

AIIMS - 2001

Full Paper

Physics

- Four lenses having the focal length of +15 cm, 20 cm, +150 cm, and +250 cm respectively are provided to make an astronomical telescope. The focal length of the eyepiece to produce the largest magnification, should be :
 - + 150 cm
 - + 180 cm
 - 25 cm
 - + 240 cm
- A stone tied to a string is rotated with a uniform speed in a vertical plane. If mass of the stone is m , the length of the string is r and the linear speed of the stone is v , when the stone is at its lowest point, then the tension in the string will be :
(g = acceleration due to gravity)
 - $(mv^2/r) + mg$
 - $(mv^2/r) - mg$
 - mv/r
 - mg
- Which one of the following is not a thermodynamical co-ordinate ?
 - V
 - R
 - T
 - P
- In a circuit, the current lags behind the voltage by a phase difference of $\pi/2$, the circuit will contain which of the following :
 - only R
 - only C
 - R and C
 - only L
- When the two surface are coated with the lubricant, then they will :
 - slide upon each other
 - stick to each other
 - roll upon each other
 - none of the above
- The escape velocity from the earth is 11.2 km/s. The escape velocity from a planet having twice the radius and the same mean density as the earth, is :

- 1) 11.2 km/s
- 2) 22.4 km/s
- 3) 15.83 km/s
- 4) 7.92 km/s

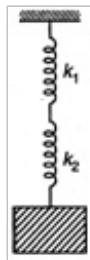
7. A gun fires a bullet of mass 50 g with a velocity of 30 m/s. Due to this, the gun is pushed back with a velocity of 1 m/s, then the mass of the gun is :

- 1) 1.5 kg
- 2) 4.5 kg
- 3) 0.5 kg
- 4) 6.0 kg

8. In a sinusoidal wave the time required for a particular point to move from equilibrium position to maximum displacement is 0.17 s, then the frequency of wave is :

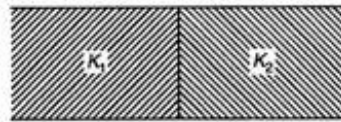
- 1) 1.47 Hz
- 2) 2.47 Hz
- 3) 3.47 Hz
- 4) 5.48 Hz

9. The frequency of oscillator of the springs as shown in figure will be :



- 1) $\frac{1}{2\pi} \sqrt{\frac{(k_1 + k_2)m}{k_1 k_2}}$
- 2) $\frac{1}{2\pi} \sqrt{\frac{k_1 k_2}{(k_1 + k_2)m}}$
- 3) $\frac{1}{2\pi} \sqrt{\frac{k}{m}}$
- 4) $2\pi \sqrt{\frac{k}{m}}$

10. Two material having the dielectric constants K_1 and K_2 are filled between two parallel plates of a capacitor. Where area of each plate is A and the distance between the plates is d .



The capacity of the capacitor is :

- 1) $\frac{A\epsilon_0(k_1 \times k_2)}{d(k_1 + k_2)}$
- 2) $\frac{A\epsilon_0(k_1 - k_2)}{d}$
- 3) $\frac{A\epsilon_0 k_1 k_2}{(k_1 + k_2)}$
- 4) $\frac{A\epsilon_0(k_1 + k_2)}{d}$

11. Simple pendulum is executing simple harmonic motion with time period T. If the length of the pendulum is increased by 21%, then the increase in the time period of the pendulum of the increased length is :
 - 1) 12%
 - 2) 11%
 - 3) 10%
 - 4) 9%

12. The temperature of the cold junction of a thermocouple is 0°C and the temperature of the hot junction is T°C. The relation for the thermo emf is given by, $E = AT - (1/2) BT^2$ (when $A = 16$ and $B = 0.08$). The temperature of inversion will be :
 - 1) 100°C
 - 2) 200°C
 - 3) 300°C
 - 4) 400°C

13. Two projectiles are projected with the same velocity. If one is projected at an angle of 30° and the other at 60° to the horizontal. The ratio of maximum heights reached, is :
 - 1) 1 : 3
 - 2) 9 : 1
 - 3) 3 : 1
 - 4) 1 : 9

14. Bernoulli's principle is based on the law of conservation of :
 - 1) mass
 - 2) energy
 - 3) angular momentum
 - 4) linear momentum

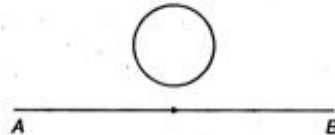
15. Fraunhofer line of the solar system is an example of :
 - 1) line absorption spectrum
 - 2) line emission spectrum

