

Model Test Paper-1

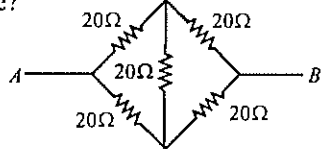


Time : 3½ hours.

Maximum Marks : 200

PHYSICS

- What is the dimensional formula for the gravitational constant?
 - $[M^{-1} L^3 T^{-1}]$
 - $[M^{-2} L^{-1} T^3]$
 - $[M^{-1} L^3 T^{-2}]$
 - $[M^{-2} L^3 T^{-2}]$
- An ideal gas is heated from 27°C to 627°C at constant pressure. If initial volume was 4 m^3 , then the final volume of the gas will be
 - 2 m^3
 - 4 m^3
 - 6 m^3
 - 12 m^3
- The tension in piano wire is 10 N . What should be the tension in the wire to produce a note of double the frequency?
 - 5 N
 - 20 N
 - 40 N
 - 80 N
- Which of the following is a dimensionless quantity?
 - strain
 - stress
 - specific heat
 - quantity of heat.
- When we heat a gas-sample from 27°C to 327°C , then the initial average kinetic energy of the molecules was E . What will be the average kinetic energy after heating?
 - $327E$
 - $300E$
 - $2E$
 - $\sqrt{2}E$
- A certain radioactive element has a half-life of 20 years. If we have a block with 10 gm of the element in it, after how many years will there be just 2.5 g of the element in the block?
 - 40 years
 - 60 years
 - 80 years
 - 100 years.
- A ray of light having wavelength 720 nm enters in a glass of refractive index 1.5 . The wavelength of the ray within the glass will be
 - 360 nm
 - 480 nm
 - 720 nm
 - 1080 nm .
- The reactance of an inductance of 0.01 Hz to a 50 Hz A.C. is
 - $6.28\ \Omega$
 - $3.14\ \Omega$
 - $1.04\ \Omega$
 - $0.59\ \Omega$.
- Ten identical cells each of potential E and internal resistance r are connected in series to form a closed circuit. An ideal voltmeter connected across three cells, will read
 - $3E$
 - $7E$
 - $10E$
 - $13E$.
- Which of the following, when added as impurity into the silicon, produces n -type semiconductor?
 - P
 - Al
 - B
 - Mg.
- A tube closed at one end containing air produces fundamental note of frequency 512 Hz . If the tube is open at both ends, the fundamental frequency will be
 - 256 Hz
 - 768 Hz
 - 1024 Hz
 - 1280 Hz .
- Which of the following is an essential requirement for initiating the fusion reaction?
 - critical mass
 - thermal neutrons
 - high temperature
 - critical temperature.
- If an electron is brought towards another electron, the electric potential energy of the system
 - increases.
 - decreases
 - becomes zero
 - remains the same.
- The photoelectrons emitted from a given cathode on the incidence of a given monochromatic beam of light, have a/an
 - energy spread with a lower limit

