NEET SAMPLE PAPER - 3

Maximum Marks: 720

Topics Covered:

Physics	**:Full Syllabus**
Chemistry	**:Full Syllabus**
Biology	**: Full Syllabus**

Important Instruction:

1. Attempting all the questions are compulsory.
2. Use **Blue / Black Ball** point pen only.
3. There are three sections of equal weightage in the question paper A, B, C (**Physics, Chemistry having 45 questionsand Biology having 90 questions.**
4. For marking scheme, +4 marks for each correct answer and -1 marks for each incorrect answer.
5. Use of calculator and other electronic devices is not allowed during the exam.
6. No extra sheets will be provided for any kind of work.

Name of the Student : ……Class: ……

Father's Name:……Signature : ……

Branch Name : ……Contact No : ……

PART – A (PHYSICS)

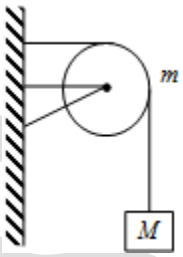
1. If *h* is Plank's constant and *e* is charge ,then dimensions of resistance are same as

(a) $\frac{h}{e}$ (b) $\frac{h^2}{e}$ (c) $\frac{h}{e^2}$ (d) $\frac{h^2}{e^2}$

2. A projectile is given an initial velocity of $\left(\hat{i}+2\hat{j}\right)m/s$, where $\hat{i}$ is along the ground and $\hat{j}$ is along the vertical. If $g=10m/s^2$, the equation of its trajectory is:

(a) $y=x-5x^2$ (b) $y=2x-5x^2$ (c) $4y=2x-5x^2$ (d) $4y=2x-25x^2$

3. A string of negligible mass going over a clamped pulley of mass m supports a block of mass M as shown in the figure. The force on the pulley by the clamp is given by



(a) $\sqrt{2}Mg$ (b) $\sqrt{2}mg$

(c) $g\sqrt{(M+m)^2+m^2}$ (d) $g\sqrt{(M+m)^2+M^2}$

4. What is the minimum energy required to launch a satellite of mass m from the surface of a planet of mass M and radius R in a circular orbit at an altitude of $2R$?

(a) $\frac{5GmM}{6R}$ (b) $\frac{2GmM}{3R}$ (c) $\frac{GmM}{2R}$ (d) $\frac{GmM}{3R}$

5. A *P*-type semiconductor has acceptor levels 57 *meV* above the valence band. The maximum wavelength of light required to create a hole is (Planck's constant *h* = 6.6×10^{-34} *J-s*)

(a)57 *Å* (b) 57×10^{-3} *Å* (c) 217100 *Å* (d) 11.61×10^{-33} *Å*

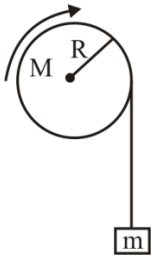
6. One gram of ice is mixed with one gram of steam. After thermal equilibrium, the temperature of the mixture is

(a) $0°C$ (b) $100°C$ (c) $55°C$ (d) $80°C$

7. A ray of light travelling in the direction $\frac{1}{2}\left(\hat{i}+\sqrt{3}\hat{j}\right)$ is incident on a plane mirror. After reflection, it travels along the direction $\frac{1}{2}\left(\hat{i}-\sqrt{3}\hat{j}\right)$. The angle of incidence is

(a) 30° (b) 45° (c) 60° (d) 75°

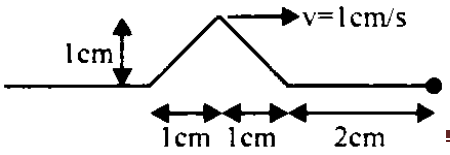
8. A block of mass 2kg hangs from the rim of a wheel of radius 0.5m. On releasing from rest the block falls through 5m height in 2s. The moment of inertia of the wheel will be