- 3) emission of band spectrum
4) none of the above
16. According to Hooke's law of elasticity, if stress is increased, then the ratio of stress to strain :
- 1) becomes zero
 - 2) remains constant
 - 3) decreases
 - 4) increases
17. In a circuit the coil of a choke :
- 1) decreases the current
 - 2) increases the current
 - 3) has high resistance to DC circuit
 - 4) no effect with the current
18. A body A starts from rest with an acceleration a_1 . After 2 s another body B starts from rest with an acceleration a_2 . If they travel equal distances in 5 s, after the starts of A, the ratio $a_1 : a_2$ will be equal to :
- 1) 3 : 5
 - 2) 5 : 3
 - 3) 5 : 9
 - 4) 9 : 5
19. The function of heavy water in a nuclear reactor is to :
- 1) slow down the neutrons
 - 2) increase the neutrons
 - 3) stop the electrons
 - 4) none of the above
20. The colour of a star indicates its :
- 1) velocity
 - 2) temperature
 - 3) size
 - 4) length
21. The current gain for a transistor working a common-base amplifier is 0.96. If the emitter current is 7.2 mA, the base current will be :
- 1) 0.19 mA
 - 2) 0.29 mA
 - 3) 0.39 mA
 - 4) 0.49 mA

22. When radioactive substance emits an α -particle, then, its position in the periodic table is lowered by :

- 1) two places
- 2) three places
- 3) five places
- 4) one place

23. The current flows from A to B as shown in figure, then the direction of the induced current in the loop will be :



- 1) straight line
- 2) anti-clockwise
- 3) clockwise
- 4) none of the above

24. In an atom bomb, the energy is released because of the :

- 1) chain reaction of neutrons and ${}_{92}\text{U}^{238}$
- 2) chain reaction of neutrons and ${}_{92}\text{U}^{235}$
- 3) chain reaction of neutrons and ${}_{92}\text{U}^{236}$
- 4) chain reaction of neutrons and ${}_{92}\text{U}^{240}$

25. The cell has an emf of 2V and the internal resistance of this cell is 0.1Ω , it is connected to resistance of 3.9Ω , the voltage across the cell will be :

- 1) 1.95 V
- 2) 1.85 V
- 3) 2 .85 V
- 4) 2.95 V

26. A sings with a frequency n and B sings with a frequency $1/8$ that of A. If the energy remains the same and the amplitude of A is a , then amplitude of B will be :

- 1) $6a$
- 2) $8a$
- 3) $10a$
- 4) $12a$

27. When added an impurity into the silicon which one of the following produces n-type of semiconductors ?

- 1) Iron

- 2) Magnesium
- 3) Aluminium
- 4) Phosphorus

28. The tension in a piano wire is 10 N. The tension in a piano wire to produce a node of double frequency is :

- 1) 20 N
- 2) 40 N
- 3) 50 N
- 4) 60 N

29. The internal resistance of a cell is the resistance of :

- 1) electrolyte used in the cell
- 2) electrodes of the cell
- 3) vessel of the cell
- 4) none of the above

30. Two equal vectors have a resultant equal to either of them, then the angle between them will be :

- 1) 30°
- 2) 60°
- 3) 120°
- 4) 180°

31. A force $(3\hat{i} + 4\hat{j})$ N acts on a body and displaced it by $(3\hat{i} + 4\hat{j})$ m. The work done by the force is :

- 1) 5 J
- 2) 25 J
- 3) 75 J
- 4) 100 J

32. A stone tied to the end of string of 80 cm long, is whirled in a horizontal circle with a constant speed. If the stone makes 25 revolutions in 14 s. Then, magnitude of acceleration of the same will be :

- 1) 990 cm/s^2
- 2) 780 cm/s^2
- 3) 790 cm/s^2
- 4) 950 cm/s^2

33. Cyclotron is used to accelerate :

- 1) positive ion
- 2) negative ion
- 3) electron
- 4) none of these

34. The length and breadth of a metal sheet are 3.124 m and 3.002 m respectively, the area of this sheet upto four correct significant figure is :

- 1) 9.378 m^2

- 2) 9.478 m^2
- 3) 9.248 m^2
- 4) 9.782 m^2

35. Which one of the following has the highest neutrons ratio ?

- 1) ${}_{92}\text{U}^{235}$
- 2) ${}_{8}\text{O}^{16}$
- 3) ${}_{2}\text{He}^4$
- 4) ${}_{26}\text{Fe}^{56}$

36. A metal ball of mass 2 kg moving with speed of 36 km/h has a collision with a stationary ball of mass 3 kg. If after collision, both the ball move together, the loss in kinetic energy due to collision is :

- 1) 15 J
- 2) 30 J
- 3) 60 J
- 4) 120 J

37. A constant torque of 31.4 N-m is exerted on a pivoted wheel. If the angular acceleration of the wheel is $4\pi \text{ rad/s}^2$, then the moment of inertia, will be :

- 1) 6.8 kg-m^2
- 2) 8.5 kg-m^2
- 3) 9.6 kg-m^2
- 4) 2.5 kg-m^2

38. The velocity of a bullet is reduced from 200 m/s to 100 m/s, while travelling through a wooden block of thickness 10 cm. Assuming it to be uniform, the retardation will be :

- 1) $15 \times 10^4 \text{ m/s}^2$
- 2) $12 \times 10^4 \text{ m/s}^2$
- 3) $24 \times 10^4 \text{ m/s}^2$
- 4) 32 m/s^2

39. Which of the following pairs does not have similar dimensions ?

- 1) Tension and surface tension
- 2) Stress and pressure
- 3) Planck's constant and angular momentum
- 4) Angle and strain

