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eMedical Prep

Model Test Paper–7

Time : 3½ hours.   *Maximum Marks : 200*

PHYSICS

1. If 1000 droplets each of charge q and radius r are mixed to form a big drop, then the potential of big drop, as compared to small droplet, will be
   (a) 10 times   (b) 500 times
   (c) 100 times   (d) 1000 times

2. In uncontrolled chain reaction, the quantity of energy released, is
   (a) very high   (b) normal
   (c) very low   (d) first (a) then (b)

3. The angular velocity of the second needle of a watch will be
   (a) π (b) $\dfrac{60}{\pi}$
   (c) 2π (d) $\dfrac{\pi}{30}$

4. Which of the following gates can be served as a building block for any digital circuits?
   (a) OR   (b) NOT
   (c) AND   (d) NAND

5. The energy required to detach one electron from the Balmer series of hydrogen spectrum will be
   (a) – 13.6 ev   (b) – 3.4 eV
   (c) 10.2 eV   (d) – 1.5 eV

6. There are five resistance of 1 Ω each. If the first three resistance are joined in parallel and rest two are joined is series, then the final resistance of the combination when joined in series is
   (a) 2/3 Ω (b) 7/3 Ω
   (c) 5/3 Ω (d) 8/3 Ω

7. A train is moving with a constant velocity. If a pendulum is hanging from its roof then its time-period
   (a) remains same   (b) increases
   (c) decreases   (d) none of these

8. The value of the surface tension of a liquid is 70 dyne/cm. What will be its value in N/m?
   (a) 70 N/m   (b) 7×10^2 N/m
   (c) 7×10^{-2} N/m   (d) 7×10^3 N/m.

9. In the Young's experiment the distance between two slits is increased by 2 times. What will be fringe width?
   (a) increased by two times
   (b) increased by four times
   (c) decreased by two times
   (d) decreased by four times

10. The force of cohesion is
    (a) maximum in solids
    (b) same in different matters
    (c) maximum in liquids
    (d) maximum in gases

11. The working of a dynamo is based on the principle of
    (a) heating effect of current
    (b) chemical effect of current
    (c) magnetic effect of current
    (d) electromagnetic induction

12. A nucleus emits one α-particle and forms a new nucleus. The mass and charge of the new nucleus is changed in which of the following way?
    (a) mass is reduced by 4 and charge is reduced by 6
    (b) mass is reduced by 2 and charge is reduced by 2
    (c) mass is reduced by 4 and charge is reduced by 2
    (d) mass is reduced by 2 and charge is reduced by 4

13. A boy aims a gun at a bird from a point at a horizontal distance of 100 m. If the gun can impart a velocity of 500 m/s to the bullet, at what height about the board must he aim his gun in order to hit it (Take $g = 10$ m/s^2)
    (a) 20 m   (b) 50 m
    (c) 40 m   (d) 100 m

14. If the momentum of a particle is 2×10^{-23} kg-m/s. then its wavelength will be
    (a) 3.3×10^{-11} m   (b) 8.2×10^{-5} m
    (c) 6.3×10^{-7} m   (d) 9×10^{-3} m

15. Atomic number of a nucleus is Z, while its mass number is M. What will be the number of neutrons in its nucleus ?
    (a) M (b) $(M - Z)$
    (c) Z (d) $(M + Z)$

16. The energy produced in the sun is due to
    (a) fission reaction   (b) chemical reaction
    (c) fusion reaction
    (d) motion of electrons and ions

17. In Young's experiment, the distance between slits is 0.28 mm and distance between slits and screen is 1.4 m. Distance between central bright fringe and third bright fringe is 0.9 cm. What is wavelength of used light
    (a) 5000 Å   (b) 5880 Å
    (c) 6000 Å   (d) 5800 Å

18. The radius of a planet is 1/4th of Earth's radius and its acceleration due to gravity is double to Earth's acceleration due to gravity. How many times be the value of escape velocity at the planet comparing to its value at the Earth?
    (a) $1/\sqrt{2}$ (b) $2\sqrt{2}$
    (c) $\sqrt{2}$ (d) 2

19. Initially a tyre at 27°C has 20 atm. pressure. What is the value of temperature when the tyre moves with pressure of 25 atmosphere
    (a) 192 K   (b) 350 K
    (c) 240 K   (d) 375 K

20. No. of images formed by an object kept between two plane mirrors at an angle 72° is
    (a) 2   (b) 4
    (c) 3   (d) 5

21. The half-life of a radioactive substance is 48 hr. How much time it will take to disintegrate to its 1/16th part
    (a) 12 hr   (b) 48 hr
    (c) 16 hr   (d) 192 hr

22. According to the Rutherford's atomic model. the electrons inside the atom are
    (a) stationary   (b) centralized
    (c) not stationary   (d) none of these

