NEET (UG)

SOLVED PAPER 2013

Time : 3 Hours **Max. Marks : 720**

Important Instructions :

1. *The test is of 3 hours duration and test contains 180 questions. Each question carries 4 marks. For each correct response, the candidate will get 4 marks.*
2. *For each incorrect response, one mark will be deducted from the total scores.*

PHYSICS

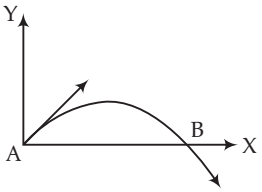
1. In an experiment four quantities a, b, c and d are measured with percentage error 1%, 2%, 3% and 4% respectively. Quantity P is calculated as follows

$$P = \frac{a^3b^2}{cd}$$

Percentage error in P is

(a) 14% **(b)** 10% **(c)** 7% **(d)** 4%

2. The velocity of a projectile at the initial point A is $2\hat{i}+3\hat{j}$ m/s. Its velocity (in m/s) at point B is



(a) $-2\hat{i}-3\hat{j}$ **(b)** $-2\hat{i}+3\hat{j}$

(c) $2\hat{i}-3\hat{j}$ **(d)** $2\hat{i}+3\hat{j}$

3. A stone falls freely under gravity. It covers distances h_1, h_2 and h_3 in the first 5 seconds, the next 5 seconds and the next 5 seconds respectively. The relation between h_1, h_2 and h_3 is

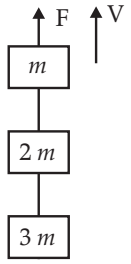
(a) $h_1 = 2h_2 = 3h_3$

(b) $h_1 = \frac{h_2}{3} = \frac{h_3}{5}$

(c) $h_2 = 3h_1$ and $h_3 = 3h_2$

(d) $h_1 = h_2 = h_3$

4. Three blocks with masses m, $2m$ and $3m$ are connected by strings, as shown in the figure. After an upward force F is applied on block m, the masses move upward at constant speed v. What is the net force on the block of mass $2m$? (g is the acceleration due to gravity)



(a) Zero **(b)** 2 mg **(c)** 3 mg **(d)** 6 mg

5. The upper half of an inclined plane of inclination θ is perfectly smooth while lower half is rough. A block starting from rest at the top of the plane will again come to rest at the bottom, if the coefficient of friction between the block and lower half of the plane is given by

(a) $\mu = \frac{2}{\tan\theta}$ **(b)** m = 2 tan q

(c) m = tan q **(d)** $\mu = \frac{1}{\tan\theta}$

6. A uniform force of $(3\hat{i} + \hat{j})$ N acts on a particle of mass 2 kg. Hence the particle is displaced from position $(2\hat{i} + \hat{k})$ m to position $(4\hat{i} + 3\hat{j} - \hat{k})$ m. The work done by the force on the particle is

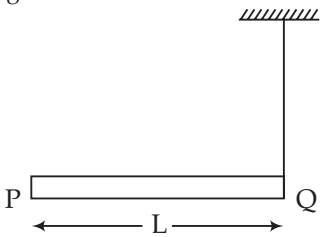
(a) 6 J **(b)** 13 J **(c)** 15 J **(d)** 9 J

7. An explosion breaks a rock into three parts in a horizontal plane. Two of them go off at right angles to each other. The first part of mass 1 kg moves with a speed of 12 ms^{-1} and the second part of mass 2 kg moves with 8 ms^{-1} speed. If the third part flies off with 4 ms^{-1} speed, then its mass is

(a) 3 kg **(b)** 5 kg **(c)** 7 kg **(d)** 17 kg

8. A rod PQ of mass M and length L is hinged at end P. The rod is kepts horizontal by a massless string tied

to point Q as shown in figure. When string is cut, the initial angular acceleration of the rod is



(a) g/L **(b)** 2g/L **(c)** 2g/3L **(d)** 3g/2L

9. A small object of uniform density rolls up a curved surface with an initial velocity "v". It reaches up to a maximum height of $3v^2/4g$ with respect to the initial position. The object is

(a) Solid sphere **(b)** Hollow sphere

(c) Disc **(d)** Ring

10. A body of mass 'm' is taken from the earth's surface to the height equal to twice the radius (R) of the earth. The change is potential energy of body will be

(a) $mg2R$ **(b)** $2mgR/3$ **(c)** $3mgR$ **(d)** $mgR/3$

11. Infinite number of bodies, each of mass 2 kg are situated on x-axis at distance 1 m, 2 m, 4 m, 8 m, respectively from the origin. The resulting gravitational potential due to this system at the origin will be

(a) –G **(b)** $-\frac{8}{3}G$

(c) $-\frac{4}{3}G$ **(d)** – 4 G

12. The following four wires are made of the same material. Which of these will have the largest extension when the same tension is applied ?

(a) Length = 50 cm, diameter = 0.5 mm

(b) Length = 100 cm, diameter = 1 mm

(c) Length = 200 cm, diameter = 2 mm

(d) Length = 300 cm, diameter = 3 mm

13. The wet-ability of a surface by a liquid depends primarily on

(a) density.

(b) angle of contact between the surface and the liquid.

(c) viscosity.

(d) surface tension.

14. The molar specific heats of an ideal gas at constant pressure and volume are denoted by C_p and C_v, respectively. If $\gamma = C_p/C_v$ and R is the universal gas constant, then C_v is equal to

(a) γR **(b)** $\frac{1+\gamma}{1-\gamma}$

(c) $\frac{a^3b^2}{cd}$ **(d)** $\frac{(\gamma-1)}{R}$

15. A piece of iron is heated in a flame. If first becomes dull red then becomes reddish yellow and finally turns to white hot. The correct explanation for the above observation is possible by using Out of Syllabus

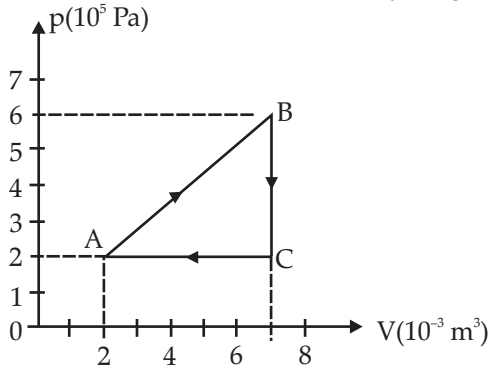
(a) Stefan's law.

(b) Wien's displacement law.

(c) Kirchoff's law.

(d) Newton's law of cooling.