- (b) energy spread with an upper limit
 (c) energy spread with no sharp limits
 (d) definite energy only.
15. The angular velocity of rotation of a star (of mass M and radius R) at which the matter starts to escape from its equator, is
- (a) $\sqrt{\frac{2GR}{M}}$ (b) $\sqrt{\frac{2GM}{R^3}}$
 (c) $\sqrt{\frac{2GM}{R}}$ (d) $\sqrt{\frac{2GM^2}{R}}$
16. Greater accuracy in the determination of the position of a particle with an optical microscope can be had, if the beam of light used
- (a) is polarised
 (b) has greater intensity
 (c) has higher wavelength
 (d) has higher frequency.
17. A body of mass 5 kg is raised vertically to a height of 10 m by a force of 170 N. The velocity of the body at this height will be
- (a) 37 m/s (b) 22 m/s
 (c) 15 m/s (d) 9.8 m/s.
18. An intrinsic semiconductor, at the absolute zero temperature, behaves like a/an
- (a) insulator (b) superconductor
 (c) n -type semiconductor
 (d) p -type semiconductor.
19. The periodic time of a body executing SHM is 4 sec. After how much interval from time $t = 0$, its displacement will be half of its amplitude?
- (a) $\frac{1}{2}$ sec (b) $\frac{1}{3}$ sec
 (c) $\frac{1}{4}$ sec (d) $\frac{1}{8}$ sec.
20. Time period of pendulum, on a satellite orbiting the earth is
- (a) zero (b) infinity
 (c) $1/\pi$ (d) π .
21. For an enclosure maintained at 1000 K, the maximum radiation occurs at wavelength λ_m . If the temperature is raised to 2000 K, the peak will be shift to
- (a) $\frac{1}{2}\lambda_m$ (b) $\frac{3}{2}\lambda_m$
 (c) $\frac{5}{2}\lambda_m$ (d) $\frac{7}{2}\lambda_m$.
22. It is possible to have a positively charged body at
- (a) zero potential (b) negative potential
 (c) positive potential (d) all of these.
23. If two lenses of power +1.5 D and +1.0 D are placed in contact, then the effective power of combination will be
- (a) 2.5 D (b) 4.2 D
 (c) 4.5 D (d) 5.4 D.
24. Simple capacitor filters are good for
- (a) low voltage supply (b) low current supply
 (c) high current supply
 (d) low voltage and high current supply.
25. The heat produced by a 100 W heater in 2 minutes is equal to
- (a) 16.3 kcal (b) 14.2 kcal
 (c) 10.5 kcal (d) 2.8 kcal.
26. Curies temperature of iron is the temperature below which, it is
- (a) radioactive (b) superconducting
 (c) ferromagnetic (d) diamagnetic.
27. An X-ray beam of wavelength 10^{-10} m falls on a crystal of atomic spacing 2×10^{-10} m. The Bragg angle for the second order reflection will be
- (a) 15° (b) 30°
 (c) 45° (d) 60° .
28. What is the equivalent resistance between A and B in the given figure?
- (a) 10Ω
 (b) 20Ω
 (c) 40Ω
 (d) 50Ω .
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29. A certain mass of gas at 273 K is expanded to 81 times its volume under adiabatic conditions. If $\gamma = 1.25$ for the gas then its final temperature is
- (a) 0°C (b) -91°C
 (c) -182°C (d) -235°C .
30. In a phase-shift oscillator, the positive feedback is taken from the
- (a) anode directly (b) grid and anode
 (c) load resistance (d) RC network.

31. The moment of inertia of a disc of mass M and radius R about an axis which is tangential to the circumference of the disc and parallel to its diameter, is

- (a) $\frac{3}{2}MR^2$ (b) $\frac{2}{3}MR^2$
 (c) $\frac{5}{4}MR^2$ (d) $\frac{4}{5}MR^2$

32. Crystalline solids are

- (a) anisotropic (b) isotopic
 (c) amorphous (d) none of these.

33. The motion of a rocket is based on the principle of conservation of

- (a) mass (b) kinetic energy
 (c) linear momentum (d) angular momentum.

34. Which of the following relation is called as current density?

- (a) $\frac{I}{A}$ (b) $\frac{A}{I}$
 (c) $\frac{I^2}{A}$ (d) $\frac{I^3}{A^2}$

35. A body weighed 250 N on the surface assuming the earth to be a sphere of uniform mass density, how much would it weigh half way down to the centre of the earth?

- (a) 240 N (b) 210 N
 (c) 195 N (d) 125 N.

36. Radius of gyration of a body depends upon

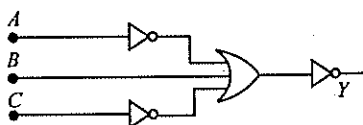
- (a) axis of rotation (b) translation motion
 (c) shape of the body (d) area of the body.

37. Ten identical wires each having a resistance of one ohm are connected in parallel. The combination will have a resistance of

- (a) 10 Ω (b) 1 Ω
 (c) 0.1 Ω (d) 0.01 Ω .

38. The logic circuit given in the figure performs the logic operation

- (a) \overline{ABC} (b) $\overline{A\overline{B\overline{C}}}$
 (c) \overline{ABC} (d) $\overline{A\overline{B\overline{C}}}$



39. A nucleus of ${}^9_4\text{Be}$ absorbs an alpha particle and emits a neutron. The resulting nucleus will be

- (a) ${}^{12}_6\text{C}$ (b) ${}^8_4\text{Be}$
 (c) ${}^{13}_5\text{C}$ (d) ${}^{13}_6\text{C}$

40. If a p-n diode is reverse biased, then the resistance measured by an ohm-meter, will be

- (a) zero (b) low
 (c) high (d) infinite.

Directions for Q.41 to 60 : 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 four 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 the Reason is false.
 (d) If both Assertion and Reason are false.

41. Assertion (A) : Evaporation has a cooling effect. Reason (R) : At the surface of the liquid, some of the faster upward-moving molecules have enough kinetic energy to overcome the attractions from other molecules and escape from the liquid. With these faster molecules gone, the average kinetic energy of those left behind is reduced.