40. A spherical drop of water has 1 mm radius. If the surface tension of water is $70 \times 10^{-3} \text{ N/m}$, then the difference of pressures between inside and outside of the spherical drop is :

- 1) 140 N/m^2
- 2) 70 N/m^2
- 3) 35 Nm^2
- 4) 14 N/m^2

41. What change occurs, if the monochromatic light used in Young's double slit experiment is replaced by white light ?

- 1) Only the central fringe is white and all other fringes are observed coloured
- 2) No fringes are observed
- 3) All the bright fringes become white
- 4) All the bright fringes are coloured between violet and red

42. How does the red shift confirm that the universe is expanding ?

- 1) Wavelength of light emitted by galaxies appears to decrease
- 2) Wavelength of light emitted by galaxies appears to be the same
- 3) Wavelength of light emitted by galaxies appears to increase
- 4) None of the above

43. If in a wire of Young's modulus Y , longitudinal strain X is produced then the potential energy stored in its unit volume will be :

- 1) $0.5 Y X^2$
- 2) $0.5 Y^2 X$
- 3) $Y X^2$
- 4) $Y^2 X$

44. A black body is heated from 27°C to 127°C . The ratio of their energies of radiation emitted will be :

- 1) 3 : 2
- 2) 27 : 64
- 3) 81 : 256
- 4) 2 : 3

45. In an adiabatic change, the pressure and temperature of a monoatomic gas are related with relation as $P \propto T^C$, where C is equal to :

- 1) $4/5$
- 2) $4/3$
- 3) $5/2$
- 4) $3/5$

46. What is electric flux associated with one of faces of the cube, when a charge (q) is enclosed in a cube?

- 1) $6q/\epsilon_0$
- 2) $q/6\epsilon_0$
- 3) $q/3\epsilon_0$
- 4) $3q/\epsilon_0$

47. A closely wound flat circular coil of 25 turns of wire has diameter of 10 cm which carries current of 4 A, the flux density at the centre of a coil will be :

- 1) $1.256 \times 10^{-3} \text{ T}$
- 2) $2.679 \times 10^{-5} \text{ T}$
- 3) $2.512 \times 10^{-5} \text{ T}$
- 4) $3.28 \times 10^{-4} \text{ T}$

48. The point charges Q and - 2Q are placed at some distance apart. if the electric field at the location of Q is E, the electric field at the location of - 2Q will be :

- 1) - (3E/2)
- 2) - E
- 3) - (E/2)
- 4) - 2E

49. A concave mirror having the focal length 15 cm, forms an image having twice of the linear dimensions of the object. If the image is virtual, then the position of the object will be :

- 1) 7.5 cm
- 2) 15 cm
- 3) 30 cm
- 4) 60 cm

50. Two sound waves have phase difference of 60° , then they will have the path difference of :

- 1) $3\lambda/2$
- 2) $2\lambda/3$
- 3) $\lambda/6$
- 4) $\lambda/3$

These questions consist of two statements each stated as Assertion and Reason. While answering these questions you are required to choose any one of the following options :

A. If both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. If both the Assertion and Reason are true but the Reason is not 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 Reason is true.

51. **Assertion** : A metallic shield in form of a hollow shell may be built to block an electric field.

Reason : In a hollow spherical shield, the electric field inside it is zero at every point.

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

52. **Assertion** : A rocket moves forward by pushing the surrounding air backwards.

Reason : It derives the necessary thrust to move forward according to Newton's third Law of motion.

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

53. **Assertion** : In a movie, ordinarily 24 frames are projected per second from one end to the other of the complete film.

Reason : The image formed on retina of eye is sustained upto $1/10$ s after the removal of stimulus.

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

54. **Assertion** : In adiabatic compression, the internal energy and temperature of the system get decreased.

Reason : The adiabatic compression is a slow process.

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

55. **Assertion** : In Young's experiment, the fringe width for dark fringes is different from that for white fringes.

Reason : In Young's double slit experiment when the fringes are performed with a source of white light, then only black and bright fringes are observed.

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

5) E

56. **Assertion** : The isothermal curves intersect each other at a certain point.

Reason : The isothermal change takes place slowly so, the isothermal curves have very little slope.

1) A

2) B

3) C

4) D

5) E

57. **Assertion** : Blue colour of sky appears due to scattering of blue colour.

Reason : Blue colour has shortest wave length in visible spectrum.

1) A

2) B

3) C

4) D

5) E

58. **Assertion** : X-rays travel with the speed of light.

Reason : X-rays are electromagnetic rays.

1) A

2) B

3) C

4) D

5) E

59. **Assertion** : When the speed of an electron increases its specific charge decreases.

Reason : Specific charge is the ratio of the charge to mass.

1) A

2) B

3) C

4) D

5) E

60. **Assertion** : ${}_Z X^A$ undergoes 2α -decays, 2β -decays and 2γ -decays and the daughter product is ${}_{Z-2} Y^{A-8}$.

Reason : In α -decay the mass number decreases by 4 and atomic number decreases by 2. In, β -decay the mass number remains unchanged, but atomic number increases by 1 only.

