AIIMS - 2002

Full Paper

Physics

1. A black body is at a temperature 300 K. It emits energy at a rate, which is proportional to :

   1) $(300)^4$

   2) $(300)^5$

   3) $(300)^6$

   4) $(300)^7$

2. The coefficients of mutual inductance when magnetic flux changes by 2×10^{-2} Wb and current changes by 0.01 A, will be :

   1) 2 H 2) 4 H 3) 6 H 4) 8 H

3. At what temperature the speed of sound in air will become double of its value at 27° ?

   1) 127 ° C

   2) 527° C

   3) 927° C

   4) 1127° C

4. Velocity of light is equal to :

   1) $\sqrt{(1/\varepsilon_0\mu_0)}$

   2) $\sqrt{(\varepsilon_{0/}\mu_0)}$

   3) ε_0/μ_0

   4) $\varepsilon_0\mu_0$

5. Light of wevelength 6000 Å is reflected at nearly normal incidence from a soap films of refractive index 1.4. The least thickness of the fringe then will appear black is :

   1) infinity

   2) 200 Å

   3) 2000 Å

   4) 4000 Å

6. The velocities of sound at same temperature in two monoatomic gases densities ρ_1 and ρ_2 are v_1 and v_2 respectively, if $(\rho_1/\rho_2) = 4$, then, the value of (v_1/v_2) will be :

   1) 1

   2) 1/2

3) 1/3

4) 1/6

7. A siren emitting sound of frequency 800 Hz is going away from a static listener with a speed of 30 m/s. Frequency of sound to be heard by the listener is :
(velocity of sound = 330 m/s)

1) 186.5 Hz

2) 281.2 Hz

3) 733.3 Hz

4) 844.8 Hz

8. A conducting sphere of radius 10 cm is charged with 10μC. Another uncharged sphere of radius 20 cm is allowed to touch it for some time. After that if the spheres are separated, then surface density of charges on the spheres will be in the ratio of :

1) 1 : 2

2) 4 : 1

3) 2 : 1

4) 1 : 4

9. The latent heat of vaporisation of water is 2240 J. If the work done in the process of vaporization of 1 g is 168 J, then increase in internal energy will be :

1) 1644 J

2) 2072 J

3) 3240 J

4) 3600 J

10. The Cauchy's formula is :

1) $h = A + B\lambda^2 + C\lambda^3$

2) $\mu = A + B\lambda^2 + C\lambda^4$

3) $\mu = A + B\lambda^2 + C\lambda^4$

4) $\mu = A + B\lambda^{-2} + C\lambda^{-4}$

11. The speed of an electron having wavelength of 10^{-10} m is :

1) 6.24×10^6 m/s

2) 6.25×10^6 m/s

3) 7.25×10^6 m/s

4) 8.25×10^6 m/s

12. Three different objects of masses m_1, m_2 and m_3 are allowed to fall from rest and from the same point O along three different frictionless paths. The speeds of three objects on reaching the ground will be :

1) $(1/m_1) : (1/m_2) : (1/m_3)$

2) 1 : 1 : 1

3) $m_1 : 2m_2 : 3m_3$

4) $m_1 : m_2 : m_3$

13. How many electrons make up a charge of 20 μC ?

1) 1.25×10^{14}

2) 2.25×10^{14}

3) 6.25×10^{14}

4) 7.25×10^{14}

14. An electric bulb marked 40 W and 200 V, is used in a circuit of supply voltage 100 V. Now, its power is :

1) 10 W 2) 15 W 3) 30 W 4) 45 W

15. The dimension of torque is :

1) $[ML^1T^{-3}]$

2) $[ML^{-2}T^{-1}]$

3) $[ML^2T^{-2}]$

4) $[MT^{-2}L]$

16. The bulk modulus of a metal is 10^{10} N/m^2 and Poisson's ratio 0.20. If average distance between the molecules is 3 Å then the interatomic force constant is :

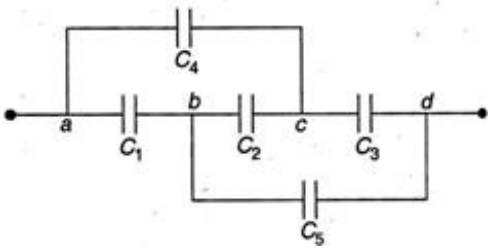
1) 5.4 N/m

2) 80 N/m

3) 8.0 N/m

4) 40 N/m

17. The capacitors C_1, C_3, C_4, C_5 have a capacitance 4 μF each and C_2 has capacitance 10 μF. The effective capacitance between *a* and *d* will be :



1) 10 μF

2) 5 μF

3) 4 μF

4) 1 μF

18. A soap bubble in vacuum has a radius 3 cm and another soap bubble in vacuum has

radius 4 cm. If two bubbles coalesce under isothermal condition, then the radius of the new bubble will be :

1) 3 cm
2) 5 cm
3) 8.5 cm
4) 3.2 cm

19. When a wire is stretched and its radius becomes *r*/2 then its resistance will be :

1) R
2) 4R
3) 8R
4) 16R

20. If the vectors $\vec{P} = a\hat{i} + a\hat{j} + 3\hat{k}$ and $\vec{Q} = a\hat{i} - 2\hat{j} - \hat{k}$ are perpendicular to each other then the positive value of *a* is :