23. The equivalent resistance (R_{AB}) between the points A and B is
    (a) 6 Ω
    (b) 7.5 Ω
    (c) 4.5 Ω
    (d) 8 Ω
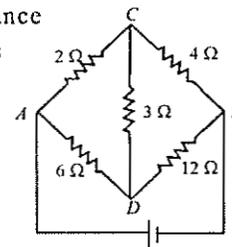
24. If a ball is thrown vertically upwards with 40 m/s, its velocity after two sec will be ($g = 10$ ms^{-2})
    (a) 10 m/s   (b) 30 m/s
    (c) 20 m/s   (d) 40 m/s

25. A scooter ($m = 40$ kg) having velocity 4 m/s collides with another scooter ($m = 60$ kg) having velocity 2 m/s. If the collision is inelastic, then loss in kinetic energy is
    (a) 48 J   (b) 392 J
    (c) 110 J   (d) 440 J

26. A sphere of 0.2 m diameter bears 1 microcoulomb charge on it. The maximum electric intensity at a point due to the sphere will be
    (a) 9×10^9 N/C   (b) 9×10^{-9} N/C
    (c) 9×10^5 N/C   (d) 9×10^{-5} N/C.

27. A star is receding from earth at a speed 10^5 m/s. The line of wavelength 5700 Å in its spectrum will be shifted by
    (a) 1.9 Å   (b) 5700 Å
    (c) 1.9 metre   (d) 1.9 micron.

28. The waves moving from a sitar to a listener in air are
    (a) longitudinal progressive
    (b) longitudinal stationary
    (c) transverse progressive
    (d) transverse stationary.

29. Light of wavelength 2×10^{-3} m falls on a slit of width 4×10^{-3} m. The angular dispersion of the central maximum will be
    (a) 30°   (b) 60°
    (c) 90°   (d) 180°.

30. The distance between two coherent sources produced by a biprism is 1.0 mm. When the screen is 1 metre far from the sources, the fringe width is found to be 0.6 mm. What is the wavelength of light?
    (a) 6000 Å   (b) 5896 Å
    (c) 5890 Å   (d) 7800 Å.

31. The focal lengths of the objective and the eyepiece of an astronomical telescope are 20 cm and 5 cm respectively. If the final image is formed at a distance of 30 cm from the eyepiece, find the magnifying power.
    (a) 44.6   (b) 4.68
    (c) 64.4   (d) 6.44.

32. The luminous intensity of a 40 watt bulb is 300 candela. Calculate the efficiency of the bulb.
    (a) 62.4 lm/watt   (b) 42.6 lm/watt
    (c) 94.25 lm/watt (d) 25.94 lm/watt.

33. A straight rod partially immersed in water appears to be inclined at 45° with the surface when viewed vertically through air. What is the actual inclination of the rod?
    (a) 30°   (b) 45°
    (c) 53°   (d) 60°.

34. Fraunhaufer lines become brighter during solar eclipse because
    (a) the sun-rays get diffracted by moon
    (b) solar radiations are completely blocked off by the moon and only the photosphere radiations reach the earth

    (c) chromosphere radiations are stopped by the moon and only the photosphere radiations reach the earth
    (d) photosphere radiations are stopped by the moon, but the chromosphere radiations are able to reach the earth.

35. In a cyclic process the change in internal energy of a system is
    (a) minimum but not zero
    (b) zero
    (c) maximum but not infinite
    (d) infinite.

36. The rms speed of the particles of fume of mass 5×10^{-17} kg executing Brownian motion in air at N.T.P. is
    (a) 1.5 m/s   (b) 3.0 m/s
    (c) 1.5 cm/s   (d) 3 cm/s.

37. A material breaks under a stress of 10^9 N/m². If the density of the material be 3×10^3 kg/m³, what will be the length of the wire made of that material so that the wire breaks by its own weight when suspended.
    (a) 3.4×10^4 m   (b) 3.4×10^5 m
    (c) 3.4×10^3 m   (d) 3.4 m.

38. Which of the following bond is strongest?
    (a) ionic   (b) covalent
    (c) Van der Waals (d) metallic.

39. Surface area of a soap bubble is 1.3×10^{-4} m². The work done to double the surface area will be (surface tension (T) for soap solution $= 3 \times 10^{-3}$ N/m.)
    (a) 3.9×10^{-7} joule
    (b) 3×10^{-7} joule
    (c) 2.6×10^{-4} joule   (d) $2.3 \times 10^{+1}$ joule.

40. A spacecraft is launched in a circular orbit very close to earth. What additional velocity should be given to the spacecraft so that it might escape the earth's gravitational pull (Radius of the earth = 6400 km, $g = 9.8$ m/s²)
    (a) 11.2 km/s   (b) 3.25 km/s
    (c) 8 km/s   (d) 20.2 km/s.

Instructions for Q. No. 41 to 60

Directions : Each of the questions given below consists of two statements, an assertions (A) and reason (R). Select the number corresponding to the appropriate response in the answer sheet as follows.

(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 the reason is not a correct explanation of the assertion*

(c) *If the assertion is true, but the reason is false*

(d) *If both assertion and reason are falses*

41. *Assertion (A) :* When light passes from one medium to another of different density the only quantity which is unchanged is its wavelength.
Reason (R) : The wavelength is not related to the refractive index of the medium.