16. A gas is taken through the cycle A → B → C → A, as shown. What is the net work done by the gas ?



(a) – 2000 J **(b)** 2000 J

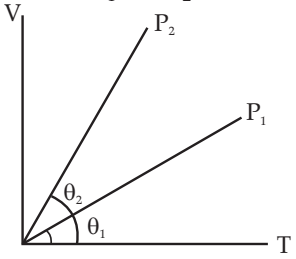
(c) 1000 J **(d)** Zero

17. During an adiabatic process, the pressure of a gas is found to be proportional to the cube of its absolute temperature. The ratio of C_p/C_v for the gas is

(a) $\frac{3}{2}$ **(b)** $\frac{4}{3}$

(c) 2 **(d)** $\frac{5}{3}$

18. In the given (V – T) diagram, what is the relation between pressure P_1 and P_2 ?



(a) Cannot be predicted **(b)** $P_2 = P_1$

(c) $P_2 > P_1$ **(d)** $P_2 < P_1$

19. The amount of heat energy required to raise the temperature of 1 g of helium at NTP, from T_1K to T_2K is

(a) $\frac{3}{8}N_aK_B(T_2 - T_1)$ **(b)** $\frac{3}{2}N_aK_B(T_2 - T_1)$

(c) $\frac{3}{4}N_aK_B(T_2 - T_1)$ **(d)** $\frac{3}{4}N_aK_B\left(\frac{T_2}{T_1}\right)$

20. A wave travelling in the positive x-direction having displacement along y-direction as 1 m, wavelength 2π m and frequency of $1/\pi$ Hz is represented by

(a) $y = \sin(2\pi x + 2\pi t)$

(b) $y = \sin(x - 2t)$

(c) $y = \sin(2\pi x - 2\pi t)$

(d) $y = \sin(10\pi x - 20\pi t)$

21. If we study the vibration of a pipe open at both ends, then the following statements is not true

(a) Pressure change will be maximum at both ends

(b) Open end will be anti-node

(c) Odd harmonics of the fundamental frequency will be generated

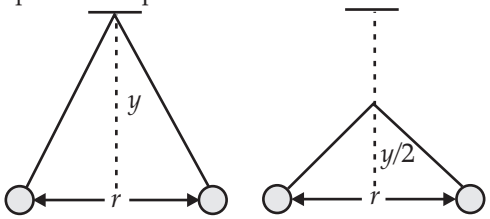
(d) All harmonics of the fundamental frequency will be generated

22. A source of unknown frequency gives 4 beats/s, when sounded with a source of known frequency 250 Hz. The second harmonic of the source of unknown frequency gives five beats per second, when sounded with a source of frequency 513 Hz. The unknown frequency is

(a) 260 Hz **(b)** 254 Hz

(c) 246 Hz **(d)** 240 Hz

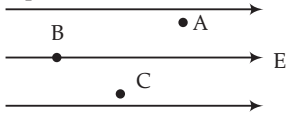
23. Two pith balls carrying equal charges are suspended from a common point by strings of equal length, the equilibrium separation between them is r. Now the strings are rigidly clamped at half the height. The equilibrium separation between the balls now become.



(a) $\left(\frac{1}{\sqrt{2}}\right)^2$ **(b)** $\left(\frac{r}{\sqrt[3]{2}}\right)$

(c) $\left(\frac{2r}{\sqrt{3}}\right)$ **(d)** $\left(\frac{2r}{3}\right)$

24. A, B and C are three points in a uniform electric field. The electric potential is



(a) same at all the three points A, B and C.

(b) maximum at A.

(c) maximum at B.

(d) maximum at C.

25. A wire of resistance 4 Ω is stretched to twice its original length. The resistance of stretched wire would be

(a) 2 Ω **(b)** 4 Ω **(c)** 8 Ω **(d)** 16 Ω

26. The internal resistance of a 2.1 V cell which gives a current of 0.2 A through a resistance of 10 Ω is

(a) 0.2 Ω **(b)** 0.5 Ω **(c)** 0.8 Ω **(d)** 1.0 Ω

27. The resistances of the four arms P, Q, R and S in a Wheatstone's bridge are 10 Ω, 30 Ω, 30 Ω and 90 Ω, respectively. The emf and internal resistance of the cell are 7 V and 5 Ω respectively. If the galvanometer resistance is 50 Ω, the current drawn from the cell will be

(a) 2.0 A **(b)** 1.0 A **(c)** 0.2 A **(d)** 0.1 A

28. When a proton is released from rest in a room, it starts with an initial acceleration a_0 towards west. When it is projected towards north with a speed v_0 it moves with an initial acceleration $3a_0$ towards west. The electric and magnetic fields in the room are

(a) $\frac{ma_0}{e}$ west, $\frac{2ma_0}{ev_0}$ up

(b) $\frac{ma_0}{e}$ west, $\frac{2ma_0}{ev_0}$ down

(c) $\frac{ma_0}{e}$ east, $\frac{3ma_0}{ev_0}$ up

(d) $\frac{ma_0}{e}$ east, $\frac{3ma_0}{ev_0}$ down

29. A current loop in a magnetic field

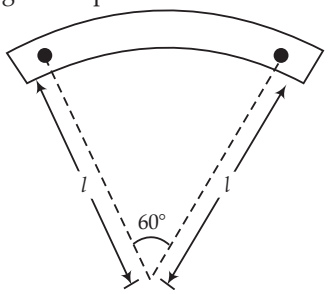
(a) experiences a torque whether the field is uniform or non-uniform in all orientations.

(b) can be in equilibrium in one orientations.

(c) can be equilibrium in two orientations, both the equilibrium states are unstable.

(d) can be in equilibrium in two orientations, one stable while the other unstable.

30. A bar magnet of length l and magnetic dipole moment M is bent in the form of an arc as shown in figure. The new magnetic dipole moment will be



(a) $\frac{M}{2}$ **(b)** M **(c)** $\frac{3}{\pi}M$ **(d)** $\frac{2}{\pi}M$

31. A wire loop is rotated in a magnetic field. The frequency of change of direction of the induced emf is

(a) six times per revolution.

(b) once per revolution

(c) twice per revolution

(d) four times per revolution

32. A coil of self-inductance L is connected in series with a bulb B and an AC source. Brightness of the bulb decreases when

(a) an iron rod is inserted in the coil.

(b) frequency of the AC source is decreased.

(c) number of turns in the coil is reduced.

(d) a capacitance of reactance $X_C = X_L$ is included in the same circuit.

33. The condition under which a microwave oven heats up a food item containing water molecules most efficiently is

(a) the frequency of the microwave must match the resonant frequency of the water molecules.

(b) the frequency of the microwave has no relation with natural frequency of water molecules.

(c) microwave are heat waves, so always produce heating.

(d) infrared waves produce heating in a microwave oven.

34. Ratio of longest wavelengths corresponding to Lyman and Balmer series in hydrogen spectrum is

(a) $\frac{5}{27}$ **(b)** $\frac{3}{23}$ **(c)** $\frac{7}{29}$ **(d)** $\frac{9}{31}$

35. The half-life of a radioactive isotope X is 20 years. It decays to another element Y which is stable. The two elements X and Y were found to be in the ratio 1 : 7 in a sample of a given rock. The age of the rock is estimated to be Out of Syllabus

(a) 40 years **(b)** 60 years

(c) 80 years **(d)** 100 years

36. A certain mass of hydrogen is changed to helium by the process of fusion. The mass defect in fusion reaction is 0.02866 u. The energy liberated per u is (Given 1 u = 931 MeV)

(a) 2.67 MeV **(b)** 26.7 MeV

(c) 6.675 MeV **(d)** 13.35 MeV

37. For photoelectric emission from certain metal the cut-off frequency is ν. If radiation of frequency 2ν impinges on the metal plate, the maximum possible velocity of the emitted electron will be (m is the electron mass)

(a) $\sqrt{\frac{h\nu}{(2m)}}$ **(b)** $\sqrt{\frac{h\nu}{m}}$ **(c)** $\sqrt{\frac{2h\nu}{m}}$ **(d)** $2\sqrt{\frac{h\nu}{m}}$

38. The wavelength λ_e of an electron and λ_p of a photon of same energy E are related by

(a) $\lambda_p \propto \lambda_e^2$ **(b)** $\lambda_p \propto \lambda_e$

(c) $\lambda_p \propto \sqrt{\lambda_e}$ **(d)** $\lambda_p \propto \frac{1}{\sqrt{\lambda_e}}$