1) Zero
2) 2
3) 3
4) 6

21. The value of current gain α of a transistor is 0.98. The value of β will be :

1) 98
2) 9.8
3) 49
4) 4.9

22. The radius of earth is about 6400 km and that of mars is about 3200 km. The mass of the earth is about 10 times the mass of mars. An object weighs 200 N on earth's surface, then its weight on the surface of mars will be :

1) 80 N 2) 32 N 3) 16 N 4) 4 N

23. Light of wavelength 4000 Å is incident on a metal plate whose work function is 2 eV. What is maximum kinetic energy of emitted photoelectron ?

1) 0.6 eV
2) 1.1 eV
3) 1.2 eV
4) 2.4 eV

24. The volume of a gas is reduced adiabatically to (1/4) of its volume at 27°C. If γ = 1.4. The new temperature will be :

1) 300 x $(4)^{0.4}$ K
2) 200 x $(4)^{0.4}$ K

3) $350 \times (4)^{0.4}$ K

4) None of these

25. A string in a musical instrument is 50 cm long and its fundamental frequency is 800 Hz. If the frequency of 1000 Hz is to be produced, then required length of string is :

1) 27.5 cm

2) 40 cm

3) 57.5 cm

4) 60.5 cm

26. Which one of the following does not support the wave nature of light ?

1) Photoelectric effect

2) Interference

3) Polarization

4) Diffraction

27. A satellite is launched into a circular orbit of radius R around the earth, While a second satellite is launched into an orbit of radius 1.01 R. The period of the second satellite is longer than the first one by approximately :

1) 4.5% 2) 1.5% 3) 1.5% 4) 0.5%

28. If v_o be orbital velocity of a satellite in a circular orbital close to the earth's surface and v_e is escape velocity from earth, then relation between the two is :

1) $v_e = 3v$

2) $v_e = \sqrt{3}v_o$

3) $v_e = v_o\sqrt{2}$

4) $v_o = v_e$

29. A 0 K temperature, a *p*-type semiconductor :

1) has equal numbers of holes and free electrons

2) has few holes but no free electrons

3) has few holes and few free electrons

4) does not have any charge carrier

30. At the uppermost point of a projectile its velocity and acceleration are at an angle of :

1) 45°

2) 90°

3) 135°

4) 180°

31. The path difference for destructive interference is :

1) $(2n + 1)\lambda/2$

2) $(n + 1)\lambda/2$

3) $n\lambda + 1$

4) $n + \lambda$

32. The flux of α-particle at 2° is 1×10^6. The flux of α-particle at angle 60° is :

1) 1.5

2) 3.0

3) 4.5

4) 6.0

33. A moving coil galvanometer is converted into an ammeter reads upto 0.03 A by connecting a shunt of resistance 4r across it and ammeter reads upto 0.06 A, when a shunt of resistance *r* is used. What is the maximum current which can be sent through this galvanometer if no shunt is used ?

1) 0.08 A

2) 0.04 A

3) 0.02 A

4) 0.01 A

34. The density of a substance at 0°C is 10 g/cc and at 100°C, its density is 9.7 g/cc. The coefficient of linear expansion of the substance is :

1) 10^{-4}

2) 10^{-6}

3) 10^{-8}

4) 10^{-10}

35. Scent sprayer is based on :

1) Bernoulli's theorem

2) Archimedes' principle

3) Charles' law

4) Boyle's law

36. A ray of light is incident on the surface of plate of glass of refractive index 1.5 at the polarising angle. The angle of refraction of the raywill be :

1) 33.7°

2) 53.7°

3) 63.7°

4) 73.7°

37. If equation of a sound wave is $y = 0.0015 \sin (62.8x + 314t)$ then its wavelength will be :

1) 3 unit

2) 0.3 unit

3) 0.1 unit
4) 1 unit

38. The kinetic energy of a body becomes four times its initial value. The new linear momentum will be :
1) eight times that of initial value
2) four times that of initial value
3) twice of the initial value
4) remain as the initial value

39. The maximum range of a gun from horizontal terrain is 16 km. If g = 10 m/s^2 what must be the muzzle velocity of the shell ?
1) 400 m/s
2) 800 m/s
3) 1600 m/s
4) 100 m/s

40. Hubble's law is related with :
1) planetary motion
2) speed of galaxy
3) black hole
4) comet

These questions consist two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one of the following five responses :
A. If both the assertion and reason are true and reason is a true explanation of the assertion.
B. If both the assertion and reason are true but the reason is not the correct explanation of assertion.
C. If the assertion is true but reason is false.
D. If both the assertion and reason are false.
E. If the assertion is false but reason is true.

41. **Assertion :** Coloured spectrum is seen when we look through a muslin cloth.
Reason : It is due to the diffraction of white light on passing through fine slits.
1) A
2) B
3) C
4) D
5) E

42. **Assertion :** The knowledge of Albedo helps us to estimate the atmosphere of a planet.
Reason : The clouds are not good reflectors of light.
1) A

2) B
3) C
4) D
5) E

43. **Assertion :** When a tiny circular obstacle is placed in the path of light from some distance, a bright spot is seen at the centre of shadow of the obstacle.
Reason : Destructive interference occurs at the centre of the shadow.