42. *Assertion (A) :* A plane mirror forms a real image when a converging beam of light falls on it.
Reason (R) : When a converging beam is reflected, the angle of reflection is not equal to the angle of incidence.

43. *Assertion (A) :* Light incident normally on the first face of an equilateral glass prism ($\mu = 1.5$) is certain to be totally internally reflected.
Reason (R) : The critical angle for the given glass is less than 60°.

44. *Assertion (A) :* Due to friction kinetic energy of a satellite increases.
Reason (R) : Air friction decreases the total mechanical energy of the system, consequently the planet comes nearer with greater velocity.

45. *Assertion (A) :* Rain drops fall to the earth with uniform velocity.
Reason (R) : All freely falling objects have zero weight.

46. *Assertion (A) :* A stream of water from a tap becomes narrower as it falls.
Reason (R) : The speed of water increases as it falls.

47. *Assertion (A) :* The internal energy of an ideal gas does not change during an isothermal process.

Reason (R) : The decrease in volume of the ideal gas is compensated by a corresponding increase in pressure when its temperature is held constant.

48. *Assertion (A) :* Cathode rays travel with speed of light.
Reason (R) : Cathode rays are electromagnetic in nature.

49. *Assertion (A) :* When a dielectric medium is filled between the plates of a condenser, its capacitance increases.
Reason (R) : The dielectric medium reduces the potential difference between the plates of the condenser.

50. *Assertion (A) :* A thin polythene bag weights the same when empty and when filled with air at atmospheric pressure.
Reason (R) : Air is weightless.

51. *Assertion (A) :* The lightening conductor at the top of high buildings has sharp pointed conductors.
Reason (R) : The surface density of charge at sharp points is very high resulting in setting up of electric wind.

52. *Assertion (A) :* If a convex lens of glass is immersed in water its power decreases.
Reason (R) : In water it behaves as a concave lens.

53. *Assertion (A) :* The power factor in a series of resonant circuit is unity.
Reason (R) : In case of series resonance the inductive and capacitive reactances are equal.

54. *Assertion (A) :* When a current is drawn from a cell, there is a fall in potential difference across its terminals.
Reason (R) : Every cell has internal resistance.

55. *Assertion (A) :* Ammeter is always connected in series with a circuit to measure the current flowing through it.
Reason (R) : Ammeter has very low resistance.

56. *Assertion (A) :* During boiling, if an amount ΔQ of heat is absorbed, $p\Delta V$ is the work done by the system, then $\Delta Q = p\Delta V$

Reason (R) : Boiling is an isothermal process, So $\Delta U = O$ in equation $\Delta Q = \Delta U + p\Delta V$, which is based on first law of thermodynamics.

57. *Assertion (A)* : When one mole of an ideal gas expands under adiabatic condition so that its state changes from (P_1, V_1, T_1) to (P_2, V_2, T_2), the work done by the gas is given by $\Delta W = C_v(T_1 - T_2)$.
Reason (R) : During adiabatic expansion $\Delta Q = 0$ and $\Delta U = C_v(T_2 - T_1)$ in the expression $\Delta Q = \Delta U + \Delta W$.

58. *Assertion (A)* : A beam of light which emerges from a convex lens must be convergent.
Reason (R) : A convex lens is a converging lens while a concave lens is diverging lens, whatever may be the medium in which they are placed.

59. *Assertion (A)* : When light passes from one medium to another of different density the only quantity which is unchanged is its wavelength.
Reason (R) : The wavelength of light is not related to the refractive index of the medium.

60. *Assertion (A)* : α - particles produce more intense ionization than β -particles.
Reason (R) : α -particles are positively charged.

CHEMISTRY

61. Which of the following has larger radius?
(a) Ca   (b) F^-
(c) F   (d) Na

62. Identify the transition element
(a) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
(b) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2\ 4p^1$
(c) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^2 4s^2$
(d) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^1 4d^2$

63. Which of the following is most alkaline?
(a) PH_3 (b) AsH_3
(c) NH_3 (d) SbH_3

64. The oxide that gives hydrogen peroxide (H_2O_2) on the treatment with a dilute acid (H_2SO_4) is

(a) PbO_2 (b) MnO_2
(c) Na_2O_2 (d) TiO_2

65. Catalyst is used to
(a) increase the product
(b) increase the reactants
(c) decrease the product
(d) minimise the time of reaction

66. Chlorobenzene is prepared commercially by
(a) Dow's process
(b) Rasching process
(c) Deacon's process
(d) Etard's process

67. Which of the following is Lewis-acid?
(a) Cl^- (b) S^{--}
(c) Ag^+ (d) C_2H_5OH

68. Which of the following are the constituents of gun metal?
(a) Cu, Sn   (b) Cu, Sn, Zn
(c) Cu, Sn, Pb   (d) Cu, Zn, Sb, Pb

