UNIVERSITY OF LUCKNOW

D.Pharm Entrance Examination

Biology Group — Model Test Paper Set 1

Total Questions: 100 | Section A: Chemistry & Physics (50) + Section B: Biology (50)

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SECTION A — Chemistry & Physics [50]

Chemistry

1. An element with atomic number 103 has a nuclear charge of +103. So its charge would be balanced by _____.

(a) 104 protons (b) 103 electrons

(c) 103 protons (d) 104 electrons

Answer: (b) 103 electrons

2. An electron near the nucleus is strongly attracted by the nucleus and has _____.

(a) Low potential energy (b) High potential energy

(c) High kinetic energy (d) Low kinetic energy

Answer: (a) Low potential energy

3. Observed standard enthalpy of a surface phenomenon for CH as adsorbate is -21 4 :

(a) Physical adsorption (b) Physisorption

(c) Chemical adsorption (d) Chemisorption

Answer: (b) Physisorption

4. For graphical determination of rate constant of a first order reaction, when In :

(a) Increasing slope (b) Constant slope

(c) Sigmoidal curve (d) Decreasing slope

Answer: (d) Decreasing slope

5. The rate determining step in any reaction is _____.

(a) The slowest step (b) The first step

(c) Not determinable (d) The fastest step

Answer: (a) The slowest step

6. According to the Debye-Huckel limiting law, if the concentration of a dilute aqueous solution of KCl is increased 9 folds, the value of in Yz (molar mean ionic activity coefficient is _____.

(a) Decrease by 3 fold (b) Increase by 3 fold

(c) Decrease by 9 fold (d) Increase by 9 fold

Answer: (a) Decrease by 3 fold

7. When two different concentrations of Hydrochloric acids are used as electrolytes in a system, it contributes as an additional source of potential difference at theinterface. This is an example of _____.

(a) Salt bridge (b) Liquid junction potential

(c) Reducing agent (d) Oxidising agent

Answer: (b) Liquid junction potential

8. To prepare 1L of 5N solution of conc. HCl from 37% HCl one would need how much of HCl?

(a) 256 mL (b) 493 mL

(c) 370 mL (d) 50 mL

Answer: (b) 493 mL

9. When solid solute is added to a solvent, some solute particles in solution collide with the solid solute particles and get separated out of solution. This process isknown as _____.

(a) Deionisation (b) Dissolution

(c) Crystallisation (d) Solubilisation

Answer: (c) Crystallisation

10. A solution of Gallic acid in ethanol was made by dissolving 0.05 mg in 250 mL of ethanol(w :

(a) 0.2 ppm (b) 0.05 ppm

(c) 1 ppm (d) 0.5 ppm

Answer: (a) 0.2 ppm

11. The geometry in accordance with VSEPR theory in is_____.

(a) Octahedral (b) Square planar

(c) Square pyramidal (d) See saw

Answer: (d) See saw

12. An element has atomic number 25. This element belongs to _____.

(a) p-block (b) d-block

(c) s-block (d) f-block

Answer: (b) d-block

13. The heat of atomization decreases in order ___.

(a) Li>Na>K>Rb>Cs (b) Cs>Rb>Na>K>Li

(c) Na>Li>K>Cs>Rb (d) Cs>Rb>K>Na>Li

Answer: (a) Li>Na>K>Rb>Cs

14. The ionic radii increases in the order_____.

(a) Cr2+<Cr4+<Cr3+<Cr5+<Cr6+ (b) Cr6+<Cr5+<Cr4+<Cr3+<Cr2+

(c) Cr2+<Cr3+<Cr4+<Cr5+<Cr6+ (d) Cr6+<Cr5+<Cr3+<Cr4+<Cr2+

Answer: (b) Cr6+<Cr5+<Cr4+<Cr3+<Cr2+

15. According to Fajan's rule which one holds true?

(a) Ti3+ and V3+ will be poorly polarising (b) Ti3+ and V3+ will be highly polarising

(c) Ti3+ and V3+ are neutral ions (d) Ti3+ and V3+ will have stable gas configuration

Answer: (b) Ti3+ and V3+ will be highly polarising

16. Atomic hydrogen recombines to give molecular hydrogen and a large amount of heat in a very fast reaction and can also be used for welding metals. This isbecause _____.