1) A
2) B
3) C
4) D
5) E

44. **Assertion :** The quantity L/R possesses dimensions of time.
Reason : To reduce the rate of increase of current through a solenoid should we increase the time constant (L/R).

1) A
2) B
3) C
4) D
5) E

45. **Assertion :** In a simple battery circuit the point of lowest potential is positive terminal of the battery.
Reason : The current flows towards the point of the higher potential as it flows in such a circuit from the negative to the positive terminal.

1) A
2) B
3) C
4) D
5) E

46. **Assertion :** In SHM, the motion is to and fro and periodic.
Reason : Velocity of the particle, $v = \omega\sqrt{(a^2 - x^2)}$
(where x is displacement)

1) A
2) B
3) C
4) D
5) E

47. **Assertion :** Stress is the internal force per unit area of a body.

Reason : Rubber is more elastic than steel.

1) A
2) B
3) C
4) D
5) E

48. **Assertion :** In an elastic collision of two billiard balls, the total KE is conserved during the short time of collision of the balls *(i.e.,* when they are in contact).
Reason : Energy spent against friction does not follow the law of conservation of energy.

1) A
2) B
3) C
4) D
5) E

49. **Assertion :** Thin films such as soap bubble or a thin layer of oil on water show beautiful colours when illuminated by white light.
Reason : It happens due to the interference of light reflected from the upper surface of the thin film.

1) A
2) B
3) C
4) D
5) E

50. **Assertion :** We cannot think of magnetic field confirmation with three poles.
Reason : A bar magnet does exert a torque on itself due to its own field.

1) A
2) B
3) C
4) D
5) E

51. **Assertion :** Faraday's laws are consequences of conservation of energy.
Reason : In a purely resistive AC circuit, the Current lags behind the emf in phase.

1) A
2) B
3) C
4) D
5) E

52. **Assertion :** Woollen clothes keep the body warm in winter.

Reason : Air is a bad conductor of heat.

1) A
2) B
3) C
4) D
5) E

53. **Assertion :** The time period of pendulum on satellite orbiting the earth is infinity.
Reason : Time period of a pendulum is inversely proportional to $\sqrt{g}$.

1) A
2) B
3) C
4) D
5) E

54. **Assertion :** Retardation is directly opposite to the velocity.
Reason : Retardation is equal to the time rate of decrease of speed.

1) A
2) B
3) C
4) D
5) E

55. **Assertion :** The dimensional formula for relative velocity is same as that of the rate of change in velocity.
Reason : Relative velocity of P w.r.t. Q is the ratio of velocity of P and that of Q.

1) A
2) B
3) C
4) D
5) E

56. **Assertion :** If three capacitors of capacitances $C_1 < C_2 < C_3$ are connected in parallel then their equivalent capacitance $C_P > C_3$.
Reason : $(1/C_P) = (1/C_1) + (1/C_2) + (1/C_3)$.

1) A
2) B
3) C
4) D
5) E

57. **Assertion :** First law of thermodynamics does not forbid flow of heat from lower

temperature to higher temperature.
Reason : Heat supplied to a system always equal to the increase in its internal energy.

1) A
2) B
3) C
4) D
5) E

58. **Assertion :** Speed of wave = (wavelength / time period).
Reason : Wavelength is the distance between two nearest particles in phase.

1) A
2) B
3) C
4) D
5) E

59. **Assertion :** Electric lines of force never cross each other.
Reason : Electric field at a point superimpose to give one resultant electric field.

1) A
2) B
3) C
4) D
5) E

60. **Assertion :** The air bubble shines in water.
Reason : Air bubble in water shines due to refraction of light.

1) A
2) B
3) C
4) D
5) E

Chemistry

61. The monomer of teflon is :

1) tetra chloroethylene
2) tetra bromoethylene
3) tetra iodoethylene
4) tetra fluoroethylene