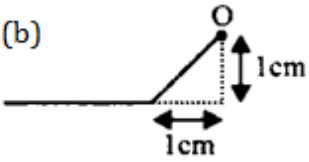
(a) 1 kg – m^2 (b) 3.2 kg – m^2

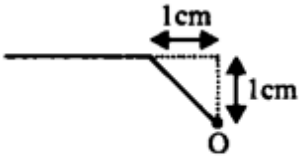
(c) 2.5 kg – m^2 (d) 1.5 kg – m^2

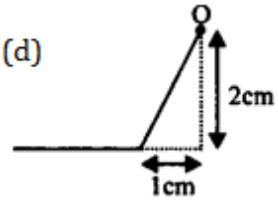
9. A wave pulse on a string has the dimension shown in figure. The wave speed is $v=1cm/s$. If point O is a free end. The shape of wave at time $t=3s$ is:



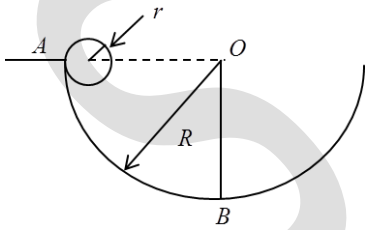
(a) 

(b) 

(c) 

(d) 

10. A cylinder of mass *m* and radius *r* rolls down a circular track from point *A* as shown in the figure. Assume that the friction is just sufficient to support the rolling. Velocity of the cylinder at point *A* was zero. Assume $r << R$. The reaction by the track on the cylinder at point B is



(a) $\frac{7}{3}mg$ (b) $\frac{4}{3}mg$

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

11. Two point charges $+q$ and $-q$ are held fixed at $(-d,0)$ and $(d,0)$ respectively of a (X,Y) coordinate system. Then

(a) The electric field $\vec{E}$ at all points on the X-axis has the same direction

(b) $\vec{E}$ at all points on the Y-axis is along positive $\hat{i}$

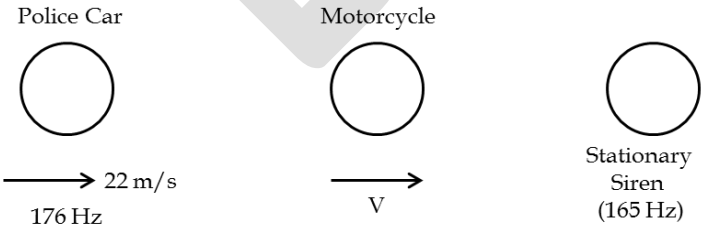
(c) Work has to be done in bringing a test charge from infinity to the origin along the Y axis

(d) The dipole moment is $2qd$ directed along positive $\hat{i}$

12. For an electron in the nth Bohr orbit of hydrogen atom, what will be the ratio of radius of orbit to its de-Broglie wavelength

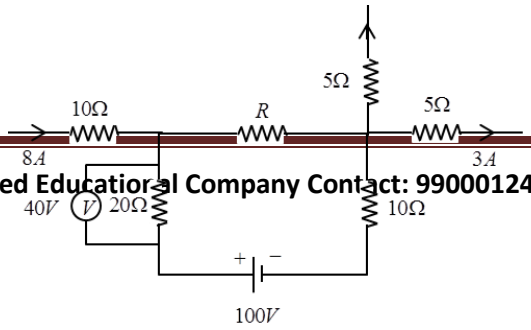
(a) $\frac{n}{2\pi}$ (b) $\frac{n^2}{2\pi}$ (c) $\frac{1}{2\pi n}$ (d) $\frac{1}{2\pi n^2}$

13. A police car moving at 22 m/s, chases a motorcyclist. The police man sounds his horn at 176 Hz, while both of them move towards a stationary siren of frequency 165 Hz. Calculate the speed of the motorcycle, if it is given that motor cyclist does not observes any beats.
(velocity of sound in air $=330 m/s$)