1) A

2) B

3) C

- 4) D
- 5) E

Chemistry

61. Which one of the following is not a Green house gas ?
- 1) CO₂
 - 2) H₂O
 - 3) N₂
 - 4) O₃
62. The number of sigma electrons in toluene is :
- 1) 5
 - 2) 10
 - 3) 15
 - 4) 30
63. The most suitable method for removing water traces from ethanol is :
- 1) distillation
 - 2) passing dry HCl
 - 3) reacting it with Mg
 - 4) heat with sodium metal
64. A solution having hydrogen ion concentration is 0.0005 g-equi/L, its pOH is :
- 1) 9.2798
 - 2) 10.6990
 - 3) 11.7854
 - 4) 15.3344
65. The colligative property is not represented by :
- 1) elevation in boiling point
 - 2) osmotic pressure
 - 3) optical activity
 - 4) relative lowering of vapour pressure
66. The boiling points of four saturated hydrocarbons are given below. Which boiling point suggests maximum number of carbon atoms in its molecule ?
- 1) - 182°C
 - 2) - 188.6°C
 - 3) - 0.5°C
 - 4) - 52.2°C
67. Aldehyde and ketones can be distinguished by :
- 1) ammonia
 - 2) H₂SO₄

- 3) alkaline KMnO_4
- 4) Fehling solution

68. Which of the following is unaffected by temperature ?

- 1) Normality
- 2) Molarity
- 3) Molality
- 4) Formality

69. Zwitter ion contains :

- 1) -ve charge
- 2) +ve charge
- 3) both +ve and -ve charge
- 4) none of the above

70. In lake test of Al^{3+} ion, there is formation of coloured floating. It is due to :

- 1) absorption of litmus by H_2O
- 2) adsorption of litmus of $\text{Al}(\text{OH})_3$
- 3) adsorption of litmus $\text{Al}(\text{OH})_4^-$
- 4) none of the above

71. The oxidation number of Cr in $\text{K}_2\text{Cr}_2\text{O}_7$ is :

- 1) +2
- 2) +4
- 3) +6
- 4) +7

72. The strongest oxidising agent is :

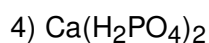
- 1) F_2
- 2) Cl_2
- 3) I_2
- 4) Br_2

73. The shape of NH_3 molecule is :

- 1) tetrahedral
- 2) trigonal planar
- 3) trigonal pyramidal
- 4) linear

74. Water glass is :

- 1) Na_2SiO_3
- 2) Mg_2Si
- 3) SiCl_4



75. The movement of colloidal particle under applied electric current is known as :

- 1) electro dialysis
- 2) dialysis
- 3) electrophoresis
- 4) none of the above

76. The velocity of electron in second shell of hydrogen atom is :

- 1) $20.94 \times 10^6 \text{ms}^{-1}$
- 2) $38.88 \times 10^6 \text{ms}^{-1}$
- 3) $1.888 \times 10^6 \text{ms}^{-1}$
- 4) $1.094 \times 10^6 \text{ms}^{-1}$

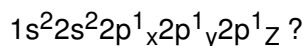
77. In diamond crystal each carbon atom is linked with carbon atoms. The number of carbon atoms linked is :

- 1) 2 2) 4 3) 3 4) 1

78. Reduction of nitrobenzene with Sn / HCl produce :

- 1) azobenzene
- 2) azoxybenzene
- 3) nitrobenzene
- 4) aniline

79. Which of the following element is represented by electronic configuration



- 1) Nitrogen
- 2) Oxygen
- 3) Fluorine
- 4) Sulphur

80. Philosopher's wool on heating with BaO at 1100°C produce :

- 1) $\text{Ba} + \text{ZnCl}_2$
- 2) BaCdO_2
- 3) BaZnO_2
- 4) $\text{BaO}_2 + \text{Zn}$

81. Hinsberg's reagent is :

- 1) COOC_2H_5
|
 COOC_2H_5

- 2) $C_6H_5SO_2Cl$
- 3) $C_6H_5SO_2NH_2$
- 4) $CH_3COCH_2COOC_2H_5$

82. Sucrose on treatment with conc. HCl produce :

- 1) glucose
- 2) fructose
- 3) glucose + fructose
- 4) laevulinic acid

83. The composition of duralumin is :

- 1) Al 94%, Mg 6%
- 2) Cu 56%, Zn 24%, Ni 20%
- 3) Cu 95%, Al 5%
- 4) Al 95%, Cu 4%, Mn 0.5%, Mg 0.5%

84. In the exothermic reaction the enthalpy of reaction is always :

- 1) zero
- 2) positive
- 3) negative
- 4) none of these

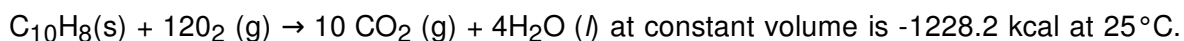
85. The molarity of H_2SO_4 solution, which has a density 1.84 g/cc at $35^\circ C$ and contains 98% by weight is :