39. A plano-convex lens fits exactly into a plano-concave lens. Their plane surfaces are parallel to each other. If lenses are made of different materials of refractive indices μ_1 and μ_2 and R is the radius of curvature of the curved surface of the lenses, then the focal length of the combination is

(a) $\frac{2R}{(\mu_2 - \mu_1)}$ **(b)** $\frac{R}{2(\mu_1 + \mu_2)}$

(c) $\frac{R}{2(\mu_1 - \mu_2)}$ **(d)** $\frac{R}{(\mu_1 - \mu_2)}$

40. For a normal eye, the cornea of eye provides a converging power of 40 D and the least converging power of the eye lens behind the cornea is 20 D. Using this information, the distance between the retina and the cornea-eye lens can be estimated to be Out of Syllabus

(a) 5 cm **(b)** 2.5 cm **(c)** 1.67 cm **(d)** 1.5 cm

41. In Young's double slit experiment, the slits are 2 mm apart and are illuminated by photons of two wavelengths $\lambda_1 = 12000$ Å and $\lambda_2 = 10000$ Å. At what minimum distance from the common central bright fringe on the screen 2 m from the slit will a bright fringe from one interference pattern coincide with a bright fringe from the other ?

(a) 3 mm **(b)** 8 mm **(c)** 6 mm **(d)** 4 mm

42. A parallel beam of fast moving electrons is incident normally on a narrow slit. A fluorescent screen is placed at a large distance from the slit. If the speed of the electrons is increased, then which of the following statements is correct ?

(a) Diffraction pattern is not observed on the screen in the case of electrons.

(b) The angular width of the central maximum of the diffraction pattern will increase.

(c) The angular width of the central maximum will decrease.

(d) The angular width of the central maximum will be unaffected.

43. In a n-type semiconductor, which of the following statement is true ?

(a) Electrons are majority carriers and trivalent atoms are dopants.

(b) Electrons are minority carriers and pentavalent atoms are dopants.

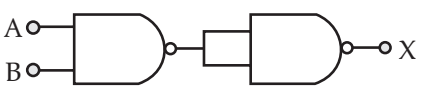
(c) Holes are minority carriers and pentavalen atoms are dopants.

(d) Holes are majority carriers and trivalent atoms are dopants.

44. In a common emitter (CE) amplifier having a voltage gain G, the transistor used has trans conductance 0.03 mho and current gain 25. If the above transistor is replaced with another one with transconductance 0.02 mho and current gain 20, the voltage gain will be Out of Syllabus

(a) $\frac{2}{3}$G **(b)** 1.5 G **(c)** $\frac{G}{3}$ **(d)** $\frac{5}{4}$G

45. The output (X) of the logic circuit shown in figure will be



(a) $X = \overline{A} \cdot \overline{B}$ **(b)** $X = \overline{A \cdot B}$

(c) $X = A \cdot B$ **(d)** $X = \overline{A + B}$

CHEMISTRY

46. The value of Planck's constant is 6.63×10^{-34} Js. The speed of light is 3×10^{17} nms^{-1}. Which value is closest to the wavelength in nanometer of a quantum of light with frequency of 6×10^{15} s^{-1} ?

(a) 10 **(b)** 25

(c) 50 **(d)** 75

47. What is the maximum numbers of electrons that can be associated with the following set of quantum numbers ?
$n = 3, l = 1$ and $m = -1$
(a) 10 **(b)** 6 **(c)** 4 **(d)** 2

48. What is the activation energy for a reaction if its rate doubles when the temperature is raised from 20°C to 35°C ? ($R = 8.314$ J mol^{-1} K^{-1})
(a) 342 kJ mol^{-1} **(b)** 269 kJ mol^{-1}
(c) 34.7 kJ mol^{-1} **(d)** 15.1 kJ mol^{-1}

49. A hydrogen gas electrode is made by dipping platinum wire in a solution of HCl of pH = 10 and by passing hydrogen gas around the platinum wire at 1 atm pressure. The oxidation potential of electrode would be
(a) 0.059 V **(b)** 0.59 V **(c)** 0.118 V **(d)** 1.18 V

50. A reaction having equal energies of activation for forward and reverse reactions has
(a) $\Delta S = 0$ **(b)** $\Delta G = 0$
(c) $\Delta H = 0$ **(d)** $\Delta H = \Delta G = \Delta S = 0$

51. At 25°C molar conductance of 0.1 molar aqueous solution of ammonium hydroxide is 9.54 Ω^{-1} cm^2 mol^{-1} and at infinite dilution, its molar conductance is 238 Ω^{-1} cm^2 mol^{-1}. The degree of ionisation of ammonium hydroxide at the same concentration and temperature is
(a) 2.080% **(b)** 20.800% **(c)** 4.008% **(d)** 40.800%

52. Based on equation
$E = -2.178 \times 10^{-18}\ J\left(\frac{Z^2}{n^2}\right)$ certain con-clusions are written. Which of them is not correct ?
(a) The negative sign in equation simply means that the energy of electron bound to the nucleus is lower than it would be if the electrons were at the infinite distance from the nucleus.
(b) Larger the value of n, the larger is the orbit radius.
(c) Equation can be used to calculate the change in energy when the electron changes orbit.
(d) For $n = 1$, the electron has a more negative energy than it does for $n = 6$ which means that the electron is more loosely bound in the smallest allowed orbit.

53. A button cell used in watches functions as following
$Zn(s) + Ag_2O(s) + H_2O(l) \rightleftharpoons 2\,Ag(s) + Zn^{2+}(aq) + 2OH^-(aq)$
If half-cell potentials are
$Zn^{2+}(aq) + 2e^- \longrightarrow Zn(s)$; $E^\circ = -0.76$ V
$Ag_2O(s) + H_2O(l) + 2e^- \longrightarrow 2Ag(s) + 2OH^-(aq)$, $E^\circ = 0.34$ V
The cell potential will be
(a) 1.10 V **(b)** 0.42 V **(c)** 0.84 V **(d)** 1.34 V

54. How many grams of concentrated nitric acid solution should be used to prepare 250 mL of 2.0 M HNO_3? The concentrated acid is 70% HNO_3.
(a) 45.0 g conc. HNO_3 **(b)** 90.0 g conc. HNO_3
(c) 70.0 g conc. HNO_3 **(d)** 54.0 g conc. HNO_3

55. The number of carbon atoms per unit cell of diamond unit cell is
(a) 4 **(b)** 8 **(c)** 6 **(d)** 1

56. Maximum deviation from ideal gas is expected from
(a) $H_2(g)$ **(b)** $N_2(g)$ **(c)** $CH_4(g)$ **(d)** $NH_3(g)$

57. A metal has a fcc lattice. The edge length of the unit cell is 404 pm. The density of the metal is 2.72 g cm^{-3}. The molar mass of the metal is
(N_A Avogadro's constant = 6.02×10^{23} mol^{-1})
(a) 27 g mol^{-1} **(b)** 20 g mol^{-1}
(c) 40 g mol^{-1} **(d)** 30 g mol^{-1}

58. Dipole-induced dipole interactions are present in which of the following pairs ? Out of Syllabus
(a) H_2O and alcohol **(b)** Cl_2 and CCl_4
(c) HCl and He atoms **(d)** SiF_4 and He atoms

59. A magnetic moment of 1.73 BM will be shown by one among the following is
(a) $[Cu(NH_3)_4]^{2+}$ **(b)** $[Ni(CN)_4]^{2-}$
(c) $TiCl_4$ **(d)** $[CoCl_6]^{4-}$