62. Hydrogen is produced by the reaction :

1) $Na_2O_2 + 2HCl$

2) $Mg + H_2O$

3) $BaO_2 + HCl$

4) $H_2S_4O_8 + H_2O$

63. The IUPAC name of following compound is :
$CH_3 — C(CH_3)_2 — CH = C(CH_3)_2$

1) 2, 2, 3, 3-tetramethyl-but-1- ene

2) 1, 1, 3-trimethyl-pent-2-ene

3) 2, 2, 4-trimethyl but-4-ene

4) 2, 4, 4-trimethyl pent-2-ene

64. The kinetic energy of two moles of N_2 at 27°C is ($R = 8.324\ JK^{-1}mol^{-1}$) :

1) 6491.6 J

2) 7491.6 J

3) 8491.6 J

4) 9882.4 J

65. The molecule having highest bond energy is :

1) N—N

2) F—F

3) C—C

4) O—O

66. The most stable ion is :

1) $CH_3C\overset{+}{H}_2$

2) $(CH_3)_2\overset{+}{C}H$

3) $(CH_3)_3C^+$

4) $C_6H_5C\overset{+}{H}_2$

67. Cyanohydrin can easily be prepared from :

1) $C_2H_5 — C_2H_5$

2) C_2H_5COOH

3) $C_6H_5NH_2$

4) $C_2H_5COC_2H_5$

68. Propyne and propene can be distinguished by :

1) dil. $KMnO_4$

2) conc. H_2SO_4

3) $AgNO_3$ in ammonia

4) Br_2 in CCl_4

69. At 80°C (H_3O^+) of distilled water is 10^{-6} mol/L. At the same temperature the value of K_w is :

1) 1×10^{-2}
2) 1×10^{-4}
3) 1×10^{-8}
4) 1×10^{-12}

70. 1000 g calcium carbonate solution contains 10g carbonate. The concentration of solution is :

1) 1 ppm
2) 100 ppm
3) 10000 ppm
4) 10,0000 ppm

71. The enthalpy of formation of ammonia is = 46.0 kJ mol^{-1}. The enthalpy change for following reaction is :
$2NH_3 \rightarrow N_2 + 3H_2$

1) 42.0 kJ
2) 128.0 kJ
3) 132.0 kJ
4) 32.0 kJ

72. Methyl orange comes under :

1) mordant dye
2) nitro dye
3) acid dye
4) basic dye

73. Which of the electronic configuration shows noble gas. ?

1) $1s^2, 2s^2\ 2p^6, 3s^2\ 3p^6$
2) $1s^2, 2s^2\ 2p^6, 3s^2\ 3p^3$
3) $1s^2, 2s^2\ 2p^6, 3s^2\ 3p^1$
4) $1s^2, 2s^2\ 2p^6, 3s^2\ 3p^4$

74. The solubility of AgCl in 0.2 M NaCl is :
[K_{sp} AgCl = 1.8×10^{-10}]

1) 1.5×10^{-11} M
2) 9×10^{-10} M

3) 3.9×10^{-12} M

4) 2.6×10^{-11} M

75. The mass of 70% H_2SO_4 required for neutralization of one mole of NaOH is :

1) 70 g 2) 14 g 3) 7 g 4) 49 g

76. Acetylene and dil. H_2SO_4 reacts to produce :

1) CH_3COOH

2) CH_3CHO

3) CH_3COCH_3

4) none of these

77. The weight of one molecule of a compound $C_{60}H_{122}$ is :

1) 1.2×10^{-20} g

2) 2.4×10^{-21} g

3) 4.72×10^{23} g

4) 1.4×10^{-21} g

78. Which of the following is an iron ore ?

1) Cassiterite

2) Magnetite

3) Galena

4) Copper pyrite

79. Acetone can easily be converted into propane by the action of :

1) HI

2) H_3PO_3

3) HNO_3

4) HIO_3

80. Liquid ammonia and liquor ammonia are :

1) same

2) different

3) allotropes

4) isotopes

81. The half-life of a substance in a first order reaction is 15 min. The rate constant is :

1) 3.46×10^{2} min^{-1}

2) 4.62×10^{-2} min^{-1}

3) 8.74×10^{-2} min^{-1}

4) 9.18×10^{2} min^{-1}

82. Quantum numbers of an atom can be defined on the basis of :

1) Aufbau's principle
2) Heisenberg's uncertainty principle
3) Hund's rule
4) Pauli's exclusion principle

83. A chiral compound is :

1) 2, 3, 4- trimethyl hexane
2) n- hexane
3) methane
4) n-butane

84. In Sandmeyer's reaction the salt involved is :

1) diazonium salt
2) cupramonium salt
3) ferrous salt
4) ammonium salt

85. A compound possess 8% sulphur by mass. The least molecular mass is :

1) 200
2) 400
3) 500
4) 600

86. Enzymes having two sites are :

1) conjugate enzyme
2) apoenzyme
3) holoenzyme
4) allesteric enzyme

87. Oxidation number of Fe in Fe_3O_4 is :

1) 2/3
2) 4/3
3) 8/3
4) 5/3

88. An AB_2 type of structure is present in :

1) NaCl

2) N_2O

3) Al_2O_3

4) CaF_2

89. Thermite is a mixture of iron oxide and :

1) aluminium powder

2) zinc powder

3) potassium metal

4) sodium metal

90. The halide having highest melting point is :

1) NaF

2) NaCl

3) NaBr

4) NaI

91. Phenol $\xrightarrow[H^+]{CHCl_3/NaOH}$ salicylaldehyde. The above reaction is known as :

1) Reimer-Tiemann reaction

2) Bucherer reaction

3) Gattermann synthesis

4) Perkin reaction

92. The tribasic acid is :

1) H_3PO_4

2) H_3PO_3

3) H_3PO_2

4) $H_4P_2O_7$

93. The number of σ and π bonds present in pent-1- ene-4-yne is :

1) 3, 10

2) 8, 5

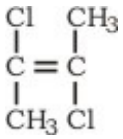
3) 5, 8

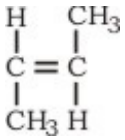
4) 10, 3

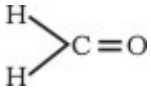
94. At 25°C the pH of a solution containing 0.10 M sodium acetate and 0.03 M acetic acid is : [pK_a value of CH_3COOH = 4.57]