(a) 33 m/s (b) 22 m/s (c) 55 m/s (d) 11 m/s

14. In the circuit shown, the voltmeter reading is 40 V. Find the value of unknown resistor R



(a) 4Ω (b) 8Ω

(c) 5Ω (d) 10Ω

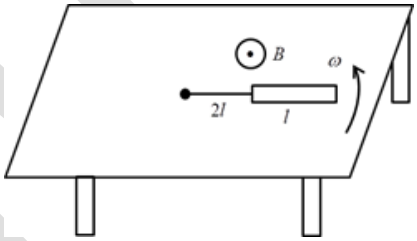
15. If in a plano-convex lens radius of curvature of convex surface is 10 cm and the focal length of the lens is 30 cm, the refractive index of the material of the lens will be:

(a) 1.5 (b) 1.66 (c) 1.33 (d) 3

16. In young's double slit experiment, the intensity at a point where the path difference is $\frac{\lambda}{6}$ (λ being the wavelength of light used) is I. If I_0 denotes the maximum intensity, $\frac{I}{I_0}$ is equal to

(a) $\frac{3}{4}$ (b) $\frac{1}{\sqrt{2}}$ (c) $\frac{\sqrt{3}}{2}$ (d) $\frac{1}{2}$

17. A metallic rod of length l is tied to a string of length $2l$ and made to rotate with angular speed ω on a horizontal table with one end of the string fixed. If there is a vertical magnetic field B in the region, the emf induced across the ends of the rod is



(a) $\frac{7B\omega l^2}{2}$ (b) $\frac{3B\omega L^2}{2}$

(c) $\frac{5B\omega l^2}{2}$ (d) $\frac{4B\omega L^2}{2}$

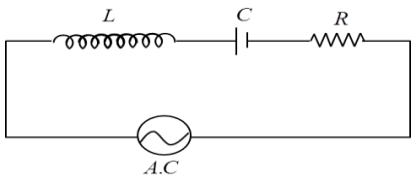
18. A wheel is rotating about a fixed axis through its centre 300 rpm. A constant torque starts acting on it opposes its motion. Before coming to rest it makes 25 complete rotations. If the moment of inertia of the wheel about the axis of rotation is $\left(\frac{10}{\pi}\right) Kg\,m^2$, the torque (in N-m) acting on it is

(a) 10 (b) 15 (c) 20 (d) 25

19. An inductance of $\frac{200}{\pi} mH$, a capacitance of $\frac{10^{-3}}{\pi} F$ and a resistance of 10Ω are connected in series with an a.c. source 220V, 50Hz. The phase angle of the circuit for the current and voltage source is

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$

(c) $\frac{\pi}{6}$ (d) $\frac{\pi}{4}$



20. If an electron and a proton having same momenta enter perpendicular to a magnetic field, then

(a) the length of curved path of electron and proton will be same

(b) they will move undeflected

(c) the length of curved path of electron is more curved than that of the proton

(d) the length of curved path of proton is more curved than that of the electron

21. A radioactive nucleus (initial mass number A and atomic number Z) emits $3\,\alpha-$ particles and 2 positrons. The ratio of number of neutrons to that of protons in the final nucleus will be

1. (a) $\frac{A-Z-8}{Z-4}$ (b) $\frac{A-Z-4}{Z-8}$ (c) $\frac{A-Z-12}{Z-4}$ (d) $\frac{A-Z-4}{Z-2}$

22. A smooth block is released at rest from an inclined plane of inclination $45°$ and is allowed to slide a distance $'d'$. Now same block is released on a similar rough inclined plane and allowed to slide the same distance. The time taken by block to slide on rough plane is $'n'$ times the time taken by it on a smooth plane. Then what would be the coefficient of friction for the rough inclined plane?