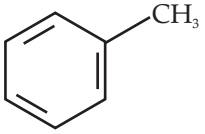
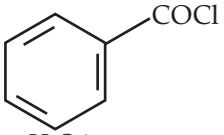
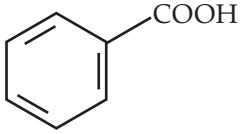
60. Roasting of sulphides gives the gas X as a by-product. This is a colourless gas with choking smell of burnt sulphur and causes a great damage to respiratory organs as a result of acid rain. Its aqueous solution is acidic acts as a reducing agent and its acid has never been isolated. The gas X is Out of Syllabus
(a) H_2S **(b)** SO_2 **(c)** CO_2 **(d)** SO_3

61. Which is the strongest acid in the following?
(a) H_2SO_4 **(b)** $HClO_3$ **(c)** $HClO_4$ **(d)** H_2SO_3

62. Which of the following is paramagnetic ?
(a) CO **(b)** O_2^- **(c)** CN^- **(d)** NO^+

63. Which of the following structure is similar to graphite ?
(a) BN **(b)** B **(c)** B_4C **(d)** B_2H_6

64. The basic structural unit of silicates is
(a) SiO^- **(b)** SiO_4^{4-} **(c)** SiO_3^{2-} **(d)** SiO_4^{2-}

65. Reaction by which benzaldehyde cannot be prepared ?
(a)  + CrO_2Cl_2 and CS_2 followed by H_3O^+
(b)  + H_2O in presence of Pd-$BaSO_4$
(c)  +CO+HCl in presence of anhy. $AlCl_3$
(d)  + Zn/Hg and conc. HCl

66. Which of the following does not give oxygen on heating ?
(a) $KClO_3$ **(b)** $Zn(ClO_3)_2$
(c) $K_2Cr_2O_7$ **(d)** $(NH_4)_2Cr_2O_7$

67. Which of the following lanthanoid ions is diamagnetic ? (At. no. Ce = 58, Sm = 62, Eu = 63, Yb =70)
(a) Ce^{2+} **(b)** Sm^{2+} **(c)** Eu^{2+} **(d)** Yb^{2+}

68. Identify the correct order of solubility in aqueous medium.
(a) CuS > ZnS > Na_2S **(b)** ZnS > Na_2S > CuS
(c) Na_2S > CuS > ZnS **(d)** Na_2S > ZnS > CuS

69. XeF_2 is isostructural with
(a) TeF_2 **(b)** ICl_2^- **(c)** $SbCl_3$ **(d)** $BaCl_2$

70. An excess of $AgNO_3$ is added to 100 mL of a 0.01 M solution of dichlorotetraaqua-chromium (III) chloride. The number of moles of AgCl precipitate would be
(a) 0.001 **(b)** 0.002 **(c)** 0.003 **(d)** 0.01

71. Which of these is least likely to act as a Lewis base ?
(a) CO **(b)** F^- **(c)** BF_3 **(d)** PF_3

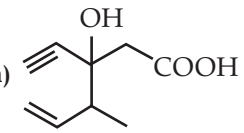
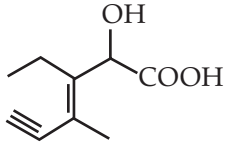
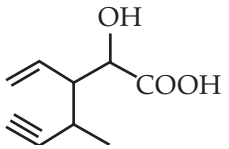
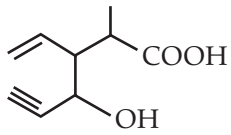
72. $KMnO_4$ can be prepared from K_2MnO_4 as per reaction

$$3MnO_4^{2-} + 2H_2O \rightleftharpoons 2MnO_4^- + MnO_2 + 4OH^-$$

The reaction can go to completion by removing OH^- ions by adding
(a) HCl **(b)** KOH **(c)** CO_2 **(d)** SO_2

73. Which of the following is electron deficient?
(a) $(CH_3)_2$ **(b)** $(SiH_3)_2$ **(c)** $(BH_3)_2$ **(d)** PH_3

74. Structure of the compound whose IUPAC name is 3-ethyl-2-hydroxy-4-methylhex-3-en-5-ynoic acid is

(a) 
(b) 
(c) 
(d) 

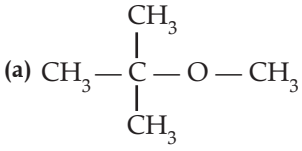
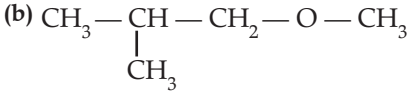
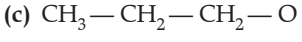
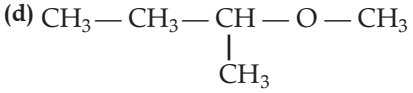
75. Which of these is not a monomer for a high molecular mass silicon polymer ? Out of Syllabus
(a) $MeSiCl_3$ **(b)** Me_2SiCl_2
(c) Me_3SiCl **(d)** $PhSiCl_3$

76. Which of the following statements about the interstitial compounds is incorrect ? Out of Syllabus
(a) They retain metallic conductivity.
(b) They are chemically reactive.
(c) They are much harder than the pure metal.
(d) They have higher melting points than the pure metal.

77. Which one of the following molecules contain no π-bond ?
(a) CO_2 **(b)** H_2O **(c)** SO_2 **(d)** NO_2

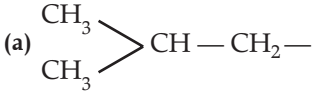
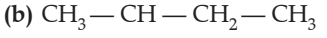
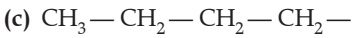
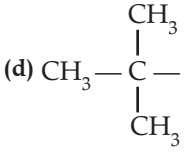
78. Antiseptics and disinfectants either kill or prevent the growth of microorganisms. Identify which of the following is not true. Out of Syllabus
(a) Dilute solutions of boric acid and hydrogen peroxide are strong antiseptics.
(b) Disinfectants harm the living tissues.
(c) A 0.2% solution of phenol is an antiseptic while 1% solution acts as a disinfectant.
(d) Chlorine and iodine are used as strong disinfectants.

79. Among the following ethers, which one will produce methyl alcohol on treatment with hot concentrated HI ?

(a) 
(b) 
(c) 
(d) 

80. Nylon is an example of Out of Syllabus
(a) polyamide. **(b)** polythene.
(c) polyester. **(d)** polysaccharide.

81. The structure of isobutyl group in an organic compound is

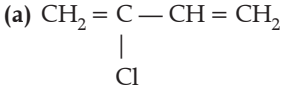
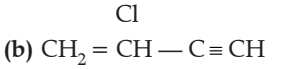
(a) 
(b) 
(c) 
(d) 

82. Nitrobenzene on reaction with conc. HNO_3/H_2SO_4 at 80 – 100°C forms which one of the following products ?
(a) 1, 2-dinitrobenzene **(b)** 1, 3-dinitrobenzene
(c) 1, 4-dinitrobenzene **(d)** 1, 2, 4-trinitrobenzene

83. Some *meta*-directing substituents in aromatic substitution are given. Which one is the most deactivating ?
(a) —C ≡ N **(b)** $—SO_3H$ **(c)** —COOH **(d)** $—NO_2$

84. 6.023×10^{20} molecules of urea are present in 100 mL of its solution. The concentration of solution is
(a) 0.02 M **(b)** 0.01 M **(c)** 0.001 M **(d)** 0.1 M