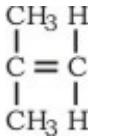
1) 1.24 2) 2.59 3) 3.09 4) 6.67

95. The compound having highest dipole moment is:

1) 

2) 

3) 

4) 

96. The size of C—C bond in benzene is :

1) 1.34 Å
2) 1.39 Å
3) 1.44 Å
4) 1.49 Å

97. Lucas test is used for :

1) aldehydes
2) alkyl halides
3) alcohols
4) acids

98. Schottky defect defines imperfection in the lattice structure of a :

1) gas
2) plasma
3) liquid
4) solid

99. $C_2H_5OH + SOCl_2 \xrightarrow{\text{Pyridine}} C_2H_5Cl + SO_2 + HCl$. The above reaction is known as :

1) Williamson's synthesis
2) Hoffmann's reaction
3) Mendius reaction
4) Darzen's process

100. $H_2 + Cl_2 \xrightarrow{\text{Sunlight}} 2HCl$

In the above reaction the order of reaction is :

1) 3 2) 2 3) 0 4) 1

Directions for question 101 to 120 :

These questions consists of two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one of the following five responses.

A. If both the assertion and reason are true and the reason is a correct explanation of the assertion.

B. If both the assertion and reason are true but the reason is not a correct explanation of the assertion.

C. If the assertion is true but the reason is false.

D. If both the assertion and reason are false.

E. If the assertion is false but the reason is true.

101. **Assertion :** Stannous chloride is a powerful oxidising agent which oxidises mercuric chloride to mercury.
Reason : Stannous chloride gives grey precipitate with mercuric chloride, but stannic chloride does not do so.

1) A
2) B
3) C
4) D
5) E

102. **Assertion :** Physical absorption of molecules takes place on surface only.
Reason : In this process, the bonds of the absorbed molecules are broken.

1) A
2) B
3) C
4) D
5) E

103. **Assertion :** The fluorine has lower reactivity.
Reason : F — F bond has low bond dissociation energy.

1) A
2) B
3) C
4) D
5) E

104. **Assertion :** Absolute values of internal energy of substance cannot be determined.
Reason : It is impossible to determine exact values of constituent energies of the substances.

1) A
2) B
3) C
4) D
5) E

105. **Assertion :** Mass and volume are extensive properties.
Reason : Mass/volume is also an extensive parameter.

1) A
2) B
3) C
4) D
5) E

106. **Assertion :** Work done by an ideal gas during reversible isothermal expansion is zero.
Reason : In vacuum external pressure against which expansion occur is zero.

1) A
2) B
3) C
4) D
5) E

107. **Assertion :** DNA molecules and RNA molecules are found in the nucleus of a cell.
Reason : On heating the enzyme do not lose their specific activity.

1) A
2) B
3) C
4) D
5) E

108. **Assertion :** Halogens absorb visible light.
Reason : All halogens are coloured.

1) A
2) B
3) C
4) D
5) E

109. **Assertion :** The first ionisation energy of Be is greater than boron.
Reason : 2p orbitals have lower energy than 2s orbitals.

1) A
2) B
3) C
4) D
5) E

110. **Assertion :** K and Cs are used in photo-electric cells.

Reason : K and Cs emit electrons on exposure to light.

1) A
2) B
3) C
4) D
5) E

111. **Assertion :** σ is strong while π is a weak bond.
Reason : Atoms rotate freely about π bond.

1) A
2) B
3) C
4) D
5) E

112. **Assertion :** A beam of electrons deflects more than a beam of α-particles in an electric field.
Reason : Electrons possess negative charge while α-particles possess positive charge.

1) A
2) B
3) C
4) D
5) E

113. **Assertion :** Alcohol and phenol can be distinguished by sodium hydroxide.
Reason : Phenol is acidic while alcohol is neutral.

1) A
2) B
3) C
4) D
5) E

114. **Assertion :** Acetophenone and benzophenone can be distinguished by iodoform test.
Reason : Acetophenone and benzophenone both are carbonyl compounds.

1) A
2) B
3) C
4) D
5) E

115. **Assertion :** Potassium ferrocyanide and potassium ferricyanite both are diamagnetic.
Reason : Both have unpaired electrons.

1) A
2) B
3) C
4) D
5) E

116. **Assertion :** Benzene is reactive while inorganic benzene is unreactive compound.
Reason : Inorganic benzene is borazine, $B_3N_3H_6$.

1) A
2) B
3) C
4) D
5) E

117. **Assertion :** Isotonic solution do not show the phenomenon of osmosis.
Reason : Isotonic solutions have equal osmotic pressure.

1) A
2) B
3) C
4) D
5) E

118. **Assertion :** CCl_4 and H_2O are immiscible.
Reason : CCl_4 is a polar solvent.

1) A
2) B
3) C
4) D
5) E

119. **Assertion :** All amino acids exist as Zwitter ions.
Reason : Amino acids have both —NH_2 and —COOH group.