- 1) 1.84 M
- 2) 18.4 M
- 3) 36.6 M
- 4) 54.5 M

86. The pH value of N/10 NaOH is :

- 1) 9
- 2) 11
- 3) 12
- 4) 13

87. The heat of reaction for :



The heat of reaction at constant pressure and same temperature is :

- 1) -1238.2 kcal
- 2) -1229.3 kcal
- 3) -1242.9 kcal
- 4) -1252.6 kcal

88. The electrical conductivity of semi-conductors :

- 1) decrease with temperature
- 2) increase with temperature
- 3) remain constant on heating
- 4) none of the above

89. The product formed by the reaction of acetamide with bromine in presence of NaOH is :

- 1) CH_3CN
- 2) CH_3CHO
- 3) $\text{CH}_3\text{CH}_2\text{OH}$
- 4) CH_3NH_2

90. Primary amine reacts with carbon disulphide and HgCl_2 to produce alkyl isothiocyanate. This reaction is :

- 1) Carbylamine reaction
- 2) Hofmann bromide reaction
- 3) Perkin reaction
- 4) Hofmann mustard oil reaction

91. Water gas is produced by :

- 1) passing steam over red hot coke
- 2) passing steam and air over red hot coke
- 3) burning coke in excess of air
- 4) burning coke in limited supply of air

92. The de-Broglie wavelength associated with a particle of mass 10^{-6} kg moving with a velocity of 10 ms^{-1} is :

- 1) 6.63×10^{-14}
- 2) 6.63×10^{-15}
- 3) 6.63×10^{-23}
- 4) 6.63×10^{-29}

93. 20 g of a substance were dissolved in 500 mL of water and the osmotic pressure of the solution was found to be 600 mm of mercury at 15°C . The molecular weight of substance is :

- 1) 898
- 2) 1024
- 3) 1092
- 4) 1198

94. The number of water molecules in Mohr's salt is :

- 1) 3

- 2) 6
- 3) 9
- 4) 12

95. The weight of NaCl decomposed by 4.9 g of H₂SO₄, if 6 g of sodium hydrogen sulphate and 1.825 of HCl were produced in the reaction :

- 1) 7.921 g
- 2) 5.65 g
- 3) 2.925 g
- 4) 12.4 g

96. Salol is :

- 1) acetyl salicylic acid
- 2) phenyl salicylate
- 3) methyl salicylate
- 4) none of the above

97. The normality of orthophosphoric acid having purity of 70% by weight and specific gravity 1.54 is :

- 1) 11 N
- 2) 22 N
- 3) 33 N
- 4) 55 N

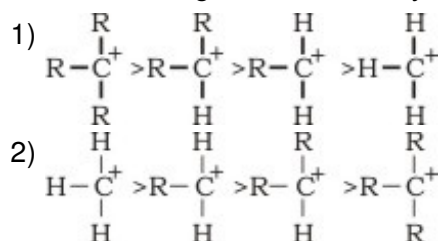
98. Sodium forms Na⁺ ion but it does not form Na²⁺ because :

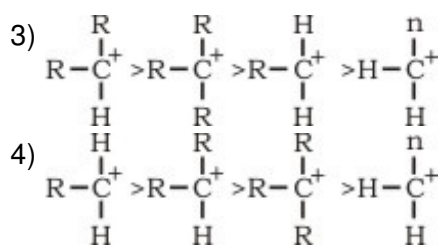
- 1) very low value of 1st and IInd IE
- 2) very high value of 1st and IInd IE
- 3) high value of 1st IE and low value of IInd IE
- 4) low value of 1st IE and high value of IInd IE

99. Two moles of an ideal gas are compressed isothermally (100°C) and reversibly from a pressure of 10 atm to 25 atm, then the free energy change is :

- 1) + 12.482 kJ
- 2) + 15.464 kJ
- 3) + 5.684 kJ
- 4) + 7.364 kJ

100. The decreasing order of stability of alkyl carbonium ion is in the order of :





101. The tribasic acid is :

- 1) H_3PO_4
- 2) H_3PO_3
- 3) H_3PO_2
- 4) HPO_3

102. Which one of the following hydroxide is insoluble in water?

- 1) $\text{Ca}(\text{OH})_2$
- 2) $\text{Ba}(\text{OH})_2$
- 3) $\text{Be}(\text{OH})_2$
- 4) $\text{Mg}(\text{OH})_2$

103. With ammoniacal cuprous chloride solution a reddish brown precipitate is obtained on treating with :

- 1) CH_4
- 2) C_2H_4
- 3) C_2H_2
- 4) C_3H_6

104. The internal energy of a substance is :

- 1) increase with increase in temperature
- 2) decrease with increase in temperature
- 3) remain unaffected with temperature
- 4) can be calculated by the reaction $E = mc^2$

105. 10^{21} molecules are removed from 200 mg of CO_2 . The moles of CO_2 left are :

- 1) 2.88×10^{-3}
- 2) 28.8×10^{-3}
- 3) 288×10^{-3}
- 4) 28.8×10^3

106. One gram equimolecular mixture of Na_2CO_3 and NaHCO_3 is reacted with 0.1 N HCl. The millilitres of 0.1 N HCl required to react completely with the above mixture is :