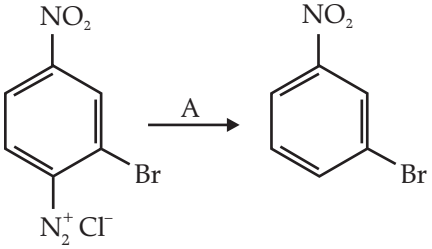
85. Which of the following is a polar molecule ?
(a) BF_3 **(b)** SF_4 **(c)** SiF_4 **(d)** XeF_4

86. Which is the monomer of neoprene in the following ?
(a) 
(b) 

(c) $CH_2 = CH - CH = CH_2$

(d) $CH_2 - C(CH_3) - CH - CH_2$

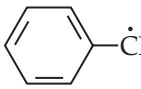
87. In the reaction,



A is

(a) $HgSO_4/H_2SO_4$ **(b)** Cu_2Cl_2

(c) H_3PO_2 and H_2O **(d)** H^+/H_2O

88. The radical  is aromatic because it has

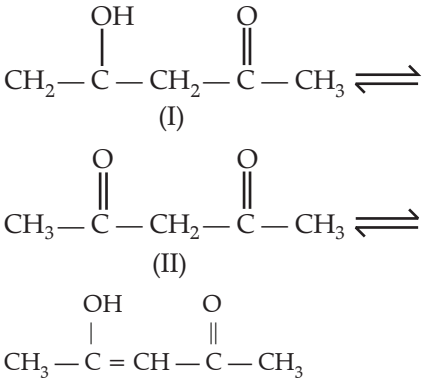
(a) 6 *p*-orbitals and 6 unpaired electrons.

(b) 7 *p*-orbitals and 6 unpaired electrons.

(c) 7 *p*-orbitals and 7 unpaired electrons.

(d) 6 *p*-orbitals and 7 unpaired electrons.

89. The order of stability of the following tautomeric compound is



(Stabilised by conjugation and H-bonding)

(III)

(a) I > II > III **(b)** III > II > I

(c) II > I > III **(d)** II > III > I

90. Which of the following compounds will not undergo Friedal-Craft's reaction easily ?

(a) Cumene **(b)** Xylene

(c) Nitrobenzene **(d)** Toluene

BIOLOGY

91. Select the wrong statement.

(a) Isogametes are similar in structure, function and behaviour.

(b) Anisogametes differ either in structure, function and behaviour.

(c) In oomycetes female gamete is smaller and motile, while male gamete is larger and non-motile.

(d) *Chlamydomonas* exhibits both isogamy and anisogamy and *Fucus* shows oogamy.

92. Which one of the following is not a correct statement ?

(a) Herbarium houses dried, pressed and preserved plant specimens.

(b) Botanical gardens have collection of living plants for reference.

(c) A museum has collection of photographs of plants and animals.

(d) Key is a taxonomic aid for identification of specimens.

93. Isogamous condition with non-flagellated gametes is found in

(a) *Chlamydomonas* **(b)** *Spirogyra*

(c) *Volvox* **(d)** *Fucus*

94. Besides paddy fields, cyanobacteria are also found inside vegetative part of

(a) *Pinus* **(b)** *Cycas*

(c) *Equisetum* **(d)** *Psilotum*

95. Megasporangium is equivalent to

(a) embryo sac. **(b)** fruit.

(c) nucellus. **(d)** ovule.

96. Read the following statements (I) to (IV) and answer the question which follows them

I. In liverworts, mosses and ferns gametophytes are free living.

II. Gymnosperms and some ferns are heterospores.

III. Sexual reproduction in *Fucus*, *Volvox* and *Albugo* is oogamous.

IV. The sporophyte in liverworts is more elaborate than that in mosses.

How many of the above statements are correct ?

(a) One **(b)** Two **(c)** Three **(d)** Four

97. Among bitter gourd, mustard, brinjal, pumpkin, china rose, lupin, cucumber, sunnhemp, gram, guava, bean, chilli, plum, *Petunia*, tomato, rose, *Withania*, potato, onion, aloe and tulip how many plants have hypogynous flower ?

(a) Ten **(b)** Fifteen

(c) Eighteen **(d)** Six

98. Interfascicular cambium develops from the cells of

(a) medullary rays. **(b)** xylem parenchyma.

(c) endodermis. **(d)** pericycle.

99. In China rose the flower is

(a) actinomorphic, hypogynous with twisted aestivation.

(b) actinomorphic, epigynous with valvate aestivation.

(c) zygomorphic, hypogynous with imbricate aestivation.

(d) zygomorphic, epigynous with twisted aestivation.

100. Lenticels are involved in
(a) transpiration. **(b)** gaseous exchange.
(c) food transport. **(d)** photosynthesis.

101. Age of a tree can be estimated by
(a) its height and girth.
(b) biomass.
(c) number of annual rings.
(d) diameter of its heartwood.

102. Seed coat is not thin, membranous in
(a) maize. **(b)** coconut.
(c) groundnut. **(d)** gram.

103. Transition state structure of the substrate formed during an enzymatic reaction is
(a) transient but stable.
(b) permanent but unstable.
(c) transient but unstable.
(d) permanent and stable.

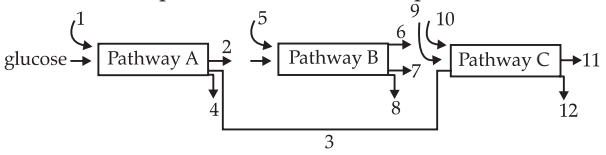
104. A phosphoglyceride is always made up of
(a) only a saturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached.
(b) only an unsaturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached.
(c) a saturated or unsaturated fatty acid esterified to a glycerol molecule to which a phosphate group is also attached.
(d) a saturated or unsaturated fatty acid esterified to a phosphate group, which is also attached to a glycerol molecule.

105. Pigment containing membranous extensions in some cyanobacteria are
(a) basal bodies. **(b)** penumatophores.
(c) chromatophores. **(d)** heterocysts.

106. A major site for synthesis of lipids is
(a) Symplast **(b)** SER
(c) RER **(d)** Nucleoplasm

107. The complex formed by a pair of synapsed homologous chromosomes is called
(a) kinetochore. **(b)** axoneme.
(c) equatorial plate. **(d)** bivalent.

108. The three boxes in this diagram represent the three major biosynthetic pathways in aerobic respiration. Arrows represent net reactants or products



Arrows numbered 4, 8 and 12 can all be
(a) NADH **(b)** ATP
(c) H_2O **(d)** FAD^+ or $FADH_2$

109. The most abundant intracellular cation is
(a) Na^+ **(b)** Ca^{2+} **(c)** H^+ **(d)** K^+

110. During seed germination, its stored food is mobilised by
(a) gibberellin. **(b)** ethylene.
(c) cytokinin. **(d)** ABA

111. Which of the following criteria does not pertain to facilitated transport ?
(a) High selectivity.
(b) Transport saturation.
(c) Uphill transport.
(d) Requirement of special membrane.

112. The first stable product of fixation of atmo-spheric nitrogen in leguminous plants is
(a) NO_2^- **(b)** ammonia
(c) NO_3^- **(d)** glutamate

113. Which of the metabolite is common to respiration mediated breakdown of fats, carbohydrates and proteins ?
(a) Acetyl Co-A
(b) Glucose 6-phosphate
(c) Fructose 1, 6-biphosphate
(d) Pyruvic acid

114. Which one of the following statement is correct ?
(a) Tapetum nourishes the developing pollen.
(b) Hard outer layer of pollen is called intine.
(c) Sporogenous tissue is haploid.
(d) Endothecium produces the micro-spores.