1) A
2) B
3) C
4) D
5) E

120. **Assertion :** *o* and *p*-nitrophenols can be separated by steam distillation.
Reason : *o*-nitrophenol have intra-molecular hydrogen bonding while *p*-nitrophenol exists as associated molecules.

1) A

2) B
3) C
4) D
5) E

Biology

121. The nicotinamide is synthesized in our body from :
1) tryptophan
2) tryosine
3) valine
4) alanine

122. Proteins are :
1) polysaccharides
2) polyamides
3) polynucleotides
4) polyglycol

123. Green mufler is useful against :
1) air pollution
2) noise pollution
3) soil pollution
4) radioactive pollution

124. Cyclosporine is used :
1) for allergy
2) as immunodepressent
3) prophylactic for virus
4) none of the above

125. Frame shift mutation occurs when :
1) base is added
2) base is deleted
3) base is added or deleted
4) none of the above

126. Elaters help in dispersal of spores of :
1) Riccia
2) Marchantia
3) Dryopteris
4) Funaria

127. Which of the following has minimum pH ?

1) Bile
2) Saliva
3) Gastric juice
4) Pancreatic juice

128. Anaerobic respiration, after glycolysis is also called as :

1) fermentation
2) fragmentation
3) restoration
4) multiplication

129. Which of following type of anther is found in Malvaceae ?

1) Monothecous
2) Dithecous
3) Polythecous
4) Without thecous

130. The cranial capacity was largest among the :

1) Peking man
2) African man
3) Java ape man
4) Neanderthal man

131. In glycolysis, glucose molecule is converted in to :

1) PEP
2) RuBP
3) acetyl Co-A
4) pyruvic acid

132. If a homozygous red flowered plant is crossed with a homozygous white flowered plant, the offsprings would be :

1) all red flowered
2) half red flowered
3) half white flowered
4) all white flowered

133. Fascicular cambium is the cambium of vascular bundle of :

1) monocot stem
2) dicot stem
3) monocot leaf

4) dicot leaf

134. Introduction of foreign gene for improving genotype is called :
1) tissue culture
2) vernalization
3) genetic engineering
4) eugenics

135. Bud dormancy can be induced by :
1) IAA 2) GA 3) ABA 4) Ethylene

136. Xenia refers to effect of pollen on :
1) endosperm
2) stems
3) taste of fruits
4) vascular tissue

137. Sharpey's perforating fibres are related with :
1) heart contraction
2) muscle relaxation
3) fixing of teeth
4) none of these

138. Which of the following are uricotelic animals ?
1) Rohu, frog
2) Camel, frog
3) Lizard, crow
4) Eagles, earthworm

139. Which of the following helps in respiration of Lichens. ?
1) Isidia
2) Soredia
3) Cyphella
4) Cephalodia

140. Adults of *Wauchereria bancrofti* attacks :
1) kidney
2) heart
3) nervous system
4) lymph vessel

141. The nature of megasporophyll of *Cycas* is similar to :

1) stamen
2) carpel
3) sepal
4) petal

142. Mesophyll is usually differentiated in :
1) monocot leaf
2) isobilateral leaf
3) dorsiventral leaf
4) both (1) and (2)

143. Which of the following gives Fehling's test ?
1) Pectin
2) Sucrose
3) Cellulose
4) Glucose

144. The plant body of *Funaria* is :
1) sporophyte
2) gametophyte
3) predominantly sporophyte with independent gametophyte
4) predominantly gametophyte with dependent sporophyte

145. Lysis of foreign cell is mediated through :
1) IgM
2) IgA
3) IgE
4) IgM and IgG

146. Wharton's duct is the duct of :
1) parotid gland
2) submandibular salivary gland
3) submaxillary gland
4) pancreatic gland

147. *Hydra* receives impulses and stimuli through :
1) nerve cells
2) sensory cells
3) neuron cell
4) nematocysts

148. What is left, when bath sponges dries up ?

1) Spicules
2) Hold fast
3) Spongin fibres
4) Tentacles

149. The places of first, second and third moulting of *Ascaris* larva are :
1) soil, alveoli, lung
2) liver, soil, stomach
3) soil, lung, liver
4) soil, intestine, lung

150. In *Entamoeba histolytica,* the presence of chromatid bodies is characteristic of :
1) precystic stage
2) trophozoite stage
3) mature binucleate stage
4) both (1) and (2)

151. A chromosome with centromere at one end is called :
1) telocentric
2) metacentric
3) excentric
4) apocentric

152. Pure line breed refers to :
1) homozygosity
2) heterozygosity
3) linkage
4) both (2) and (3)

153. Algae are useful because they :
1) purify the atmosphere
2) are large in number
3) are used in fermentation
4) are used to study respiration

154. Which of following teeth are lophodont ?
1) Incisor and canine
2) Premolar and molar
3) Canine and premolar
4) Premolar and incisor

155. The phagocytosis was first of all seen by :

1) Huxley
2) Haeckel
3) Matchnikoff
4) Darwin

156. Which of the following organelle is related with photorespiration ?
1) Peroxisome
2) Chloroplast
3) Mitochondria
4) Lysosome

157. Wobble hypothesis was given by :
1) F.H.C. Crick
2) Nirenberg
3) Holley
4) Khorana

158. Curdling of milk in small intestine takes place due to :
1) rennin
2) trypsin
3) chymotrypsin
4) ptylase

159. Passage cells are found in :
1) endodermis
2) pericycle
3) cortex
4) epiblemma

160. Ploidy of ovum of angiosperms is :
1) haploid
2) diploid
3) triploid
4) polyploid

Directions for question 161 to 180 :

These question consist of two statements, each, printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following five responses.
(A) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
(B) If both the assertion and the reason are true but the reason is not a correct explanation of assertion.