- 1) 15.78 mL
- 2) 157.8 mL
- 3) 98.4 mL
- 4) 198.5 mL

107. Both oxidation and reduction takes place in :

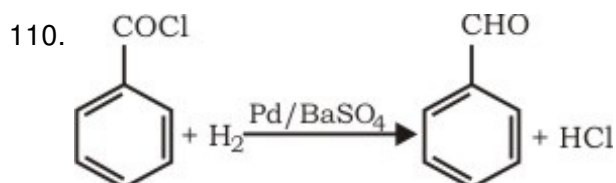
- 1) $\text{NaBr} + \text{HCl} \rightarrow \text{NaCl} + \text{HBr}$
- 2) $\text{HBr} + \text{AgNO}_3 \rightarrow \text{AgBr} + \text{HNO}_3$
- 3) $\text{H}_2 + \text{Br}_2 \rightarrow 2\text{HBr}$
- 4) $\text{CaO} + \text{H}_2\text{SO}_4 \rightarrow \text{CaSO}_4 + \text{H}_2\text{O}$

108. Among the following, insecticide is :

- 1) BHC
- 2) phosphene
- 3) chloral
- 4) aspirin

109. The colloid is :

- 1) urea
- 2) blood
- 3) cane sugar
- 4) NaCl



The above reaction is :

- 1) Clemmensen reduction
- 2) Rosenmund reduction
- 3) Birch reduction
- 4) Wolff-Kishner reduction

Directions for question 111 to 120 :

These questions 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 assertion and reason are true and the reason is a correct explanation of the assertion.
- B. If both assertion and reason are true but reason is not a correct explanation of the assertion.
- C. If assertion is true but reason is false.
- D. If both assertion and reason are false.

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

111. **Assertion** : Anhydrous BaO_2 is used for preparing H_2O_2 .

Reason : Hydrated BaO_2 is not available.

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

112. **Assertion** : Fluorine exists only in -1 oxidation state.

Reason : Fluorine has $2s^2 2p^5$ configuration.

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

113. **Assertion** : Neopentane forms one mono-substituted compound.

Reason : Neopentane is isomer of pentane.

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

114. **Assertion** : Glycerol is purified by distillation under reduced pressure.

Reason : Glycerol is a trihydric alcohol.

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

115. **Assertion** : Magnesium continue to burn in nitric oxide.

Reason : During burning heat evolved do not decompose NO.

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

116. **Assertion** : All molecules in a gas have same speed.

Reason : Gas contains molecules of different size and shape.

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

117. **Assertion** : Iron is found in free state in nature.

Reason : Iron is highly reactive element.

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

118. **Assertion** : A solution of FeCl_3 in water produces brown precipitate on standing.

Reason : Hydrolysis of FeCl_3 takes place in water.

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

119. **Assertion** : During test for nitrogen with Lassaigne extract on adding FeCl_3 solution sometimes a red precipitate is obtained.

Reason : Sulphur is also present.

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

120. **Assertion** : CH_4 does not react with Cl_2 in dark.

Reason : Chlorination of CH_4 takes place in sunlight.

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

121. Discontinuous variations are :

- 1) essential features
- 2) acquired character
- 3) non-essential changes
- 4) mutations

122. 5th cranial nerve of frog is called :

- 1) vagus
- 2) trigeminal
- 3) optic
- 4) ophthalmic

123. In rainy season, door get swelled due to :

- 1) imbibition
- 2) diffusion
- 3) transpiration
- 4) respiration

124. Which of the following is made up of a single bone in mammal ?

- 1) Dentary
- 2) Hyoid
- 3) Upper jaw
- 4) All of these

125. In which portion of *Cycas* diploxylic vascular bundles are found ?

- 1) Root
- 2) Stem
- 3) Leaflet
- 4) Rachis and leaflet

126. Which of the following is not a mental disorder ?

- 1) Epilepsy
- 2) Neurosis
- 3) Psychosis
- 4) Plague

127. Curling of tendrils is due to :

- 1) thigmotropism
- 2) phototropism
- 3) chemotropism
- 4) nyctinasty

128. In which family (9) + 1 androecium condition is found ?

- 1) Malvaceae
- 2) Papilionaceae
- 3) Solanaceae
- 4) Poaceae

129. Geizmule formation in sponges are useful :

- 1) asexual reproduction
- 2) sexual reproduction
- 3) parthenogenesis
- 4) parthenocarpy

130. *Cycas* is :

- 1) monoecious
- 2) bisexual
- 3) dioecious
- 4) hermaphrodite

131. Meroblastic cleavage refers to which type of division of egg ?

- 1) Complete
- 2) Spiral
- 3) Incomplete
- 4) Horizontal

132. Sex organs in *Funaria* develop :

- 1) in protonema
- 2) outside capsule
- 3) in the axil of leaf
- 4) at the tip of gametophore

133. Spindle fibres of mitotic cell are madeup of :

- 1) tubulin
- 2) actin
- 3) myosin
- 4) collagen

134. Zygospor of *Spirogyra* at the time of meiosis is divided into four nuclei. How many nuclei degenerate out of these four ?