115. Product of sexual reproduction generally generates
(a) longer viability of seeds.
(b) prolonged dormancy.
(c) new genetic combination leading to variation.
(d) large biomass.

116. Meiosis takes place in
(a) meiocyte. **(b)** conidia.
(c) gemmule. **(d)** megaspore.

117. Advantage of cleistogamy is
(a) higher genetic variability.
(b) more vigorous offspring.
(c) no dependence on pollinators.
(d) vivipary.

118. Monoecious plant of *Chara* shows occurrence of
(a) antheridiophore and archegoniophore on the same plant.
(b) stamen and carpel on the same plant.
(c) upper antheridium and lower oogo-nium on the same plant.
(d) upper oogonium and lower antheri-dium on the same plant.

119. Perisperm differs from endosperm in
(a) being a haploid tissue.
(b) having no reserve food.
(c) being a diploid tissue.
(d) its formation by fusion of secondary nucleus with several sperms.

120. Which of the following statements is not true of two genes that show 50% recombination frequency ?
(a) The genes may be on different chromo-somes.
(b) The genes are tightly linked.
(c) The genes show independent assort-ment.
(d) If the genes are present on the same chromosomes, they undergo more than one crossovers in every meiosis.

121. Variation in gene frequencies within populations can occur by chance rather than by natural selection. This is referred to as
(a) genetic flow. **(b)** genetic drift.
(c) random mating. **(d)** genetic load.

122. If two persons with 'AB' blood group marry and have sufficiently large number of children, these children could be classified as 'A' blood group 'AB' blood group 'B' blood group in 1 : 2 :1 ratio. Modern technique of protein electrophoresis reveals presence of both 'A' and 'B' type proteins in 'AB' blood group individuals. This is an example of
(a) codominance.
(b) incomplete dominance.
(c) partial dominance.
(d) complete dominance.

123. The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge, is called
(a) natural selection.
(b) convergent evolution.
(c) non-random evolution.
(d) adaptive radiation.

124. The tendency of population to remain in genetic equilibrium may be disturbed by
(a) random mating. **(b)** lack of migration.
(c) lack of mutations. **(d)** lack of random mating.

125. Which of the following *Bt* crops is being grown in India by the farmers ?
(a) Brinjal **(b)** Soyabean
(c) Maize **(d)** Cotton

126. A good producer of citric acid is
(a) *Aspergillus* **(b)** *Pseudomonas*
(b) *Saccharomyces* **(d)** *Clostridium*

127. DNA fragments generated by the restriction endonucleases in a chemical reaction can be separated by
(a) centrifugation
(b) polymerase chain reaction.
(c) electrophoresis
(d) restriction mapping

128. Which of the following is not correctly matched for the organism and its cell wall degrading enzyme ?
(a) Bacteria — Lysozyme
(b) Plant cells — Cellulase
(c) Algae — Methylase
(d) Fungi — Chitinase

129. The colonies of recombinant bacteria appear white in contrast to blue colonies of non-recombinant bacteria because of
(a) non-recombinant bacteria containing β-galactosidase.
(b) insertional inactivation of α-galacto-sidase in non-recombinant bacteria.
(c) insertional inactivation of α-galacto-sidase in recombinant bacteria.
(d) inactivation of glycosidase enzyme in recombinant bacteria.

130. Which of the following are likely to be present in deep sea water ?
(a) Archaebacteria **(b)** Eubacteria
(c) Blue-green algae **(d)** Saprophytic fungi

131. Natural reservoir of phosphorus is
(a) fossils. **(b)** sea water.
(c) animal bones. **(d)** rocks.

132. Secondary productivity is the rate of formation of new organic matter by
(a) decomposers. **(b)** producers.
(c) parasite. **(d)** consumer.

133. Which one of the following is not used for *ex situ* plant conservation ?
(a) Botanical gardens. **(b)** Field gene banks.
(c) Seed banks. **(d)** Shifting cultivation.

134. Kyoto Protocol was endorsed at Out of Syllabus
(a) CoP-3 **(b)** CoP-5 **(c)** CoP-6 **(d)** CoP-4

135. Which of the following represent maximum number of species among global bio-diversity ?
(a) Mosses and ferns **(b)** Algae
(c) Lichens **(d)** Fungi

136. Match the name of the animals (Column I) with one characteristic (Column II) and the phylum/class (Column III) to which it belongs.

	Column I	Column II	Column III
(a)	*Petromyzon*	Ectoparasite	Cyclostomata
(b)	*Ichthyophis*	Terrestrial	Reptilia
(c)	*Limulus*	Body covered by chitinous exoskeleton	Pisces
(d)	*Adamsia*	Radially symmetrical	Porifera

137. Which of the following are correctly matched with respect to their taxonomic classification ?
(a) Flying fish, cuttlefish, silverfish — Pisces
(b) Centipede, millipede, spider, scorpion — Insecta
(c) House fly, butterfly, tse-tse fly, silver fish — Insecta
(d) Spiny anteater, sea urchin, sea cucumber — Echinodermata

138. Which group of animals belong to the same phylum ?
(a) Earthworm, Pinworm, Tapeworm
(b) Prawn, Scorpion, Locusta
(c) Sponge, Sea anemone, Starfish
(d) Malarial parasite, Amoeba, Mosquito

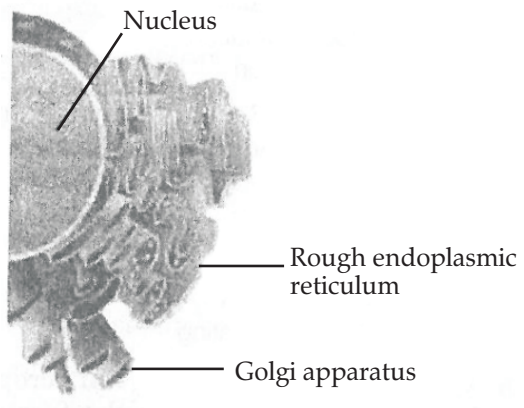
139. One of the representative of Phylum Arthropoda is
(a) cuttlefish. **(b)** silverfish.
(c) pufferfish. **(d)** flying fish.

140. The H-zone in the skeletal muscle fibre is due to
(a) the absence of myofibrils in the central portion of A-band.
(b) the central gap between myosin filaments in the A-band.
(c) the central gap between actin filaments extending through myosin filaments in the A-band.
(d) extension of myosin filaments in the central portion of the A-band.

141. What external changes are visible after the last moult of a cockroach nymph ? Out of Syllabus
(a) Mandibles become harder.
(b) Anal cerci develop.
(c) Both fore wings and hind wings develop.
(d) Labium develops.

142. The Golgi complex plays a major role
(a) post translational modification of proteins and glycosidation of lipids.
(b) trapping the light and transforming it into chemical energy.
(c) in digesting proteins and carbohydrates.
(d) as energy transferring organelles.

143. Which one of the following organelle in the figure correctly matches with its function ?

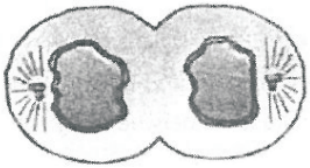


(a) Rough endoplasmic reticulum, forma-tion of glycoproteins
(b) Golgi apparatus, protein synthesis
(c) Golgi apparatus, formation of glycolipids
(d) Rough endoplasmic reticulum, protein synthesis

144. Macromolecule chitin is
(a) phosphorus containing polysaccharide.
(b) sulphur containing polysaccharide.
(c) simple polysaccharide.
(d) nitrogen containing polysaccharide.