(a) Hydrogen only exists as ions for stability (b) Hydrogen does not react readily with other elements

(c) Dissociation of hydrogen molecule is highly exothermic (d) Hydrogen molecule is very unstable at room temperature

Answer: (c) Dissociation of hydrogen molecule is highly exothermic

17. An element X essentially used in fertilisers and soap is obtained by electrolysing at high temperatures along with sodium. Element X is _____.

(a) Potassium (b) Rubidium

(c) Sodium (d) Lithium

Answer: (a) Potassium

18. Electrolysis as a source of extraction of metals are only successful when _____.

(a) Metal hydrides are used (b) Metal oxides are used

(c) Fused halides are used (d) Aqueous solution of metals are used

Answer: (c) Fused halides are used

19. According to CFT (crystal field theory) [Ni (CN)]2- has _____.

(a) Triagonal structure (b) Octahedral structure

(c) Tetrahedral structure (d) Square planar structure

Answer: (d) Square planar structure

20. A hydrocarbon used as a refrigerant and aerosol propellant is prepared using Wurtz reaction with bromoethane and sodium metal in dry ether. The final product is_____.

(a) Ethane (b) n-Butane

(c) Ethene (d) n-Propane

Answer: (b) n-Butane

21. In the reaction CH COONa+NaOH (in 3 presence of CaO and heat) :

(a) C H OH ; NaCO 2 2 (b) CH ; Na CO 4 2

(c) CH COOH ; NaCO 3 (d) CH H ; Na CO 2 6 2

Answer: (b) CH ; Na CO 4 2

22. Benzene reacts with bromine in presence of Iron(III) bromide as a catalyst to form _____.

(a) Only HBr (b) Only bromobenzene

(c) Bromobenzene and HBr (d) No reaction at all

Answer: (c) Bromobenzene and HBr

23. The reactivity of primary, secondary and tertiary hydrogen for bromination is _____.

(a) R CH>R CH >RCH 3 2 2 (b) RCH >R CH>R CH 3 3 2

(c) RCH >R CH >R CH 3 2 2 (d) R CH>RCH >R CH 3 3 2

Answer: (a) R CH>R CH >RCH 3 2 2

24. For bromination of benzene, the major product formed will be _____.

(a) Cyclobromobenzene (b) Hydrogen bromide

(c) Cyclobromopentane (d) Bromobenzene

Answer: (d) Bromobenzene

25. In elimination reaction of sec-Butyl trimethylammonium hydroxide, major product formed would be _____.

(a) 2-Butene (b) Both 1-Butene and 2-Butene in equal amount

(c) No reaction occurs (d) 1-Butene

Answer: (d) 1-Butene

Physics

26. A sound wave of unknown frequency gives 10 beats with a wave of frequency 300 Hz and 15 beats with a wave of frequency 325 Hz. The frequency of unknown wave is ?

(a) 340 Hz (b) 310 Hz

(c) None of the above (d) 290 Hz

Answer: (b) 310 Hz

27. A tuning fork of frequency 260 Hz is vibrated with a sonometer wire and 5 beats are heard. If the tension in the wire is slightly increase, the beat frequency also decreases. The original frequency of the sonometer is ?

(a) 265 Hz (b) 260 Hz

(c) 250 Hz (d) 255 Hz

Answer: (d) 255 Hz

28. The concept of internal energy was first introduced by ?

(a) Wien's law PV (b) Stefan's law

(c) Second law of thermodynamics (d) First law of thermodynamics

Answer: (d) First law of thermodynamics

29. Newton's law of cooling is a special case of ?

(a) Planck's law (b) Wien's displacement law

(c) Kirchhoff's law (d) Stefan's law

Answer: (d) Stefan's law

30. An iron plate 2 cm thick has a cross-section of cm2. 5000 Its one side is at 110°C and the other side is at 100°C. If thermal conductivity of iron is 0.115 cal/s-cm-°C, the rate of heat flow through the plate is ?

(a) 2375 cal/s (b) 5750 cal/s

(c) 4750 cal/s (d) 2875 cal/s

Answer: (d) 2875 cal/s

31. Transport phenomena is gases represent the transport of certain quantities. Which of the following is not correctly matched? Transport Phenomenon Quantity ?