69. Formaldehyde + ammonia $\longrightarrow Y$, the product Y is
(a) methanol
(b) para-formaldehyde
(c) formamide
(d) hexamethylenetetramine

**70.** Oleic, stearic and palmitic acids are
(a) nucleic acid   (b) fatty acids
(c) amino acid   (d) nitric acid

71. The most suitable method of the seperation of a mixture of ortho and para-nitrophenol mixed in the ratio of 1 : 1, is
(a) distillation   (b) vapourisation
(c) crystallization   (d) colour spectrum

72. When primary amine is heated with CS_2 in the presence of excess mercuric chloride it gives isothio cyanate. This reaction is called
(a) Perkin's reaction
(b) Hoffman-bromide reaction
(c) Carbyl-amine reaction
(d) Hoffman mustard oil reaction

73. If N and S both are present in an organic compound, then during Lassaigne's test, both will change into
    (a) NaSCN   (b) Na_2S and NaCN
    (c) Na_2S and NaCNO (d) Na_2SO_3 and NaCN

74. In radioactive decay, the emitted electrons come from
    (a) nucleus of the atom
    (b) outermost orbit of the atom
    (c) inner orbital of the atom
    (d) orbit having principal quantum number one

75. $CH_3CONH_2 \xrightarrow{P_2O_5} Z + H_2O$, identify the product Z
    (a) CH_3Br (b) CH_3OH
    (c) CH_3CN (d) CH_3NH_2

76. Which of the following compound is easily attacked by an electrophile?

    (a)   (b)
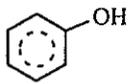
    (c)   (d)
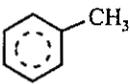
77. Paracetamol is used as a/an
    (a) antipyretic   (b) antimalarial
    (c) antibiotic   (d) tranquillizer

78. The number of water molecules in Mohr's salt is
    (a) 5   (b) 7
    (c) 6   (d) 8

79. A quantum of light energy is called
    (a) proton   (b) electron
    (c) photon   (d) neutron

80. Which of the following substance will give amide, when reacted with NH_3 ?
    (a) nitrogen
    (b) acetyl chloride
    (c) hydrogen chloride
    (d) potassium chloride

81. The bond order of nitrogen molecule is
    (a) 1   (b) 4
    (c) 3   (d) 7

82. Half-life of radium is 1580 yrs. Its average life will be
    (a) 2.5×10^3 yrs   (b) 2.275×10^3 yrs
    (c) 1.832×10^3 yrs (d) 8.825×10^2 yrs

83. The reaction between copper and hot concentrated H_2SO_4 produces
    (a) SO_3 (b) Cu
    (c) H_2 (d) SO_2

84. Electronic configuration $1s^2 2s^2 2p_x^1 2p_y^1 2p_z^1$ represents which of the following elements?
    (a) oxygen   (b) nitrogen
    (c) hydrogen   (d) fluorine

85. The pH value of HCl $(10^{-12}$ M) is
    (a) -12 (b) -7
    (c) 12   (d) 7

86. The function of enzymes in the living system is to
    (a) transport oxygen
    (b) provide energy
    (c) provide immunity
    (d) catalyse biochemical reactions

87. Which of the following is used as an anti-knocking material?
    (a) T.E.L.   (b) glyoxal
    (c) freon   (d) ethyl alcohol

88. Diazo-coupling is useful to prepare some
    (a) dyes   (b) pesticides
    (c) proteins   (d) vitamins

89. Which statement is not correct about alcohol?
    (a) alcohol is lighter than water
    (b) alcohol of less no. of carbon atoms is less soluble in water than alcohol of more no. of carbon atoms
    (c) alcohol evaporates quickly
    (d) all of these

90. Arrangement of Na, Rb, K, Mg in the increasing order of atomic radius will be
    (a) Mg < Na < K < Rb
    (b) Na < Mg < K < Rb

(c) $K < Na < Mg < Rb$

(d) $Rb < K < Mg < Na$

91. $C_3H_8 + CI_2 \xrightarrow{\text{Light}} C_3H_7CI + HCI$ is an example of which of the following types of reactions?

(a) substitution   (b) addition

(c) elimination   (d) rearrangement

92. Which of the following possesses highest melting point?

(a) chlorobenzene   (b) m-dichlorobenzene

(c) o-dichlorobenzene   (d) p-dichlorobenzene

93. Which of the following is not true in case of reaction with heated copper at 300°C?

(a) phenol $\rightarrow$ benzyl alcohol

(b) secondary alcohol $\rightarrow$ ketone

(c) primary alcohol $\rightarrow$ aldehyde

(d) tertiary alcohol $\rightarrow$ olefin

94. The heat of combusion of methane at 298 K is expressed by $CH_{4\,(g)} + 2O_{2\,(g)} \rightarrow CO_{2\,(g)} + 2H_2O$ and $\Delta H = 890.2$ KJ. Magnitude of ΔE of reaction at this temperature is