(C) If the assertion is true but the reason is false..
(D) If both the assertion and reason are false.
(E) If the assertion false but the reason is true.

161. **Assertion :** Collenchyma is thick walled dead tissue.
Reason : Collenchymatous cells show thickenings of pectin.

1) A
2) B
3) C
4) D
5) E

162. **Assertion :** Bacterial photosynthesis occurs by utilizing wavelength longer than 700 nm.
Reason : Here reaction centre is P-890.

1) A
2) B
3) C
4) D
5) E

163. **Assertion :** The two cotyledons in seed are embryonic leaves.
Reason : The embryo contain radicle and plumule.

1) A
2) B
3) C
4) D
5) E

164. **Assertion :** Systematics is the branch of biology that deals with classification of living organisms.
Reason : The aim of classification is to group the organisms.

1) A
2) B
3) C
4) D
5) E

165. **Assertion :** The megaspore mother cell divide mitotically to produce four spores.
Reason : Megaspore mother cells are diploid and megaspore is haploid.

1) A
2) B
3) C
4) D
5) E

166. **Assertion :** Six molecules of CO_2 and twelve molecules of $NADPH^+ + H^+$ and 18 ATP are used to form one hexose molecules.
Reason : Light reaction results in formation of ATP and $NADPH_2$.

1) A
2) B
3) C
4) D
5) E

167. **Assertion :** Plasmids are single-stranded extrachromosomal DNA.
Reason : Plasmids are usually present in eukaryotic cells.

1) A
2) B
3) C
4) D
5) E

168. **Assertion :** m-RNA attaches to ribosome through its 3' end.
Reason : The m-RNA has F-capsular nucleotide and bases of lagging sequence.

1) A
2) B
3) C
4) D
5) E

169. **Assertion :** Organisms are made up of cells.
Reason : Cell are structural unit of living organisms. A cell keeps its chemical composition steady within its boundary.

1) A
2) B
3) C
4) D
5) E

170. **Assertion :** Clones are produced by sexual reproduction and same sexual process.
Reason : These are prepared by group of cells descended from many cells or by inbreeding of a heterozygous line.

1) A
2) B
3) C
4) D

5) E

171. **Assertion :** Living organisms are regarded as closed systems.
Reason : Energy of living organisms can not be lost or gained from external environment.

1) A
2) B
3) C
4) D
5) E

172. **Assertion :** Death is one of the important regulatory process on earth.
Reason : It avoids over-crowding caused by continuous reproduction.

1) A
2) B
3) C
4) D
5) E

173. **Assertion :** The imbalance in concentration of Na^+, K^+ and proteins generates resting potential.
Reason : To maintain the unequal distribution of Na^+ and K^+, the neurons use electrical energy.

1) A
2) B
3) C
4) D
5) E

174. **Assertion :** The regulation of RBC production is accomplished by FSH.
Reason : Erythropoietin hormone circulates to red bone marrow where it increases stem cell mitosis and speed up development of RBCs.

1) A
2) B
3) C
4) D
5) E

175. **Assertion :** WBCs accumulate at site of wounds by diapedesis.
Reason : It is squeezing of leucocytes from endothelium.

1) A
2) B
3) C

4) D
5) E

176. **Assertion :** Specialization of cells is useful for organism.
Reason : It increases the operational efficiency of an organism.

1) A
2) B
3) C
4) D
5) E

177. **Assertion :** The number of cells in a multicellular organism is inversely proportional to size of body.
Reason : All cells of biological world are alive.

1) A
2) B
3) C
4) D
5) E

178. **Assertion :** Histamine is related with allergic and inflammatory reactions.
Reason : Histamine is a vasodilator.

1) A
2) B
3) C
4) D
5) E

179. **Assertion :** Lateral line system is found in fishes and aquatic larval amphibians.
Reason : Lateral line system has receptor sensory cells derived from ectoderm.

1) A
2) B
3) C
4) D
5) E

180. **Assertion :** Glycolysis occurs in cytoplasm.
Reason : Enzymes of glycolysis are found in cytoplasm. It is common in aerobic/anaerobic respiration.