42. Assertion (A) : Room heaters and refrigerators lose most of their heat by convection. Reason (R) : A hot surface heats the air next to it. The hot air rises, to be replaced by cooler air which then heats up, and so on.

43. Assertion (A) : The diameter of an atom is $\sim 10^4$ times that of its nucleus. Reason (R) : The diameter of the nucleus is $\sim 10^{-14}\text{m}$

44. Assertion (A) : Many solids have a molar heat capacity close to $25 \text{ J mol}^{-1} \text{ K}^{-1}$ Reason (R) : The molar heat capacity is the heat capacity per mole.

45. Assertion (A) : In conductors the electrons are free to move between atoms. Reason (R) : In conductors the conduction band is only partly filled. It has unoccupied energy levels.

46. *Assertion* : The relative velocity of two photons travelling in opposite directions is C .
Reason : The rest mass of photon is zero.
47. *Assertion* : Brilliant colours are seen in thin layer of oil on the surface.
Reason : White light is composed of several colours.
48. *Assertion* : Activity of 10^8 undecayed radioactive nuclei of half life 50 days is equal to that of 1.2×10^8 undecayed nuclei of some other material with half life 60 days.
Reason : Activity is proportional to half life.
49. *Assertion* : Any hollow metallic closed container maintained at a uniform temperature can act as a source of black body radiation.
Reason : All metals act as black bodies.
50. *Assertion* : In LCR series circuit. The resonance occurs at one frequency only.
Reason : At resonance the inductive reactance is equal to the capacitive reactance.
51. *Assertion* : The comets do not obey Kepler's laws of planetary motion.
Reason : The comets do not have elliptical orbit.
52. *Assertion* : Water kept in an open vessel will quickly evaporate on the surface of the moon.
Reason : The temperature at the surface of the moon is much higher than the boiling point of water.
53. *Assertion* : A domestic electrical appliance, working on a three pin, will continue working even if the top pin is removed.
Reason : The third pin is used only as a safety device.
54. *Assertion* : A needle placed carefully on the surface of water may float, whereas a ball of the same material will always sink.
Reason : The buoyancy of an object depends both on the material and shape of the object.
55. *Assertion* : Electric appliances with metallic body, e.g. heaters have three-pin connection, whereas an electric bulb has a two pin connection.
Reason : Three pin connection reduces heating of connecting cables.
56. *Assertion* : Machine parts are jammed in winter.
Reason : The viscosity of lubricant used in machine parts increase at low temperatures.
57. *Assertion* : A normal eye can clearly see all the objects beyond a certain minimum distance.
Reason : The human eye has the capacity to suitably adjust the focal length of its lens to a certain extent.
58. *Assertion* : On a rainy day, it is difficult to drive a car or bus at high speed.
Reason : The value of coefficient of friction is lowered on wetting the surface.
59. *Assertion* : The Sun looks bigger in size at sunrise and sunset than during day.
Reason : The phenomenon of diffraction bends light rays.
60. *Assertion* : The rainbow is seen sometimes in the sky when it is raining. When one sees a rainbow, one's back is towards the Sun.
Reason : Internal reflection from water droplet causes dispersion. The final ray is in the backward direction.

CHEMISTRY

61. The number of unpaired electron in $1s^2 2s^2 2p^3$ is
(a) 1 (b) 2
(c) 3 (d) 5.
62. The oxidation number of oxygen atom in O_2^{2-} ion is
(a) -1 (b) -2
(c) -3 (d) -5.
63. Maximum covalency of an element of atomic number 7 is
(a) 2 (b) 3
(c) 4 (d) 5.
64. Lithopone, a white pigment, consists of
(a) PbS and MgO (b) $BaSO_4$ and $PbSO_4$
(c) ZnS and $BaSO_4$ (d) Al_2O_3 and $CaCO_3$.
65. The number of electrons required to deposit 1 gm equivalent aluminium (at. wt. = 27) from a solution of aluminium chloride will be
(a) 1 (b) 2
(c) 3 (d) 4.