(a) infinity   (b) equal to ΔH

(c) less than ΔH (d) greater than ΔH

95. Which of the following species participate in sulphonation of benzene ring?

(a) H_2SO_4 (b) SO_3

(c) HSO_3^- (d) SO_2^-

96. IUPAC name of the compound

$CH_3 - CH = C - CH_2 - CH_3$

$\qquad\qquad\quad CH_2 - CH_2 - CH_3$

(a) 3-ethyl 2-hexene   (b) 3 propyl 3-hexene

(c) 3-propyl 2-hexene   (d) 4-ethyl 4-hexene

97. pH of a solution can be expressed as

(a) $- \log_e (H^+)$ (b) $\log_e (H^+)$

(c) $- \log_{10} (H^+)$ (d) $\log_{10} (H^+)$

98. The concentration of $[H^+]$ and concentration of $[OH^-]$ of a 0.1 aqueous solution of 2% ionised weak acid is [ionic product of water = 1×10^{-14}]

(a) 0.02×10^{-3}M and 5×10^{-11} M

(b) 2×10^{-3} M and 5×10^{-12}M

(c) 1×10^{-3} M and 3×10^{-11} M

(d) 3×10^{-2} M and 4×10^{-13} M

99. A compound with empirical formula (CH_2O) has a vapour density of 30. Its moleclar formula is

(a) CH_2O (b) $C_3H_6O_3$

(c) $C_2H_4O_2$ (d) $C_6H_{12}O_6$

100. The unit of equivalent conductivity is

(a) $S\text{-cm}^{-2}$

(b) $ohm - cm^2$ (g-equivalent)

(c) ohm-cm

(d) $ohm^{-1} cm^2$ (g equivalent)$^{-1}$

Instructions for Q. No. 101 to 120

Directions : Each of the questions given below consists of two statements, an assertions (A) and reason (R). Select the number corresponding to the appropriate response in the answer sheet as follows.

(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 the reason is not a correct explanation of the assertion

(c) If the assertion is true, but the reason is false

(d) If both assertion and reason are falses

101. *Assertion (A) :* The number of electron in an neutral atom is always equal to atomic number of that atom.

Reason (R) : The atomic number of the atom is equal to the number of protons in the nucleus of the atom.

102. *Assertion (A) :* The radioactivity of Ra and Ra^{2+} is always same.

Reason (R) : The radioactivity is an extra-nuclear phenomenon.

103. *Assertion (A) :* $_{14}Si^{30}$, $_{15}P^{31}$ and $_{16}S^{32}$ are a group of isotones.

Reason (R) : Isotones are atoms of different elements having different mass numbers of atomic numbers but same number of neutrons in their nuclei.

104. *Assertion (A)* : Nuclear isomers are the atoms with same atomic number, same mass number but with different radioactivity.
Reason (R) : One of the two nuclear isomeric nuclei one may be in the ground state whereas the other in the excited state.

105. *Assertion (A)* : Arenes can be obtained by the reaction of aromatic substrate with an alkylating agent in presence of acidic catalyst.
Reason (R) : This reaction is known as free radical substitution reaction.

106. *Assertion (A)* : Chlorobenzene reacts with potassium cyanide to give benzonitrile,
Reason (R) : Cyanide (CN^-) ion is a strong nucleophile.

107. *Assertion (A)* : Nuclide $_{13}Al^{30}$ is more stable as compared to nuclide $_{20}Ca^{40}$
Reason (R) : Nuclides having an odd number of protons and neutrons are generally less stable.

108. *Assertion (A)* : When butene-1 reacts with bromine (Br_2), two optical isomeres are obtained.
Reason (R) : Product contains one asymmetric carbon atom.

109. *Assertion (A)* : When an atom in group 1A of the periodic table undergoes radioactive decay by emitting a positron, the resulting element belongs to zero group.
Reason (R) : When an atom emits a positron, its atomic number increases by one unit.

110. *Assertion (A)* : A certain element X, forms three binary compounds with chlorine containing 59.68%, 68.95% and 74.75% chlorine respectively. These data illustrate the law of multiple proportions.
Reason (R) : According to law of multiple proportions, the relative amounts of an element combining with some fixed amount of a second element in a series of compounds are the ratios of small whole numbers.

111. *Assertion (A)* : Water has greater dipole-dipole attraction than hydrogen sulphide.
Reason (R) : Oxygen has higher electronegativity than sulphur.

112. *Assertion (A)* : When 20 ml of ethanol is mixed with 20 ml of water, the volume of resulting solution will be less than 40 ml.
Reason (R) : The hydrogen bond between water and alcohol molecules is weaker than hydrogen bond between the like molecules.

113. *Assertion (A)* : Ortho-nitrophenol has much lower boiling point and lower solubility in water than meta and para isomers.
Reason (R) : Ortho-nitrophenol involves intramolecular hydrogen bonding and the possibility of association of the molecules is absent.

114. *Assertion (A)* : All molecules which have polar bonds have net dipole moment.
Reason (R) : Asymmetrical molecules with polar bonds have zero dipole moment.