1) A
2) B
3) C
4) D

5) E

General Knowledge

181. The founder of 'Khalsa' was :
    1) Guru Gobind Singh
    2) Guru Nanak Dev
    3) Guru Ram Das
    4) Guru Tegh Bahadur

182. Who was the last Viceroy of India ?
    1) Lord David
    2) Lord Wavell
    3) Lord Mountbatten
    4) Wellington

183. How many islands are there in Lakshadweep ?
    1) 27
    2) 36
    3) 55
    4) 33

184. Men's Single US Open, 2001 Championship won by :
    1) Leyton Herwitt
    2) Pete Sampras
    3) Safin
    4) Stefan Edberg

185. 'Human Organ Development Centre for Transplantation' is going to be established in India at :
    1) Vellore
    2) Mumbai
    3) Hyderabad
    4) Chennai

186. Who is called Nightingale of India ?
    1) Indira Gandhi
    2) Lata Mangeshker
    3) Asha Bhonsle
    4) Sarojini Naidu

187. Which of the following Hindi Indian movies was nominated in the category of foreign language film for Oscar Award 2002 ?

1) Mansoon Wedding
2) Dil Chahata Hai
3) Gadar Ek Prem Katha
4) Lagaan

188. The design of the National Flag was adopted by the constituent assembly of India on :
1) 26 January, 1948
2) 26 January, 1950
3) 22 July, 1947
4) 15 August, 1947

189. July 11 is celebrated as :
1) Doctor's Day
2) Van Mahotsava Day
3) AIDS Day
4) World Population Day

190. Who was chosen 'Time Magazine's Person' for the year 2001 ?
1) Collin Powel
2) Mike Monore
3) George Bush
4) Rudolf Guilani

191. Which one of the classical dance forms originated in Andhra Pradesh ?
1) Odissi
2) Kathakali
3) Kuchipudi
4) Bharat Natyam

192. An Indian river, that does not form any delta is :
1) Cauvery
2) Narmada
3) Yamuna
4) Singh

193. 'Gayatri Mantra' is related with :
1) Athar Veda
2) Rig Veda
3) Yajur Veda
4) Sam Veda

194. Which organ of the body purifies the blood ?

1) Heart
2) Lungs
3) Kidneys
4) Pancreas

195. Who is known as the 'Iron Man of India' ?
1) Bhagat singh
2) Rajguru
3) Sardar Vallabhbhai Patel
4) Mahatma Gandhi

196. The spinning of the earth on its imaginary axis is known as :
1) rotation
2) circulation
3) orbiting
4) revolution

197. When was the first football world cup held ?
1) 1930
2) 1952
3) 1956
4) 1960

198. How many languages are recognise by the Constitution of India in the 8th schedule ?
1) 10
2) 15
3) 18
4) 21

199. When was the golden jubilee of Indian Parliament celebrated ?
1) 1st January, 1998
2) 26th January, 2002
3) 13th May, 2002
4) 15th August, 2004

200. Who is CEAT International Cricketer of the year 2000-2001 ?
1) Rahul dravid
2) Muttiah Muralitharan
3) Shane Warne
4) Brayan Lara

Answer Key

1) 1	2) 1	3) 3	4) 1	5) 3	6) 2	7) 3	8) 2	9) 2	10) 4
11) 3	12) 2	13) 1	14) 1	15) 3	16) 1	17) 3	18) 2	19) 4	20) 3
21) 3	22) 1	23) 2	24) 1	25) 2	26) 1	27) 2	28) 3	29) 2	30) 2
31) 1	32) 1	33) 3	34) 1	35) 1	36) 1	37) 3	38) 3	39) 1	40) 2
41) 1	42) 3	43) 3	44) 3	45) 4	46) 2	47) 3	48) 4	49) 3	50) 4
51) 3	52) 1	53) 1	54) 1	55) 5	56) 3	57) 2	58) 2	59) 3	60) 3
61) 4	62) 2	63) 4	64) 2	65) 3	66) 4	67) 4	68) 3	69) 4	70) 3
71) 4	72) 3	73) 1	74) 2	75) 1	76) 2	77) 4	78) 2	79) 1	80) 2
81) 2	82) 4	83) 1	84) 1	85) 2	86) 4	87) 3	88) 4	89) 1	90) 1
91) 1	92) 1	93) 4	94) 4	95) 3	96) 2	97) 3	98) 4	99) 4	100) 3
101) 5	102) 4	103) 5	104) 1	105) 3	106) 1	107) 5	108) 1	109) 3	110) 1
111) 3	112) 2	113) 1	114) 2	115) 5	116) 5	117) 1	118) 3	119) 1	120) 1
121) 1	122) 2	123) 2	124) 2	125) 3	126) 2	127) 3	128) 1	129) 1	130) 4
131) 4	132) 1	133) 2	134) 3	135) 3	136) 1	137) 3	138) 3	139) 3	140) 4
141) 2	142) 3	143) 4	144) 4	145) 4	146) 2	147) 2	148) 3	149) 4	150) 1
151) 1	152) 1	153) 1	154) 2	155) 3	156) 1	157) 1	158) 1	159) 1	160) 1
161) 5	162) 2	163) 2	164) 2	165) 5	166) 2	167) 4	168) 4	169) 1	170) 4
171) 4	172) 1	173) 3	174) 5	175) 2	176) 1	177) 4	178) 1	179) 1	180) 1
181) 1	182) 3	183) 2	184) 1	185) 3	186) 4	187) 4	188) 3	189) 4	190) 4
191) 3	192) 2	193) 2	194) 2	195) 3	196) 1	197) 1	198) 3	199) 3	200) 2