66. The amount of zinc (at. wt. = 65) necessary to produce 224 ml of H_2 by the reaction with an acid will be
 (a) 0.065 gm (b) 0.65 gm
 (c) 6.5 gm (d) 7.5 gm.
67. The volume of carbon dioxide gas evolved at S.T.P. by heating 7.3 gm of $Mg(HCO_3)_2$ will be
 (a) 1120 ml (b) 2000 ml
 (c) 2240 ml (d) 2340 ml.
68. The molarity of pure water is
 (a) 1.16 M (b) 5.56 M
 (c) 18.36 M (d) 55.56 M.
69. A certain gas diffuses four times as quickly as oxygen. The molecular weight of the gas is
 (a) 1 (b) 1.5
 (c) 2 (d) 16.
70. The equivalent weight of oxygen, when it is converted to oxide is equal to
 (a) molecular weight (b) $\frac{\text{molecular weight}}{2}$
 (c) $\frac{\text{molecular weight}}{3}$ (d) $\frac{\text{molecular weight}}{4}$
71. Which of the following is used in photography?
 (a) $AgCl$ (b) $AgBr$
 (c) Ag_2S (d) $Ag_2C_2O_4$.
72. In the presence of mercuric ion and concentrated sulphuric acid, the reaction of acetylene with water produces
 (a) CH_3-CHO (b) CH_3-COOH
 (c) $CH_3-CO-CH_3$
 (d) CH_3-CH_2-OH .
73. If an atom is reduced, its oxidation number
 (a) increases (b) slightly decreases
 (c) does not change (d) sharply decreases.
74. Which of the following has the maximum electronegativity?
 (a) F (b) O
 (c) C (d) N.
75. The property, which can be classified as an intensive property, is
 (a) mass (b) temperature
 (c) volume (d) heat capacity.
76. The temperature, at which the density of O_2 at 1 atm. is the same as that of CH_4 at S.T.P. is
 (a) $100^\circ C$ (b) $150^\circ C$
 (c) $273^\circ C$ (d) $546^\circ C$.
77. The important ore of aluminium is
 (a) corundum (b) ruby
 (c) kaolin (d) bauxite.
78. Which of the following oxyacids does not exist?
 (a) $HBiO_3$ (b) H_3BiO_4
 (c) H_3SbO_3 (d) H_3AsO_4 .
79. The fractional distillation is used in
 (a) crude oil (b) coal tar
 (c) petroleum (d) all of these.
80. If pH value of a solution is 3 and by adding water, it becomes 6, then the dilution is increased by
 (a) 10 times (b) 100 times
 (c) 500 times (d) 1000 times.
81. Which of the following kinds of catalysis can be explained by the adsorption theory?
 (a) enzyme catalysis (b) acid base catalysis
 (c) heterogeneous catalysis
 (d) homogeneous catalysis.
82. The element, with atomic number 118, will be
 (a) alkali (b) noble gas
 (c) transition element (d) alkaline earth metal.
83. Which of the following molecule has regular geometry?
 (a) PF_3 (b) SF_6
 (c) H_2O (d) XeF_4 .
84. The complete combustion of CH_4 gives
 (a) $CO + H_2$ (b) $CO + N_2$
 (c) $CO + H_2O$ (d) $CO + N_2O$.
85. Which of the following alkaline earth metal has highest ionic mobility in aqueous solution?
 (a) Ca^{2+} (b) Mg^{2+}
 (c) Be^{2+} (d) Ba^{2+} .
86. Rutherford's scattering experiment is related to the size of
 (a) nucleus (b) proton
 (c) electron (d) neutron.
87. Which of the following compounds is not soluble in water?