115. *Assertion (A)* : In the covalent compounds of hydrogen, the hydrogen atom has the electronic configuration analogous to that of hydride ion.
Reason (R) : Hydride ion is formed when hydrogen atom loses an electron.

116. *Assertion (A)* : The bond order of helium is always zero.
Reason (R) : The number of electrons in bonding molecular orbital and antibonding molecular orbital is equal.

117. *Assertion (A)* : The H-N-H bond angle in NH_3 molecule is much greater than H-As-H bond angle in AsH_3.
Reason (R) : Formation of NH_3 molecule involves sp^3 hybridisation, while no hybridisation occurs in AsH_3.

118. *Assertion (A)* : The dipole-moment of CH_3F is greater than that of $CHCl_3$.
Reason (R) : Fluorine has greater electron affinity than that of chlorine.

119. *Assertion (A)* : Stannous chloride ($SnCl_2$) is a non-linear molecule.
Reason (R) : In $SnCl_2$ molecule Sn atom is present in *sp* hybridised state.

120. *Assertion (A)* : The bond angle H-C-H in the methane is the same as the bond angle Cl-C-Cl in the carbon tetrachloride.
Reason (R) : H-C-H bonds in methane are almost non-polar while Cl-C-Cl bonds in carbon tetrachloride are highly polar.

BIOLOGY

121. Transpiration-pull theory operates in
(a) active water absorption
(b) passive water absorption
(c) root pressure
(d) imbibition.

122. Photophosphorylation is a process in which
(a) O_2 comes out of the water by photolysis
(b) phosphoglyceric acid is formed
(c) aspartic acid is formed
(d) light energy is changed and stored into chemical energy in ATP.

123. The primary photochemical reaction in chloroplast occurs in
(a) stroma   (b) periplast cavity
(c) quantasome   (d) inner membrane.

124. Bacterial photosynthesis occurs in wavelength
(a) ultraviolet   (b) blue
(c) red   (d) far-red.

125. Which of the following will not be a limiting factor in photosynthesis?
(a) oxygen   (b) carbon dioxide
(c) chlorophyll   (d) light.

126. In photosynthesis, the special role of light is
(a) activation of chloroplast
(b) photolysis
(b) reduction of carbon dioxide
(d) synthesis of glucose.

127. In C_4-pathway, the first reaction is
(a) addition of CO_2 with PGA
(b) addition of CO_2 with PEPA
(c) addition of CO_2 with RuDP
(d) addition of CO_2 with RMP.

128. Emerson effect has given the view of
(a) two different photochemical reactions in photosynthesis
(b) light and dark reaction in photosynthesis
(c) photophosphorylation
(d) photorespiration.

129. In higher plants, the amount of light utilised in photosynthesis is about
(a) 100 percent   (b) 50 percent
(c) 10 percent   (d) 1 to 2 percent.

130. The initial enzyme of Calvin cycle is
(a) ribulose diphosphate carboxylase
(b) triose phosphate dehydrogenase
(c) phosphopentokinase
(d) cytochrome oxidase.

131. DCMU, a herbicide, kills plants by
(a) stopping respiration due to inhibition of dehydrogenase enzymes
(b) inhibiting photosystem-II of photosynthesis
(c) inhibiting photosystem-I of photosynthesis
(d) inhibition of photolysis.

132. Transpiration takes place from
(a) leaf
(b) stem
(c) all organs
(d) only aerial parts of land plant.

133. By increasing the CO_2 concentration around leaves in light
(a) stomata open rapidly
(b) stomata close
(c) there is no effect in stomatal movement
(d) stomata open slowly.

134. About what percentage of water absorbed by plants is lost again by transpiration?
(a) 80%   (b) 60%
(c) 96%   (d) 40%.

135. What happens by spraying of phenyl mercuric acetate (PMA) of abscisic acid (ABA) on leaves?
(a) transpiration rate increases

(b) transpiration rate decreases

(c) water absorption rate increases

(d) guttation rate increases.

136. Which of the following is a bacterial disease?
 (a) rabies   (b) measles
 (c) small pox   (d) tuberculosis.

137. For chlorophyll formation in plants, which of the following elements are needed
 (a) iron and calcium
 (b) calcium and potassium
 (c) iron and magnesium
 (d) sodium and copper.

138. Viruses are formed of
 (a) nucleic acids
 (b) DNA and RNA
 (c) proteins
 (d) proteins and nucleic acids.

139. Formation of fat (lipogenesis) begins in the body when
 (a) blood sugar level is high
 (b) glucose is converted into glycogen
 (c) when liver and muscles cannot store any more glycogen
 (d) when glucose combines with glycerol.

140. The reptiles and birds cannot afford to lose water and hence they excrete
 (a) ammonia   (b) urea
 (c) creatinine   (d) uric acid.

141. The fertilized secondary nucleus of the ovule, during double fertilization, establishes the
 (a) seed coat   (b) endosperm
 (c) embryo plant   (d) pericarp.