- 1) One 2) Two 3) Three 4) Four

135. Clove is :

- 1) flower bud

- 2) axillary bud
- 3) thalamus
- 4) ovule

136. In genetic engineering, which of following is used ?

- 1) Plasmid
- 2) Plastid
- 3) Mitochondria
- 4) ER

137. In bacteria site of respiration is :

- 1) mesosome
- 2) episome
- 3) plasmid
- 4) cytoplasm

138. *Mirabilis jalapa* shows :

- 1) codominance
- 2) incomplete dominance
- 3) dominance
- 4) complementary genes

139. Powdery mildews of crops are caused by :

- 1) bacteria
- 2) ascomycetes
- 3) basidiomycetes
- 4) phycomycetes

140. Barr-body in mammals represents :

- 1) one of the two X-chromosomes in cells of female
- 2) all heterochromatin of male and female cells
- 3) Y-chromosome of male
- 4) all heterochromatin of female cells

141. Monocarpic plants flower :

- 1) once
- 2) twice
- 3) many times
- 4) never

142. The maintenance of internal favourable conditions, by a self regulated mechanisms inspite of the fact that there are changes in environment, is known as :

- 1) entropy
- 2) enthalpy
- 3) homeostasis
- 4) steady state

143. Desert can be converted into green land by planting :

- 1) oxylophytes
- 2) psammophytes
- 3) halophytes
- 4) trees

144. Trophic level are formed by :

- 1) plants
- 2) animals
- 3) organisms linked in food chain
- 4) carnivores

145. Blackman's law of limiting factor is applied to :

- 1) respiration
- 2) transpiration
- 3) photorespiration
- 4) photosynthesis

146. Porous wood contains :

- 1) vessels
- 2) tracheids
- 3) fibres
- 4) parenchyma

147. Pollinia are found in :

- 1) wheat
- 2) madar
- 3) mango
- 4) banana

148. Sella turcica is found :

- 1) near pituitary
- 2) in bone
- 3) in joints
- 4) near thyroid

149. Acromegaly is due to hypersecretion of :

- 1) insulin
- 2) thyroxin
- 3) growth hormone
- 4) none of these

150. Nodules with nitrogen fixing bacteria are found in :

- 1) cotton
- 2) gram
- 3) mustard
- 4) wheat

151. Steroid hormones are similar in structure to :

- 1) tyrosine
- 2) cholesterol
- 3) coenzyme A
- 4) glycerol

152. Deforestation causes :

- 1) soil erosion
- 2) soil pollution
- 3) noise pollution
- 4) air pollution

153. Cessation of menstrual cycle in women is called :

- 1) menopause
- 2) lactation
- 3) ovulation
- 4) parturition

154. Pullorum disease of poultry is caused by :

- 1) Mycobacterium
- 2) Salmonella
- 3) Clostridium
- 4) Hemophilus

155. Minimata disease is pollution related disease. It result from :

- 1) oil spills in sea
- 2) DDT pollution
- 3) release of industrial waste containing mercury in fishing water
- 4) accumulation of arsenic

156. The usage of binomial names, for plant species was accepted by all after the publication

of the work by :

- 1) Hooker
- 2) Linnaeus
- 3) Bentham
- 4) Darwin

157. *Funaria* gametophyte is :

- 1) dioecious
- 2) heteroecious
- 3) autoecious
- 4) monoecious and autoecious

158. A prokaryotic cell lacks :

- 1) true nucleus
- 2) nuclear membrane
- 3) membrane bound organelles
- 4) all of the above

159. Major protein of connective tissue is :

- 1) myosin
- 2) collagen
- 3) melanin
- 4) keratin

160. Outer covering of cartilage is called :

- 1) perichondrium
- 2) periostaeum
- 3) endosternum
- 4) perilonettum

161. The drug bellodona is obtained from :

- 1) Atropa
- 2) Opium
- 3) Rauwoiffia
- 4) Solanum

162. Induction of cell division and delay in senescence is done by :

- 1) cytokinins
- 2) auxins
- 3) GA
- 4) CoA

163. If frog's brain is crushed, even then its leg moves on pinpointing. It is called :
- 1) simple reflex
 - 2) conditional reflex
 - 3) neurotransmitter function
 - 4) neurotransmitter function
164. Brunner's glands are present in :
- 1) duodenum
 - 2) oesophagus
 - 3) ileum
 - 4) stomach
165. Toxic substances are detoxified in human body in :
- 1) kidney
 - 2) lungs
 - 3) liver
 - 4) stomach
166. Which part of embryo comes out first during seed germination ?
- 1) Radicle
 - 2) Plumule
 - 3) Hypocotyl
 - 4) Epicotyl
167. Sometimes, the fern plant arises from fern prothallus without fertilization. This is an example of :
- 1) apospory
 - 2) apogamy
 - 3) parthenocarpy
 - 4) gametogenesis
168. Which of the following is a single membranous structure ?
- 1) Lysosome
 - 2) Nucleus
 - 3) Mitochondria
 - 4) Chloroplast
169. Abundance of a species in a population, within habitat is called :
- 1) niche density
 - 2) absolute density
 - 3) relative density
 - 4) geographic density

170. The protoplasmic segment of a striated muscle fibre is termed as :

- 1) sarcoplasm
- 2) sarcomere
- 3) neuromere
- 4) metamere

Directions for question 171 to 180 :

These questions consist of two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one 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 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.