- (a) CuS (b) CdS
(c) PbS (d) AgCl.
88. Which of the following molecule or ions is a bidentate ligand?
(a) Br_2^+ (b) $\text{CH}_3 - \text{C} \equiv \text{N}$
(c) $\text{C}_2\text{O}_4^{2-}$ (d) CH_3NH_2 .
89. What is the correct bond angle in dimethyl ether?
(a) 109° (b) 110°
(c) 120° (d) 180° .
90. The molality of a solution having 18 gm of glucose (mol. wt. = 180) dissolved in 500 gm of water is
(a) 0.1 M (b) 0.5 M
(c) 0.2 M (d) 2.2 M.
91. Nessler's reagent is used in the test of
(a) NH_3 (b) NH_4^+
(c) NH_4Cl (d) all of these.
92. How many gm of silver will be displaced from a solution of AgNO_3 by 4 gm of magnesium?
(a) 4 gm (b) 16 gm
(c) 18 gm (d) 36 gm.
93. The IUPAC name of the compound having the formula $\text{CCl}_3\text{CH}_2\text{CHO}$ is
(a) 1, 1, 1 - trichloropropanal
(b) 1, 2, 1 - dichloromethanal
(c) 2, 2, 2 - trichloropropanal
(d) 3, 3, 3 - trichloropropanal.
94. In the presence of an acid, hydrolysis of methyl cyanide produces
(a) acetic acid (b) methylamine
(c) methyl alcohol (d) formic acid.
95. Chloroform by reacting with concentrated HNO_3 produces
(a) water gas (b) laughing gas
(c) tear gas (d) producer gas.
96. Euchlorine is produced by heating a mixture of
(a) $\text{KCl} + \text{Conc. HCl}$ (b) $\text{KClO}_3 + \text{Conc. HCl}$
(c) $\text{KCl} + \text{Conc. H}_2\text{SO}_4$
(d) $\text{K}_2\text{ClO}_3 + \text{Conc. H}_2\text{SO}_4$.
97. Which of the following is a condensation polymer?
(a) dacron (b) neoprene
(c) teflon (d) polystyrene.
98. Which of the following is the electronic configuration of Cu^{2+} ($Z = 29$)
(a) $[\text{Ar}] 4s^1 3d^8$ (b) $[\text{Ar}] 4s^1 3d^{10}$
(c) $[\text{Ar}] 3d^9$ (d) $[\text{Ar}] 4s^2 3d^{10} 4p^1$.
99. Atom bomb is based on the principle of
(a) radioactivity (b) nuclear fusion
(c) nuclear fission (d) fusion and fission.
100. In which of the following reaction $K_p > K_c$?
(a) $\text{H}_2 + \text{I}_2 \rightarrow 2\text{HI}$ (b) $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$
(c) $\text{PCl}_3 + \text{Cl}_2 \rightarrow \text{PCl}_5$ (d) $2\text{SO}_3 \rightarrow \text{O}_2 + 2\text{SO}_2$.
- Directions for Q. 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 four 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 explanations of the Assertion.
(c) If Assertion is true but the Reason is false.
(d) If both Assertion and Reason are false.
101. **Assertion :** Alpha (α)-amino acids exist as internal salt in solution as they have amino and carboxylic acid groups in near vicinity.
Reason : H^+ ion given by carboxylic group ($-\text{COOH}$) is captured by amino group ($-\text{NH}_2$) having lone pair of electrons.
102. **Assertion :** Methanoic acid reduces mercuric chloride to mercurous chloride on heating while ethanoic acid does not.
Reason : Methanoic acid is a stronger acid than ethanoic acid.
103. **Assertion :** Sulphur dioxide and chlorine are both bleaching agents.
Reason : Both are drying agents.
104. **Assertion :** In case the central atom in a molecule is surrounded only by shared pairs of electrons, the molecule has a regular geometry.
Assertion : The shared electron pairs repel each other with equal force so all bonds are equidistant from each other.
105. **Assertion :** Nitrous acid (HNO_2) may act as an oxidising as well as a reducing agent.
Reason : The oxidation number of nitrogen remains same in all the compounds.
106. **Assertion :** The bond order in a molecule can have any value, positive or negative, integral

- or fractional or zero.
Reason : The bond order of a molecule depends upon the number of electron in the bonding and antibonding molecular orbitals.
107. *Assertion* : Phenol undergoes Kolbe's reaction whereas ethanol does not.
Reason : Phenoxide ion is more basic than ethoxide ion.
108. *Assertion* : A spectral line will be observed for a $2p_x - 2p_y$ transition.
Reason : The energy is released in the form of wave of light when electron drops from $2p_x$ to $2p_y$ orbital
109. *Assertion* : Aromatic aldehydes and also formaldehyde undergo Cannizzaro reaction with strong alkali.
Reason : Aldehydes which have α -hydrogen atoms undergo cannizzaro reaction.
110. *Assertion* : With halogens and alkali, amides give primary amines having one carbon atom less.
Reason : The reaction of amides with alkali is a qualitative test of amides.
111. *Assertion* : Formic acid reduces mercuric chloride to mercurous chloride on heating, while acetic acid does not.
Reason : Formic acid is a stronger acid than acetic acid.
112. *Assertion (A)* : The graphite is a better lubricant on the moon than on the earth.
Reason (R) : On the moon, there is lack of gravity on the motion of machines.
113. *Assertion* : Enthalpy of graphite is lower than that of diamond.
Reason : Entropy of graphite is greater than that of diamond.
114. *Assertion* : Copper liberates hydrogen from a solution of dilute hydrochloric acid.
Reason : Hydrogen is below copper in the electrochemical series.
115. *Assertion* : Phenol undergoes Kolbe reaction whereas ethanol does not.
Reason : Phenoxide ion is more basic than ethoxide ion.
116. *Assertion* : Alkali metals impart colour to the flame.
Reason : Their ionisation energies are low.
117. *Assertion* : Bond order in a molecule can assume any value positive or negative; integral or fractional, including zero.
Reason : It depends on the number of electrons in the bonding and antibonding orbitals.
118. *Assertion* : The molecularity of the reaction $H_2 + Br_2 = 2 HBr$ is two.
Reason : The order of this reaction is $3/2$.
119. *Assertion* : Cyclobutane is less stable than cyclopentane.
Reason : Presence of 'blent bonds' causes "loss of orbital overlap".
120. *Assertion* : The Dumans method is more applicable to nitrogen containing organic compounds than the Kjeldahl's method.
Reason : The Kjeldahl's method does not give satisfactory results for compounds in which nitrogen is directly linked to oxygen.

