ms^{-2}$)

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

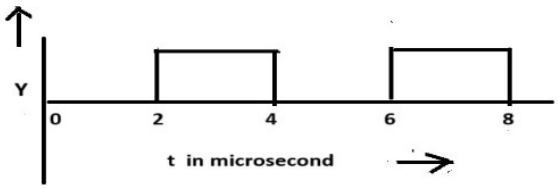
Correct Answer : Option A

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) 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