145. The essential chemical components of many coenzymes are
(a) proteins. **(b)** nuclei acids.
(c) carbohydrates. **(d)** vitamins.

146. A stage in cell division is shown in the figure. Select the answer which gives correct identification of the stage with its characteristics



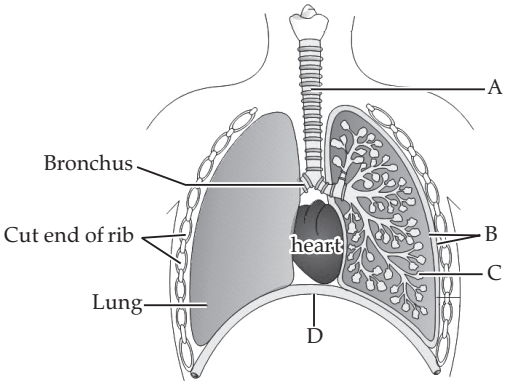
(a) Telophase — Nuclear envelope reforms, Golgi complex reforms
(b) Late anaphase — Chromosomes move away from equatorial plate, Golgi complex not present
(c) Cytokinesis — Cell plate formed, mitochondria distributed between two daughter cells
(d) Telophase — Endoplasmic reticulum and nucleolus not reformed yet

147. Select the correct match of the digested products in humans given in column I with their absorption site and mechanism in column II

	Column I	Column II
(a)	Glycine and glucose	Small intestine and active absorption
(b)	Fructose and Na^+	Small intestine and passive absorption
(c)	Glycerol and fatty acids	Duodenum and move as chylomicrons
(d)	Cholesterol and maltose	Large intestine and active absorption

148. A pregnant female delivers a baby, who suffers from stunted growth, mental retardation low intelligence quotient and abnormal skin. This is the result of
(a) deficiency of iodine in diet.
(b) low secretion of growth hormone.
(c) cancer of the thyroid gland.
(d) over secretion of pars distalis.

149. The figure shows a diagrammatic view of human respiratory system with labels A, B, C and D. Select the option, which gives correct identification and main function and/or characteristic.



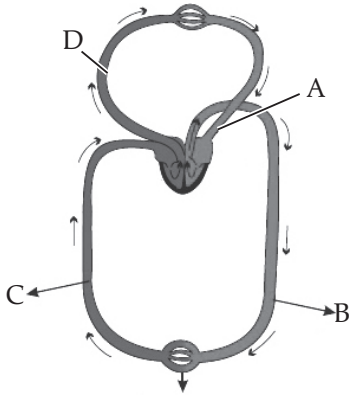
(a) A–trachea–long tube supported by complete cartilaginous rings for conducting inspired air.

(b) B–pleural membrane–surround ribs on both sides to provide cushion against rubbing.

(c) C–alveoli–thin walled vascular bag like structures for exchange of gases.

(d) D–lower end of lungs–diaphragm pulls it down during inspiration.

150. Figure shows schematic plan of blood circulation in human with labels A to D. Identify the label and give its function/s.



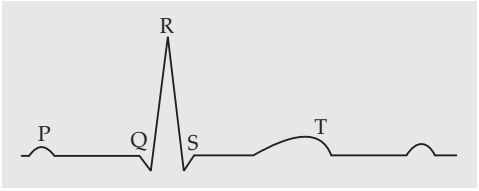
(a) A–pulmonary vein–takes impure blood from body parts, pO_2 = 60 mm Hg

(b) B–pulmonary artery–takes blood from heart to lungs, pO_2 = 90 mmHg

(c) C–vena cava–takes blood from body parts to right auricle, pCO_2 = 45 mmHg

(d) D–dorsal aorta–takes blood from heart to body parts, pO_2 = 95 mmHg

151. The diagram given here is the standard ECG of a normal person. The P-wave represents the



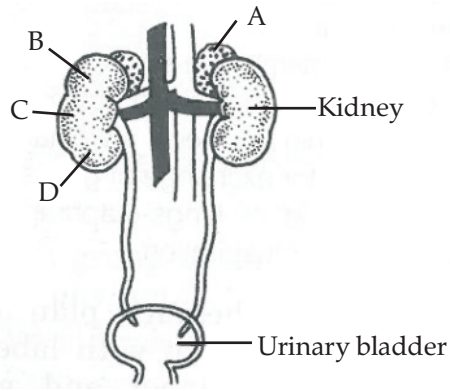
(a) contraction of both the atria.

(b) initiation of the ventricular contraction.

(c) beginning of the systole.

(d) end of systole.

152. Figure shows human urinary system with structures labelled A to D. Select option, which correctly identifies them and gives their characteristics and/of functions



(a) A–adrenal gland–located at the anterior part of kidney. Secrete catecholamines, which stimulate glycogen breakdown

(b) B–pelvis–broad funnel shaped space inner to hilum, directly connected to loops of Henle

(c) C–medulla–inner zone of kidney and contains complete nephrons

(d) D–cortex–outer part of kidney and do not contain any part of nephrons

153. Select the correct statement with respect to locomotion in humans.

(a) A decreased level of progesterone causes osteoporosis in old people.

(b) Accumulation of uric acid crystals in joints causes their inflammation.

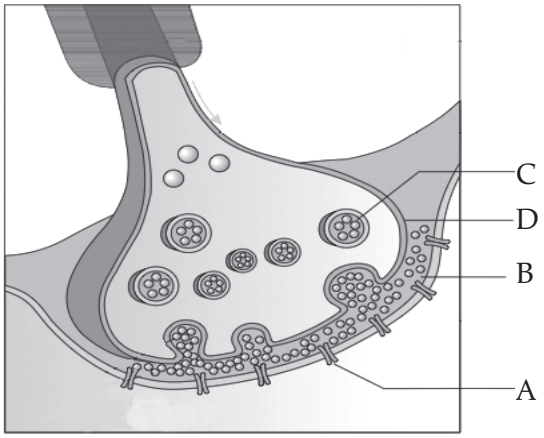
(c) The vertebral column has 10 thoracic vertebrae.

(d) The joint between adjacent vertebrae is a fibrous joint.

154. The characteristics and an example of a synovial joint in humans is

	Characteristics	Examples
(a)	Fluid cartilage between two bones, limited movements	Knee joints
(b)	Fluid filled between two joints, provides cushion	Skull bones
(c)	Fluid filled synovial cavity between two bones	Joint between atlas and axis
(d)	Lymph filled between two bones, limited movement	Gliding joint between carpals

155. A diagram showing axon terminal and synapse is given. Identify correctly at least two of A–D.



Axon terminal and Synapse

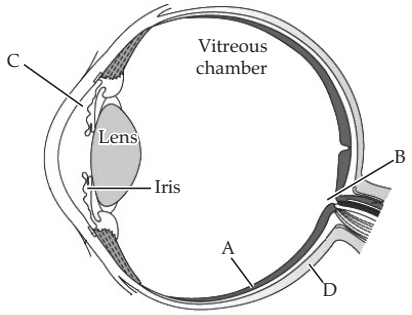
(a) A–Receptor, C– Synaptic vesicles

(b) B–Synaptic connection, D–K^+

(c) A–Neurotransmitter, B–Synaptic cleft

(d) C–Neurotransmitter, D–Ca^{2+}

156. Parts A, B, C and D of the human eyes are shown in the diagram. Select the option which gives correct identification along with its functions/ characteristics. Out of Syllabus



(a) A–retina–contains photoreceptors–rods and cones

(b) B–blind spot–has only few rods and cones

(c) C–aqueous chamber–reflects the light, which does not pass through the lens

(d) D–choroid–its anterior part forms ciliary body

157. Which of the following statement is correct in relation to the endocrine system?

(a) Adenohypophysis is under direct neural regulation of the hypothalamus.