(a) None of the above (b) Viscosity Mass

(c) Diffusion Energy (d) Conduction Momentum

Answer: (a) None of the above

32. Which of the following is the unit of strain?

(a) Newton (b) Watt

(c) No unit (d) Joule

Answer: (c) No unit

33. If the diameter of a capillary tube is increased by two times, then the height of liquid rise in it will be :

(a) half (b) remains same

(c) two times (d) one-fourth

Answer: (a) half

34. The surface tension of a liquid ?

(a) Decreases with surface area (b) Increases with surface area

(c) Decreases with temperature (d) Increases with temperature

Answer: (c) Decreases with temperature

35. The negative electrode in lead acid battery is ?

(a) Lead (b) Silver

(c) Iron (d) Carbon

Answer: (a) Lead

36. A particle moves in a circular path with uniform speed. The direction of acceleration of the particle will be :

(a) Along the tangent to the path (b) Normal to the plane of the path

(c) Along the radius (d) Acceleration is zero

Answer: (c) Along the radius

37. Which of the following is conservative force?

(a) Viscous force (b) Frictional force

(c) None of the above (d) Gravitational Force

Answer: (d) Gravitational Force

38. In above velocity-time graph of a particle, the distance covered in first 4 seconds is ?

(a) 20m (b) 16m

(c) 12m (d) Zero

Answer: (b) 16m

39. Which of the following is not necessary for performing LASER action ?

(a) Population inversion (b) Meta-energy level

(c) Stimulated emission (d) Spontaneous emission

Answer: (d) Spontaneous emission

40. A plane polarized light is passed through a quarter wave plate. The circularly polarized light is obtained, when the angle between plane polarized light and principal axis of the plate is ?

(a) 00 (b) 1800

(c) 450 (d) 900

Answer: (c) 450

41. A diffraction grating has 4000 lines and is fully exposed at normal incidence. The resolving power of the grating in the third order of the ° spectrum at the 5000Awavelength is ?

(a) 15000 (b) 12000

(c) 18000 (d) 7500

Answer: (a) 15000

42. The mean separation of two points on moon that can be resolved by a 500 cm telescope aperture is (distance of the moon is 4×105 km, eye is most sensitive to wavelength 5500Å) ?

(a) 50.6 m (b) 53.6 m

(c) 43 m (d) 40 m

Answer: (b) 53.6 m

43. Fraunhofer spectrum is ?

(a) Band emission spectrum (b) Band absorption spectrum

(c) Line absorption spectrum (d) Line emission spectrum

Answer: (c) Line absorption spectrum

44. Which of the following are coherent sources?

(a) A 60 Watt and a 100 Watt bulbs (b) Two virtual sources obtained by biprism

(c) Two halves of a 60 Watt bulbs (d) Two bulbs of 60W each

Answer: (b) Two virtual sources obtained by biprism

45. Ratio of focal lengths of two lenses of Huygens eyepiece is ?

(a) 1 : (b) None of the above

(c) 2 : (d) 3 :

Answer: (d) 3 :

46. The critical angle is maximum when light travels from ?

(a) glass to air (b) air to water

(c) glass to water (d) water to air

Answer: (c) glass to water

47. With the decrease in the prism angle, the angular dispersion between red and violet rays ?

(a) Decreases (b) Does not change

(c) Depends on the incidence angle (d) Increases

Answer: (c) Depends on the incidence angle

48. The sum of three vectors shown in fig. is zero. What is magnitude of OC?

(a) 5 5 m (b) 5 m

(c) 10 m (d) 5 2m

Answer: (d) 5 2m

49. What will be the degree of freedom for a rigid body having N particles?

(a) 3N (b) N

(c) 3 (d) Infinite

Answer: (a) 3N

50. The ionization potential of hydrogen atom is 13.6 eV. The ionization potential of singly ionized helium ion will be (in eV) :

(a) 27.2 (b) 6.8

(c) 54.4 (d) 3.4

Answer: (c) 54.4

SECTION B — Biology [50]

Zoology

51. Types of cells present in some animals can differentiate to perform different functions is ?

(a) Sea walnuts Platyhelminthes (b) Interstitial cells

(c) Spongilla (d) Spongilla lacustris

Answer: (b) Interstitial cells

52. The phenomenon of metagenesis occur in ?

(a) Obelia (b) Three

(c) Cnidaria (d) Porifera

Answer: (a) Obelia

53. Plane passing through the central axis of the body divides the organism into two identical halves, the organism is called ?