BIOLOGY

121. Single filament of *Nostoc* without mucilage sheath is known as
 (a) trichome (b) colony
 (c) mycelium (d) hyphae.
122. Which type of cancer is found in lymph nodes and spleen?
 (a) leukaemia (b) sarcoma
 (c) carcinoma (d) lymphoma.
123. A plant cell has potential to develop into full plant. This property of the plant cell is called
 (a) pleuripotency (b) totipotency
 (c) tissue culture (d) gene cloning.
124. Phytotron is a device by which
 (a) protons are liberated
 (b) plants are grown in controlled environment
 (c) mutations are produced in plants
 (d) leaf fall occurs on abscission layer.
125. When the gametophyte is not formed by spores but by any other part of sporophyte, it is known as
 (a) apospory (b) polyspory
 (c) multispory (d) germination.

126. Eggs having yolk in their centre and cytoplasm in peripheral layer, are called
 (a) centrolecithal (b) microlecithal
 (c) isolecithal (d) telolecithal.
127. Passive immunity is defined as immunity
 (a) acquired through first exposure to the disease
 (b) achieved through vaccination
 (c) inherited from the parents
 (d) achieved through the sera of other animals enriched in antibodies.
128. Sensation of stomach pain is due to
 (a) proprioceptors (b) exteroceptors
 (c) interoceptors (d) teloreceptors.
129. Sympathetic nerves in mammals arise from
 (a) thoraco-lumbar region
 (b) cervical region
 (c) sacral region
 (d) 3rd, 7th, 9th and 10th cranial nerves.
130. The genes, which are confirmed to differential region of Y-chromosomes only, are called
 (a) holandric (b) autosomal
 (c) mutant
 (d) completely sex-linked.
131. The asexual production of seed is called
 (a) fragmentation (b) advention
 (c) apomixis (d) self-fertilization.
132. Recent reports of acid rains in big industrial cities are due to the effect of atmospheric pollution by excessive release of
 (a) NH_3 by coal gas industries
 (b) CO_2 by burning of coal/wood, cutting of forests
 (c) NO_2 and SO_2 by burning of fossil fuels.
 (d) CO_2 by incomplete combustion of carbon fuel.
133. The C_4 plants differ from C_3 plants with reference to the
 (a) substrate that accepts CO_2 in carbon assimilation
 (b) number of ATP that are consumed in preparing sugar
 (c) type of end product
 (d) type of pigment involved in photosynthesis.
134. Perisperm is
 (a) peripheral part of endosperm
 (b) persistent of nucellus
 (c) remnant of endosperm
 (d) disintegrated secondary nucleus.
135. Translocation of organic materials is best explained by
 (a) imbibition theory
 (b) transpiration pull
 (c) active transport
 (d) mass flow hypothesis.
136. How much amount of oxygen is present in one gram of haemoglobin?
 (a) 20 ml (b) 13.4 ml
 (c) 1.34 ml (d) 40 ml.
137. Which proteolytic enzyme induces lysis of fibrin during fibrinolysis?
 (a) fibrin (b) thrombin
 (c) plasmin (d) all of these.
138. Which of the following is an example of sex-linked inheritance?
 (a) night-blindness (b) cretinism
 (c) anaemia (d) colour-blindness.
139. There is an irregular mating population. If the frequency of an autosomal recessive lethal gene is 0.4, then the frequency of the carriers in a population of 200 individuals is
 (a) 96 (b) 72
 (c) 36 (d) 104.
140. The compound, which is soluble in water but does not impede the oxygen transportation, is
 (a) NO (b) SO_3
 (c) SO_2 (d) CO.
141. Major source of sugar in the world is
 (a) *Citrus vulgaris* (b) *Annona squamosa*
 (c) *Beta vulgaris*
 (d) *Saccharum officinarum*.
142. During photosynthesis oxygen, in glucose comes from
 (a) oxygen in air (b) carbon dioxide
 (c) water (d) both (a) and (b).
143. Red Data Book deals with
 (a) plants on the verge of extinction
 (b) plants that are extinct
 (c) endemic plant
 (d) plant showing photoperiodism.