142. Kwashiorkor, an African word to signify "rejected ones" affecting children of underdeveloped and developing countries with symptoms of stunted growth, loss of appetite, anaemia, protruding bellies, match-stick legs, resulting in great mortality, is due to the deficiency of
 (a) vitamins   (b) proteins
 (c) fats   (d) carbohydrates.

143. Ginger is a stem, not a root because it has
 (a) food storage
 (b) nodes and internodes
 (c) burning taste
 (d) flowers.

144. The tusk of the elephant is formed
 (a) from incisors
 (b) from canines
 (c) of prolongation of the skull
 (d) by the thickening of the skin of the head.

145. The blood corpuscle which kills bacteria that get into our body is termed
 (a) erythrocyte
 (b) phagocyte
 (c) thrombocyte
 (d) eosinophils.

146. Mulberry-growing is associated with the
 (a) control of insect pest
 (b) silk worm culture (sericulture)
 (c) support for the grape vine
 (d) fodder for the cattle.

147. Which of the following disease is caused by air pollution?
 (a) rheumatism   (b) heart failure
 (c) bronchitis   (d) leukemia.

148. Cataract is caused by
 (a) accumulation of dust in the eye
 (b) lens getting opaque
 (c) nerves supplying the eyes getting weak
 (d) conjunction becoming thickened.

149. In fern plant, the ejection of spores with force is achieved by the
 (a) sporangiophore   (b) annulus
 (c) stomium   (d) indusium.

150. Which type of soil is best suited for the cultivation of cotton in India?
 (a) loamy soil   (b) black soil
 (c) sandy soil   (d) clayey soil.

151. For the first time viruses were crystallised and isolated by

(a) D. Ivanowski   (b) F.C. Bawden
(c) K.M. Smith   (d) W.M. Stanley.

152. Chlorophyll *a* occurs in
(a) all plants except algae
(b) all green plants except bacteria
(c) fungi only
(d) angiosperms only.

153. K.C. Mehta is famous for his work on
(a) the wheat rust
(b) viral diseases
(c) bacterial diseases
(d) none of the above.

154. Protonema is a stage in the life cycle of
(a) *Selaginella*   (b) *Cycas*
(c) *Funaria*   (d) *Rhizopus*.

155. Which one of the following is a fossil
(a) *Rhynia*   (b) *Equisetum*
(c) *Selaginella*   (d) none of the above.

156. Epidermal outgrowths are known as
(a) stem   (b) stomata
(c) buds   (d) trichomes.

157. Polyadelphous condition refer to
(a) stigma   (b) androecium
(c) gynoecium   (d) petals.

158. National Botanical Research Institute is situated at
(a) Shimla   (b) Cuttack
(c) Delhi   (d) Lucknow.

159. Saffron is produced from
(a) stamens of *Hibiscus*
(b) roots of *Rouwalfia*
(c) style and stigma of *Crocus*
(d) petals of *Musa*.

160. Cystolith is
(a) magnesium sulphate crystals
(b) crystals of calcium
(c) calcium carbonate crystals
(d) none of the above.

Instructions for Q. No. 161 to 180

Directions : Each of the questions given below consists of two statements, an assertions (A) and reason (R). Select the number corresponding to the appropriate response in the answer sheet as follows.

(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 the reason is not a correct explanation of the assertion

(c) If the assertion is true, but the reason is false

(d) If both assertion and reason are falses

161. *Assertion (A)* : Casparian strips are formed on the inner tangential wall.
Reason (R) : In root, epidermis is not covered by cuticle.

162. *Assertion (A)* : The stem which has undergone secondary growth shows more phloem than xylem.
Reason (R) : Vascular cambium and cork cambium are synonymus.

163. *Assertion (A)* : Double fertilization is occurs in angiosperms only.
Reason (R) : Female gametophyte is not a food supplying structure in them.

164. *Assertion (A)* : Coconut fruit is considered as drupe and tomato a berry.
Reason (R) : Both are simple fleshy fruits.

165. *Assertion (A)* : Green oranges and tomatoes turn orange yellow coloured when sprayed with ABA.
Reason (R) : ABA possess anti-gibberellin property.

166. *Assertion (A)* : Lymph contain more protein than plasma.
Reason (R) : Haemopoietic organs produce lymph.

167. *Assertion (A)* : Patients are given sago starch.
Reason (R) : Sago starch is obtained from palm.

168. *Assertion (A)* : The glomerular filtrate becomes hypotonic in the ascending limb.
Reason (R) : Ascending limb is impermeable to water.

169. *Assertion (A)* : Spermatozoa produced in large number as compared to ova.
Reason (R) : Sperms are smaller than ova.

170. *Assertion (A)* : The coelenteron of *Hydra* is called gastrovascular cavity.
Reason (R) : *Hydra* is a monoblastic animal.

171. *Assertion (A)* : Each liver lobe is a compact network of closely set, branching and anastomosing lobules cemented together by connective tissues containing blood vessels, small blood sinuses and the fine bile canaliculi.
Reason (R) : Each lobule is formed of several large and cuboidal hepatic cells arranged in columns.