(b) Organs in the body like gastrointestinal tract, heart, kidney and liver do not produce any hormones.

(c) Non-nutrient chemicals produced by the body in trace amount that act as intercellular messenger are known as hormones.

(d) Releasing and inhibitory hormones are produced by the pituitary gland.

158. Select the answer which correctly matches the endocrine gland with the hormone it secretes and its function/ deficiency symptom

S. No	Endocrine gland	Hormone	Function/deficiency symptoms
(a)	Anterior pituitary	Oxytocin	Stimulates uterus contraction during child birth
(b)	Posterior pituitary	Growth hormone [GH]	Over secretion stimulates abnormal growth
(c)	Thyroid gland	Thyroxine	Lack of iodine in diet results in goitre
(d)	Corpus luteum	Testosterone	Stimulates spermatogenesis

159. What is the correct sequence of sperm formation ?

(a) Spermatogonia, spermatozoa, sperma-tocyte, spermatid

(b) Spermatogonia, spermatocyte, sperma-tid, spermatozoa

(c) Spermatid, spermatocyte, sperma-togonia, spermatozoa

(d) Spermatogonia, spermatocyte, sperma-tozoa, spermatid

160. Menstrual flow occurs due to lack of

(a) Oxytocin **(b)** Vasopressin

(c) Progesterone **(d)** FSH

161. Which one of the following is not the function of placenta ? It

(a) facilitates removal of carbon dioxide and waste material from embryo.

(b) secretes oxytocin during parturition.

(c) facilitates supply of oxygen and nutrients to embryo.

(d) secretes oestrogen.

162. One of the legal methods of birth control is

(a) by having coitus at the time of day break.

(b) by a premature ejaculation during coitus.

(c) abortion by taking an appropriate medicine.

(d) by abstaining from coitus from day 10 to 17 of the menstrual cycle.

163. Which of the following cannot be detected in a developing foetus by amniocentesis ?

(a) Down's syndrome.

(b) Jaundice

(c) Klinefelter's syndrome.

(d) Sex of the foetus.

164. Artificial insemination means

(a) artificial introduction of sperms of a healthy donor into the vagina.

(b) introduction of sperms of a healthy donor directly into the ovary.

(c) transfer of sperms of a healthy donor to a test-tube containing ova.

(d) transfer of sperms of husband to a test tube containing ova.

165. Which Mendelian idea is depicted by a cross in which the F_1 generation resembles both the parents ?

(a) Co-dominance

(b) Incomplete dominance.

(c) Law of dominance.

(d) Inheritance of one gene.

166. The incorrect statement with regard to haemophilia is

(a) it is a sex-linked disease.

(b) it is a recessive disease.

(c) it is dominant disease.

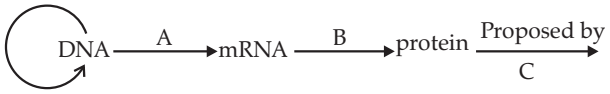
(d) a single protein involved in the clotting of blood is affected.

167. If both parent are carriers for thalassemia, which is an autosomal recessive disorder, what are the chances of pregnancy resulting in an affected child ?

(a) No chance **(b)** 50%

(c) 25% **(d)** 100%

168. The diagram shows an important concept in the genetic implication of DNA. Fill in the blanks A to C



(a) A-transcription, B-replication, C-James Watson

(b) A-translation, B-transcription, C-Erevin Chargaff

(c) A-transcription, B-translation, C-Francis Crick

(d) A-translation, B-extension, C-Rosalind Franklin

169. Which enzyme(s) will be produced in a cell in which there is a non-sense mutation in the *lac* Y gene ?

(a) Lactose permease and transacetylase.

(b) Lactose permease.

(c) Transacetylase

(d) β-galactosidase

170. According to Darwin, the organic evolution is due to

(a) competition within closely related species.

(b) reduced feeding efficiency in one species due to the presence of interfering species.

(c) intraspecific competition.

(d) interspecific competition.

171. The eyes of *Octopus* and eyes of cat show different patterns of structure, yet they perform similar function. This is an example of

(a) homologous organs that have evolved due to convergent evolution.

(b) homologous organs that have evolved due to divergent evolution.

(c) analogous organs that have evolved due to convergent evolution.

(d) analogous organs that have evolved due to divergent evolution.

172. Infection of *Ascaris* usually occurs by

(a) tse-tse fly.

(b) mosquito bite.

(c) drinking water containing egg of *Ascaris.*

(d) eating imperfectly cooked port.

173. The cell-mediated immunity inside the human body is carried out by

(a) T-lymphocytes. **(b)** B-lymphocytes.

(c) thrombocytes. **(d)** erythrocytes.

174. In plant breeding programmes, the entire collection of plants/seeds having all the diverse alleles for all genes in a given crop is called

(a) selection of superior recombinants.

(b) cross-hybridisation among the selected parents.

(c) evaluation and selection of parents.

(d) germplasm collection.

175. During sewage treatment, biogases are produced, which include

(a) methane, hydrogen sulphide and carbon dioxide.

(b) methane, oxygen and hydrogen sulphide.

(c) hydrogen sulphide, methane and sulphur dioxide.

(d) hydrogen sulphide, nitrogen and methane.

176. A biologist studied the population of rats in a barn. He found that the average natality was 250, average mortality 240, immigration 20 and emigration 30. The net increase in population is

(a) Zero **(b)** 10 **(c)** 15 **(d)** 05

177. Which one of the following processes during decomposition is correctly described ?

(a) Fragmentation—Carried out by organ-isms such as earthworm.

(b) Humification—Lead to the accumula-tion of a dark coloured substance humus, which undergoes microbial action at a very fast rate.

(c) Catabolism—Last step in the decompo-sition under fully anaerobic condition.

(d) Leaching—Water soluble inorganic nutrients rise to the top layers of soil.

178. A sedentary sea anemone gets attached to the shell lining of hermit crab. The association is

(a) amensalism. **(b)** ectoparasitism.

(c) symbiosis. **(d)** commensalism.

179. Global warming can be controlled by

(a) increasing deforestation, reducing efficiency of energy usage.

(b) reducing deforestation, cutting down use of fossil fuel.

(c) reducing reforestation, increasing use of fossil fuel.

(d) increasing deforestation, slowing down the growth of human population.

180. The Air Prevention and Control of Pollution Act came into force in

(a) 1975 **(b)** 1981 **(c)** 1985 **(d)** 1990

❐❐❐

Booklet

Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ

Batch

10+1 Ⓢ

10-2 Ⓥ

10-3 Ⓐ

Crash Ⓒ

Paper

Paper 1 ①

Paper 2 ②

RollNumber

0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9

Name

Test Date

Invigilator's Signature

Certified that all the entries In this section have been properly filled by the student

Student's Signature

The OMR Sheet will be computer checked Fill the circles completely and dark enough for proper detection, Use ballpen (black or blue) for marking.

Avoid Improper Marking

Partially Filled

Lightly Filled

Test Center Code

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1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

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

ANSWER KEY

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