(a) Radially symmetrical (b) Ctenophora

(c) Cellular grade (d) Physalia Ctenophora

Answer: (a) Radially symmetrical

54. A fresh water sponge is ?

(a) Pleurobrachia (b) Gastrovascular cavity

(c) Spongilla (d) Radially symmetrical

Answer: (c) Spongilla

55. Nervous system is present as nerve rings and nerve cords in ?

(a) Ctenophora (b) Cnidaria

(c) Physalia Ctenophora (d) Platyhelminthes

Answer: (d) Platyhelminthes

56. Pseudocoelomates animals are ?

(a) Aschelminthes (b) Sea anemone

(c) Ctenophora (d) Spongilla lacustris

Answer: (a) Aschelminthes

57. Radial symmetry occurs in ?

(a) Choanocytes 6 (b) Cnidaria

(c) Platyhelminthes (d) Three

Answer: (b) Cnidaria

58. True coelom is lined by ?

(a) Locusta Protozoa (b) Ctenophora
(c) Mesoderm (d) Cnidaria
Answer: (c) Mesoderm

59. In which phylum the body can be divided into identical left and right halves in only one plane is ?
(a) Porifera (b) Cnidaria
(c) Annelida (d) Spongin fibres
Answer: (c) Annelida

60. Organization in sponges is ?
(a) Cellular grade (b) Spongin fibres
(c) Gastrovascular cavity (d) Cnidaria
Answer: (a) Cellular grade

61. Skeleton of Porifera is made up of ?
(a) Ctenophora (b) Spongin fibres
(c) Cnidaria (d) Locusta Protozoa
Answer: (b) Spongin fibres

62. Gregarious pest is ?
(a) External, Indirect (b) Bath sponge
(c) Locusta Protozoa (d) Porifera
Answer: (c) Locusta Protozoa

63. Fresh water sponge is ?
(a) Ctenophora (b) Spongilla lacustris
(c) Coelenterata (d) Locusta Protozoa
Answer: (b) Spongilla lacustris

64. Euspongia is commonly known as ?
(a) Turtle (b) Radially symmetrical
(c) Bath sponge (d) Physalia Ctenophora
Answer: (c) Bath sponge

65. Canal system is present in ?
(a) Aschelminthes (b) Bath sponge
(c) Sycon (d) Spongin fibres
Answer: (c) Sycon

66. Feature of bony fish is missing in cartilaginous fishes ?
(a) Choanocytes 6 (b) Coelenterata
(c) Operculum (d) Ctenophora
Answer: (c) Operculum

67. _____ phylum are mostly marine and asymmetrical ?
(a) Cnidaria (b) Planaria
(c) Mesoderm (d) Porifera
Answer: (d) Porifera

68. _____ phylum represent cellular level of organization is ?
(a) Sea walnuts Platyhelminthes (b) Ascaris & Fasciola
(c) Porifera Coelenterata/Cnidaria (d) Cilia for locomotion
Answer: (c) Porifera Coelenterata/Cnidaria

69. In some animal groups, the body is found divided into compartments with at least some organs. This characteristic feature is called ?

(a) Aschelminthes (b) Sea anemone

(c) Metamerism (d) Platyhelminthes

Answer: (c) Metamerism

70. Meandrina (brain coral) belongs to phylum ?

(a) Coelenterata (b) Aschelminthes

(c) External, Indirect (d) Turtle

Answer: (a) Coelenterata

71. Chelone is commonly known as ?

(a) Cnidaria (b) Crocodile

(c) Turtle (d) Ctenophora

Answer: (c) Turtle

72. Completely non-parasitic form is ?

(a) Ctenophora (b) Sea anemone

(c) Pleurobrachia (d) Platyhelminthes

Answer: (b) Sea anemone

73. Polyp phase is absent in ?

(a) Aurelia (b) Cnidaria

(c) Spongin fibres (d) Operculum

Answer: (a) Aurelia

74. Corals belong to phylum ?

(a) Neophron (b) Choanocytes 6

(c) Metamerism (d) Cnidaria

Answer: (d) Cnidaria

75. Characteristic feature of coelenterata is ?

(a) Spongin fibres (b) Cilia for locomotion

(c) Aschelminthes (d) Gastrovascular cavity

Answer: (d) Gastrovascular cavity

Botany

76. Cells of this tissue are living and show angular wall thickening. They also provide mechanical support. The tissue is ?