171. **Assertion** : TMV is a virus which causes mosaic disease.

Reason : TMV has RNA as genetic material.

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

172. **Assertion** : Mosses are evolved from algae.

Reason : Protonema of mosses is similar to some green algae.

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

173. **Assertion** : Many plants are propagated vegetatively even though they bear seeds.

Reason : Potatoes multiply by tubers, apples by cutting etc.

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

174. **Assertion** : Power house of cell is mitochondria.

Reason : ATP is produced in mitochondria.

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

175. **Assertion** : Scurvy is caused by deficiency of vitamin.

Reason : Deficiency of ascorbic acid causes scurvy.

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

176. **Assertion** : Cell wall is not found in animal cell.

Reason : Animal cells are covered by cell membrane.

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

177. **Assertion** : During physiology of excretion, deamination does not take place in liver.

Reason : Deamination is a process to make use of excess of amino acids which can not be incorporated into protoplasm.

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

178. **Assertion** : Cartilage and bone are rigid connective tissues.

Reason : Blood is a connective tissue.

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

179. **Assertion** : Plasmids are extrachromosomal DNA.

Reason : Plasmids are found in bacteria and are useful in genetic engineering.

- 1) A

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

180. **Assertion** : *Plasmodium vivax* is responsible for malaria.

Reason : Malaria is caused by polluted water.

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

General Knowledge

181. The oath of office to a Supreme Court judge is administered by :

- 1) The Chief Justice
- 2) The President of India
- 3) The Chief Justice of India
- 4) The Law minister

182. Who addressed the U.N. General Assembly for the first time in Hindi ?

- 1) Rajendra Prasad
- 2) Atal Bihari Vajpai
- 3) Jawahar Lal Nehru
- 4) Swarn Singh

183. The earthquake is measured by :

- 1) Lactometer
- 2) Seismograph
- 3) Hygrometer
- 4) Barometer

184. Which one of the following function of the platlets occurs in our body ?

- 1) It helps in breathing
- 2) It helps in strengthening of gums
- 3) It helps in circulation of blood
- 4) It helps in clotting of blood

185. In which year was English recommended as the medium of instruction for higher education in India by Lord Macaulay ?

- 1) 1833
- 2) 1835
- 3) 1859
- 4) 1825

186. A former cricketer after whose name no championship has been started in India :
- 1) C.K. Naidu
 - 2) Daleep Singh
 - 3) Lala Amarnath
 - 4) Vijay Merchant
187. Which one of the following is the largest steel arch bridge ?
- 1) Seawise
 - 2) Petronas
 - 3) Strahov
 - 4) George
188. Miss Universe event 2000 was held at :
- 1) Peoutro Rico
 - 2) London
 - 3) Paris
 - 4) Nicosia (Cyprus)
189. Garba dance is a dance style of :
- 1) Gujrat
 - 2) Uttar Pradesh
 - 3) Nagaland
 - 4) Bihar
190. Which one of the following determines the salary of Attorney General ?
- 1) Speaker of Lok Sabha
 - 2) Home Minister
 - 3) President of India
 - 4) Prime Minister
191. The writer of "Daughter of East" is :
- 1) Indira Gandhi
 - 2) Benazir Bhutto
 - 3) Amrita Pritam
 - 4) Marget Thatcher
192. AIDS is caused by :
- 1) Helminth
 - 2) Protozoa
 - 3) Virus
 - 4) Bacteria

193. Teachers day is celebrated on ;
- 1) 5th September
 - 2) 16 August
 - 3) 21 September
 - 4) 1st April
194. National Anthem "Jana Gana Mana" was adopted on :
- 1) 26 January, 1950
 - 2) 26 July, 1947
 - 3) 15 August, 1947
 - 4) 24 January, 1950
195. At the first time, the song Vande Mataram was sung in :
- 1) Indian National Congress session 1986
 - 2) Indian National Congress session 1896
 - 3) Quit India Movement 1942
 - 4) Congress session 1911
196. Currency note bears the signature of the :
- 1) Finance Minister
 - 2) Governor, Reserve Bank of India
 - 3) Cabinet Secretary
 - 4) President
197. Who is the chairman of Rajya Sabha ?
- 1) Speaker of Lok Sabha
 - 2) Home Minister
 - 3) President
 - 4) Vice President
198. Which one of the following vitamin can be most easily synthesised in the human body ?
- 1) Vitamin B
 - 2) Vitamin C
 - 3) Vitamin A
 - 4) Vitamin D
199. From where did Mahatma Gandhi start the famous Dandi March ?
- 1) Surat
 - 2) Mumbai
 - 3) Bardoli
 - 4) Ahmedabad

200. Who discovered the sea route to India ?

- 1) Vasco de Gama
- 2) Columbus
- 3) Magellan
- 4) Hopkins

Answer Key

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