(a) $\mu_k=\sqrt{1-\frac{1}{n^2}}$ (b) $\mu_k=1-\frac{1}{n^2}$ (c) $\mu_s=\sqrt{1-\frac{1}{n^2}}$ (d) $\mu_s=1-\frac{1}{n^2}$

23. A metal sphere of mass m, radius r and specific heat c is rotated about an axis passing through its centre at a speed of n rotations per second. It is suddenly stopped and 50% of its energy is used in increasing its temperature. Then rise in temperature of the sphere is

(a) $\frac{2}{5}\frac{\pi^2n^2r^2}{c}$ (b) $\frac{1}{10}\frac{\pi^2n^2}{r^2c}$ (c) $\frac{7}{8}\pi r^2n^2c$ (d) $5\left[\frac{\pi rn}{14c}\right]^2$

24. A heavy uniform chain lies on a horizontal table top. If the coefficient of friction between the chain and the table surface is 0.25, then the maximum fraction of the length of the chain that can hang over one edge of the table is

(a) 20% (b) 25% (c) 35% (d) 15%

25. A body is projected at an angle θ to the horizontal with kinetic energy E_k. The potential energy of the body at the highest point of the trajectory is

(a) E_k (b) $E_k\cos^2\theta$ (c) $E_k\sin^2\theta$ (d) $E_k\tan^2\theta$

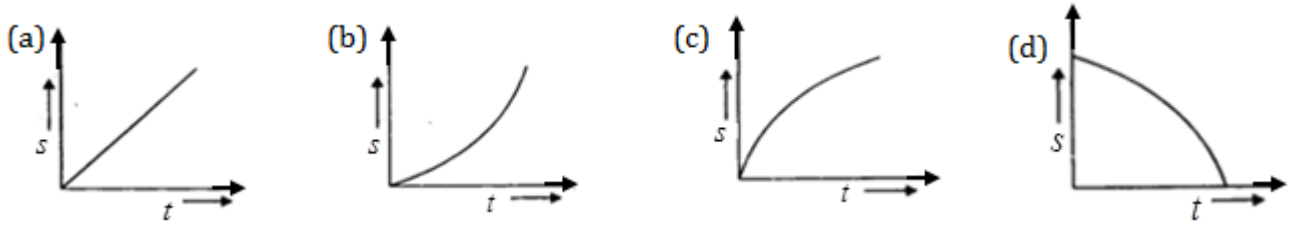
26. If pressure P, velocity V and time T are taken as fundamental physical quantities, then the dimensional formula for force is

(a) PV^2T^2 (b) $P^{-1}V^2T^{-2}$ (c) PVT^2 (d) $P^{-1}VT^2$

27. A boy runs along a straight path for the first half distance with a velocity v_1 and the second half distance with a velocity v_2. The mean velocity V is given by

(a) $\frac{2}{V}=\frac{1}{v_1}+\frac{1}{v_2}$ (b) $V=\frac{v_1+v_2}{2}$ (c) $V=\sqrt{v_1v_2}$ (d) $\vec{v}_1+\vec{v}_2$

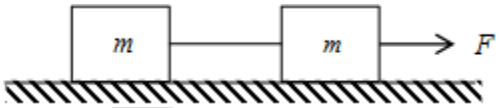
28. Which of the following graphs represents the distance-time variation of a body released from the top of a building?



29. Two blocks of equal mass are connected by a light string and placed on a smooth horizontal surface. If a force F acts on one of the block then the tension in the string is

(a) F (b) $\frac{F}{2}$

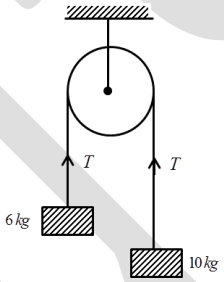
(c) $2F$ (d) $-F$



30. A light string passes over a frictionless pulley. To one of its ends, a mass of 6 kg is attached. To its other end, a mass of 10 kg is attached. The tension in the string will be