172. *Assertion (A)* : Lymphatic interstitium is packed with a gelatinous substance (tissue gel) in which long collagen fibre bundles are suspended to give tensional strength to the tissues. Tissue gel is formed by reticular network of coiled filaments of proteoglycan and a fluid trapped in minute spaces.
Reason (R) : Tissue gel allows transport water molecules, electrolytes, nutrients, O_2, CO_2, cellular waste products and hormones.

173. *Assertion (A)* : Conjunctiva is composed of stratified epithelium and is continuous with the epidermis that lines the eyelids.
Reason (R) : The conjunctiva is thin, little cornified and are not supplied with free nerve endings.

174. *Assertion (A)* : Within a liver cell, sporozoites of malarial parasite actively feed upon its cytoplasm and grow into large and spherical, adult like forms, called cryptozoites.
Reason (R) : Cryptozoites divide into about numerous minute cryptomerozoites by a special multiple fission called schizogony.

175. *Assertion (A)* : The ovarian cycle of follicles is control by gonadotropic hormones, follicles stimulating hormone (FSH) and luteinizing hormone (LH).
Reason (R) : During ovarian cycle follicles undergo maturation, contain a secondary oocyte and produce female sex hormone.

176. *Assertion (A)* : Zygospore fungi produce spores within sporangia.
Reason (R) : During sexual reproduction, a zygospore forms prior to meiosis and production of spores.

177. *Assertion (A)* : Club fungi usually reproduce sexually.
Reason (R) : In club fungi, the dikaryotic stage is prolonged and periodically produces fruiting bodies where spores are produced in basidia.

178. *Assertion (A)* : Rusts and smuts are club fungi that parasitize cereal crops.
Reason (R) : Some smuts enter seeds and exist inside the plant, becoming visible only near maturity.

179. *Assertion (A)* : Bacteria do not move by means of flagella.
Reason (R) : The 360° rotation of the flagellum does not cause the cell to spin and forward movement.

180. *Assertion (A)* : The tropical movements occurring in response to water stimulus are called rheotropic movements.
Reason (R) : Haptotropic movements occur in response to a light.

GENERAL KNOWLEDGE

181. Industrially most advanced state in India is
(a) Gujrat   (b) Maharashtra
(c) Punjab   (d) Madhya Pradesh

182. Mahabharat consist of
(a) 18 books & 10,000 couplets
(b) 18 books & 5,000 couplets
(c) 15 books & 10,000 couplets
(d) 13 books & 10,000 couplets

183. The maximum percentage of tribal population in India consists of
(a) Bhils   (b) Santhals
(c) Nagas   (d) Mundas

184. What is the playing time of the shorter version of our National Anthem which is played on

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ceremonial occassion?
(a) 2 minutes   (b) 1 minute
(c) 50 seconds   (d) 48 seconds

185. Chaikar koothu is one of the most impressive dance forms of
(a) Kerala   (b) Tamil Nadu
(c) Karnataka   (d) Goa

186. The autobiography "A Brush with life" has been written by
(a) M.F.Hussain   (b) Shobha De
(c) Satish Gujaral (d) Khushwant Singh

187. Of the 109 known elements, how many are occur in nature and how many are produced synthetically in particle accelerators
(a) 79 & 10   (b) 80 & 29
(c) 95 & 14   (d) none of these

188. Asia's oldest and largest Buddhist monastry is situated in
(a) Twang   (b) Srilanka
(c) Lhasa   (d) Mongolia

189. The Adi granth was compiled by
(a) Guru Ram Das   (b) Guru Amar Das
(c) Guru Arjun Dev (d) Guru Teg Bahadur

190. Which of the following is a metal
(a) mercury   (b) bromine
(c) chlorine   (d) none of these.

191. Which of the following is a cash crop?
(a) gram   (b) groundnut
(c) barley   (d) jawar

192. Which continent is honoured by having consecutive three term General of U.N.O.
(a) South Africa   (b) Australia

(c) South America (d) North America

193. In how many hours a geo stationary satellite completes one round of its orbit?
(a) 1   (b) 6
(c) 8   (d) 24

194. Cattle bone powder is used as fertilizer as it is rich in
(a) N   (b) P
(c) Na   (d) K

195. Which of the following is considered as the electronic city of India
(a) Hydrabad   (b) Bangalore
(c) Calcutta   (d) Mumbai

196. The Summer Olympics of 2004 will be organised at which of the following cities?
(a) Rome   (b) Athens
(c) Tokyo   (d) New Delhi

197. India had not received noble prize in which of the following field?
(a) chemistry   (b) physics
(c) medicine   (d) literature

198. The well known wonder drug against cancer 'Taxol' is extracted from the tree
(a) neem   (b) yew
(c) oak   (d) peepal

199. Aluminium in the earth's crust is found as
(a) cryolite   (b) bauxite
(c) gypsum   (d) none of these

200. Cloves are actually
(a) seeds   (b) bark
(c) fruit
(d) unopened floral bud