144. Which of the following correctly represents the flow of genetic information?
 (a) DNA → RNA → protein
 (b) protein → RNA → DNA
 (c) RNA → DNA → protein
 (d) RNA → protein → DNA.
145. When ovules at two points are developed, from the inner wall of the unilocular ovary, the placentation is called
 (a) marginal (b) basal
 (c) parietal (d) superficial.
146. Which of the following is most convincing reasons for increasing population growth in a country?
 (a) low population of old people
 (b) low mortality rate (c) high birth rate
 (d) high population of young children.
147. Which of the following is not applicable to coelenterates?
 (a) coelenteron (b) nematoblasts
 (c) choanocytes (d) radial symmetry.
148. The horns of Rhinoceros are composed of
 (a) chitin (b) cartilage
 (c) bone (d) keratin.
149. Chordae tendinae are found in
 (a) ventricles of brain (b) atria of heart
 (c) joints of legs (d) ventricles of heart.
150. The amphids are cuticular elevations on the ventro-lateral lips of *Ascaris*. These are
 (a) tactoreceptors (b) tangoreceptors
 (c) chemoreceptors (d) olfactoreceptors.
151. The cell organelle associated with photorespiration is
 (a) mesosome (b) lysosome
 (c) ribosome (d) glyoxysome.
152. The 3 sub-families of leguminose are distinguished mainly on the basis of
 (a) nature and habit of plants
 (b) inflorescence and flower characters
 (c) nature of gynoeceium
 (d) nature of fruit and its germination.
153. Which of the following plant yields powerful analgesic?
 (a) *Rauwolfia serpentina*
 (b) *Ferula asafoetida*
 (c) *Carcuma longa*
 (d) *Papaver somniferum*.
154. Black wood is obtained from
 (a) *Dalbergia* (b) *Acacia*
 (c) *Albizzia* (d) *Manihot*.
155. Velamen is found in
 (a) *Viscum* (b) *Rosa*
 (c) *Vanda* (d) *Santalum*.
156. The shade of a tree is cooler than the shade of a roof due to
 (a) transpiration
 (b) green leaves
 (c) guttation
 (d) photosynthesis.
157. Preganglionic sympathetic fibres are
 (a) synergic (b) cholinergic
 (c) adrenergic (d) hypergonic.
158. Homonids were originated during
 (a) miocene (b) palaeocene
 (c) pliocene (d) oligocene.
159. Meroblastic cleavage refers to which type of division of eggs?
 (a) incomplete (b) spiral
 (c) total (d) horizontal.
160. Glycosidic bond is broken during the digestion of
 (a) lipid (b) starch
 (c) protein (d) all of these.
- Directions for Q. 161 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 of the following four 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 the reason is not a correct explanation of the assertion.
 (c) If assertion is true but the reason is false
 (d) If both assertion and reason are false.
161. Assertion : Mitochondria are semi autonomous bodies.