(a) Collenchyma (b) Trichomes

(c) Xylem fibres (d) Exarch

Answer: (a) Collenchyma

77. Epiblema of roots is equivalent to ?

(a) Intercalary meristem (b) Epidermis

(c) Collenchyma (d) Three

Answer: (b) Epidermis

78. Dumb-bell shaped guard cells are found in ?

(a) Grasses (b) Endarch

(c) Apical meristem (d) Xylem fibres

Answer: (a) Grasses

79. The epidermal hairs on the stem are called ?

(a) Maturation (b) Grasses

(c) Exarch (d) Trichomes

Answer: (d) Trichomes

80. Permanent tissues having many different types of cells are ?

(a) Used in long distance transportation (b) Dermal , Ground , Vascular tissues

(c) Primary and secondary meristem both (d) Is a meristematic tissue

Answer: (a) Used in long distance transportation

81. Epidermal and ground tissue system are made of ?

(a) Intercalary meristem (b) No tapering ends

(c) Apical, Intercalary meristem (d) Simple permanent tissues

Answer: (d) Simple permanent tissues

82. The intrafascicular cambium is ?

(a) Solid endosperm of coconut (b) Epidermal tissue system

(c) Is a meristematic tissue (d) Used in long distance transportation

Answer: (c) Is a meristematic tissue

83. Stomata are the component of ?

(a) Capacity of division (b) Solid endosperm of coconut

(c) Lateral meristem (d) Epidermal tissue system

Answer: (d) Epidermal tissue system

84. The function of vessels in flowering plants is ?

(a) Solid endosperm of coconut (b) Transport of water and minerals

(c) Dermal , Ground , Vascular tissues (d) Is a meristematic tissue

Answer: (b) Transport of water and minerals

85. The central lumens are obliterated in ?

(a) Xylem parenchyma (b) Lateral meristem

(c) Trichomes (d) Xylem fibres

Answer: (d) Xylem fibres

86. The function of lateral meristem is ?

(a) Immature cells with power to divide (b) Pectin

(c) It changes girth of the plant axis (d) Dermal , Ground , Vascular tissues

Answer: (c) It changes girth of the plant axis

87. During the formation of leaves and elongation of stem, some cells 'left behind' from shoot apical meristem, constitute the is ?

(a) Xylem parenchyma (b) Axillary bud

(c) Sclerenchyma (d) Lignified

Answer: (b) Axillary bud

88. Tissue are classified into meristematic and permanent on the basis of ?

(a) Capacity of division (b) No tapering ends

(c) Companion cells (d) Simple permanent tissues

Answer: (a) Capacity of division

89. Regeneration of damaged growing grass grazing is largely due to ?

(a) Collenchyma (b) Sclerenchyma

(c) Axillary bud (d) Intercalary meristem

Answer: (d) Intercalary meristem

90. Root hair develop from the region of is ?

(a) Simple tissues (b) Sclerenchymatous

(c) Maturation (d) Collenchyma

Answer: (c) Maturation

91. A piece of wood having no vessels (trachea) must be belonging to is ?

(a) Collenchyma (b) Bast fibres

(c) Pine (d) Thin-walled

Answer: (c) Pine

92. Meristematic tissues are composed of ?

(a) It changes girth of the plant axis (b) Sieve tubes and companion cells

(c) Immature cells with power to divide (d) Primary and secondary meristem both

Answer: (c) Immature cells with power to divide

93. The growth of root and stem in length with the help of apical meristem is called ?

(a) Collenchyma (b) Capacity of division

(c) Primary growth (d) Endarch

Answer: (c) Primary growth

94. During the formation of the primary plant body, specific regions of the apical meristem produce is ?

(a) Dermal , Ground , Vascular tissues (b) Transport of water and minerals

(c) Sieve tubes and companion cells (d) Primary and secondary meristem both

Answer: (a) Dermal , Ground , Vascular tissues

95. Tissue is dead and provides mechanical support to plant organs ?

(a) Sclerenchyma (b) Xylem parenchyma

(c) Lignified (d) Pectin

Answer: (a) Sclerenchyma

96. Tissues consist of living cells is ?

(a) Trichomes (b) Collenchyma

(c) Lignified (d) Companion cells

Answer: (d) Companion cells

97. In stem, the primary xylem is ?

(a) Phloem (b) Endarch

(c) Sclerenchyma (d) Exarch

Answer: (b) Endarch

98. Jute is mainly composed of ?

(a) Bast fibres (b) Intercalary meristem

(c) Simple permanent tissues (d) Lateral meristem

Answer: (a) Bast fibres

99. Vascular cambium is a ?

(a) Living mechanical tissue (b) Bast fibres

(c) Lateral meristem (d) Lignified

Answer: (c) Lateral meristem

100. Axillary bud and terminal bud are derived from the activity of ?

(a) Protoxylem (b) Axillary bud

(c) Simple permanent tissues (d) Apical meristem

Answer: (d) Apical meristem