- Reason* : Mitochondria produce ATP by the breakdown of carbohydrates into CO_2 and H_2O .
162. *Assertion* : Protosteles have no pith in centre.
Reason : It is the most primitive stele in plant kingdom.
163. *Assertion* : Some of the monocots show increase in girth
Reason : Vascular cambium is absent in monocot.
164. *Assertion* : Plasma membrane is selectively permeable.
Reason : It allows some solutes to pass through it readily along with solvents.
165. *Assertion* : Plasmolysis occurs due to phenomenon of exosmosis.
Reason : It occurs because of hypertonic solution outside.
166. *Assertion* : Male *Anopheles* does not spread malaria.
Reason : It does not carry *Plasmodium*.
167. *Assertion* : Termites and ants are social insects.
Reason : They make fungus garden in their nests.
168. *Assertion* : In frog cleavage is unequal and holoblastic.
Reason : Their eggs are macrolecithal.
169. *Assertion* : Patella and fabella are sesamoid bones
Reason : They are formed by ossification of tendons.
170. *Assertion* : Deamination occurs by transaminase enzyme in the kidney.
Reason : Removal of an amino group from an amino acid is used in production of Ammonia.
171. *Assertion* : Meiotic division results in the production of four dissimilar cells.
Reason : Synapsis occurs during zygotene of meiosis.
172. *Assertion* : Minerals are not part of biologically active substances.
Reason : Some individuals suffer anaemia due to the deficiency of iron.
173. *Assertion* : Submerged plants get CO_2 in the form of carbonates and bicarbonates.
Reason : Stomata are not present in submerged plants.
174. *Assertion* : In alcoholic drink, the alcohol is converted into glucose in the liver.
Reason : Liver cells are able to produce glucose from alcohol by back fermentation.
175. *Assertion* : Generally, a woman does not conceive during the lactation period.
Reason : The hormone 'prolactin' initiates and maintains lactation in a postpartum woman
176. *Assertion* : *Drosophila melanogaster* is widely used in genetic research.
Reason : *Drosophila melanogaster* is a readily available insect.
177. *Assertion* : The 'absorption spectrum' of chlorophyll 'a' shows close correlation with its 'action spectrum'
Reason : Chlorophyll 'a' is present in both the pigment systems I and II.
178. *Assertion* : Ionizing radiations are harmful for the living organism.
Reason : They form toxic photoproducts in the cells.
179. *Assertion* : The development in cockroach is heterometabolous metamorphosis.
Reason : The young ones resemble the adults in all.
180. *Assertion* : The aerobic respiration is bioenergetically more efficient than the anaerobic glycolysis.
Reason : The aerobic respiration occurs in the mitochondria, while glycolysis is purely cytosolic.

GENERAL KNOWLEDGE

181. The human skeleton is divided into
(a) two parts (b) three parts
(c) four parts (d) six parts.
182. Who said these words "Play the game in the spirit of the game".
(a) Rajiv Gandhi (b) Indira Gandhi
(c) Chandrashekar (d) Jawahar Lal Nehru.
183. The chief metabolic function of vitamin 'D' is to
(a) afford antiachitic activity
(b) prevent night blindness
(c) prevent blood coagulation
(d) prevent the loss of muscle.

184. The capital of 'Barbados' is
 (a) Capetown (b) Bridgetown (c) Belarus (d) Berlin.
185. Mother Teresa won the Nobel Prize for peace in
 (a) 1992 (b) 1989 (c) 1984 (d) 1979.
186. First Woman Congress President was
 (a) Annie Besant (b) Sarojini Naidu (c) Indira Gandhi (d) Vijayalakshmi Pandit.
187. Sri Aurbindo was a great
 (a) writer (b) actor (c) philosopher (d) sport person.
188. "Bharat Bharti" was written by
 (a) Amrita Pretam (b) Mulkraj Anand (c) Suryakant Tripathi (d) Maithili Saran Gupta.
189. Aravali range is situated in the
 (a) north-west region (b) south-west region (c) north-east region (d) south-east region.
190. 'Prince of Wales Cup' is related with
 (a) Golf (b) Hockey (c) Football (d) Cricket.
191. 'Diesel Engine' was invented by
 (a) Carnot (b) H.W. Seeley (c) Edison (d) Rudolf Diesel.
192. Astrology deals with the study of
 (a) space (b) bacteria (c) plants life (d) stars and future forecasting.
193. Integrated Rural Development Progress (IRDP) was initiated during
 (a) 1975-1976 (b) 1969-1970 (c) 1976-1977 (d) 1980-1981.
194. The natural growth rate of population during any year is the difference between the
 (a) birth rate and death rate per 1000 (b) death rate and birth rate per 1000 (c) birth rate and average population (d) average population and birth rate per 1000.
195. Latitude is the distance in degrees on the earth's surface is measured
 (a) north and south poles of the equator (b) east and west poles of the equator (c) upper and lower position of the earth (d) temperature difference between different areas on earth.
196. 'GATT' stands for
 (a) general agreement on toures and travels (b) general agreement on to traffic's and track (c) general agreement on trade and tourism (d) general agreement on telephone and telegraph.
197. The attorney general of India is the legal adviser to
 (a) Prime Minister on foreign policies (b) Government of India (c) President of India (d) Government on finance policies.
198. First speaker of Lok Sabha was
 (a) G.V. Mavalankar (b) Sardar Hukum Singh (c) Bali Ram Bhagat (d) Neelam Sanjiva Reddy.
199. The first chief justice of India was
 (a) J.C. Shah (b) S.R. Das (c) Patanjali Shastri (d) Harilal J. Kania.
200. 'Vande Matram. was first published in
 (a) Anand math (b) Vinay patrika (c) Gitanjali (d) Nandini.