(a) $\frac{g}{2}$ (b) $\frac{5g}{2}$

(c) $\frac{10g}{2}$ (d) $\frac{15g}{2}$



31. A cricket player catches a ball of mass 0.1 kg, moving with a speed of $10ms^{-1}$ in $0.1s$. Force exerted by him is (N)

(a) 10 (b) 4 (c) 2 (d) 1

32. A spring for spring constant $240\,Nm^{-1}$ is compressed by $10\ cm$ whereas another similar spring is extended by $10\ cm$. The difference of the stored potential energies of two springs is

(a) zero (b) 4 J (c) 1.2 J (d) 12 J

33. Two harmonic motions are represented by the equations $y_1 = 10\sin\left(3\pi t + \frac{\pi}{4}\right)$, $y_2 = 5\left(\sin 3\pi t + \sqrt{3}\sin 3\pi t\right)$. Then their Amplitudes are in the ratio.

(a) 2:1 (b) 1:2 (c) 1:1 (d) 4:1

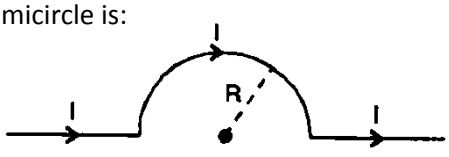
34. A cylindrical tube, open at both ends, has a fundamental frequency f_0, in air. The tube is dipped vertically into water such that half of its length is inside water. The fundamental frequency of the air column now is

(a) $\frac{3f_0}{4}$ (b) f_0 (c) $\frac{f_0}{2}$ (d) $3f_0$

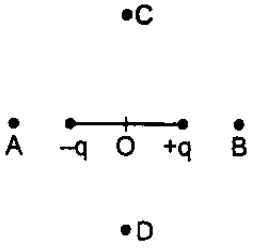
35. An infinite long straight wire is bent into a semicircle of radius R, as shown in the figure. A current I is sent through the conductor. The magnetic field at the centre of the semicircle is:

(a) infinite (b) zero

(c) $\frac{\mu_0 \pi I}{4\pi R}$ (d) $\frac{\mu_0}{4\pi}\frac{I}{R}(\pi+1)$



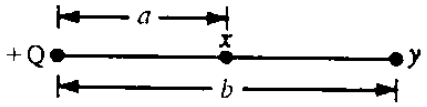
36. Choose the correct relation regarding potential. Here A, B, C and D all are at equal distance from point O, figure. Then(Assume the dipole to be short)



(a) $|V_A| = |V_B| > |V_C| = |V_D|$ (b) $|V_C| = |V_D| > |V_A| = |V_B|$

(c) $|V_A| > |V_C| = |V_D| > |V_B|$ (d) $|V_C| > |V_B| = |V_D| > |V_A|$

37. A positive charge q is carried from a point x to y in an electric field of point charge Q. the work done in SI unit is



(a) $\frac{qQ}{4\pi \in_0}\left[\frac{1}{b^2}-\frac{1}{a^2}\right]$ (b) $\frac{qQ}{4\pi \in_0}\left[\frac{1}{a}-\frac{1}{b}\right]$

(c) $\frac{qQ}{4\pi \in_0}\left[\frac{1}{a}+\frac{1}{b}\right]$ (d) $\frac{qQ}{4\pi \in_0}\left[\frac{1}{a^2}+\frac{1}{b^2}\right]$

38. A magnetic needle lying parallel to a magnetic field requires W units of work to turn it though $60°$. The torque needed to maintain the needle in this position will be

(a) $\sqrt{3}W$ (b) $\frac{\sqrt{3}}{2}W$ (c) W (d) $2W$

39. A charged particle of a mass m and charge q is released from rest in a uniform electric field E neglecting the effect of gravity, the kinetic energy of the charged particle after t second is

(a) $\frac{eqm}{t}$ (b) $\frac{E^2q^2t^2}{2m}$ (c) $\frac{2E^2t^2}{mg}$ (d) $\frac{Eq^2m}{2t^2}$

40. A step up transformer operates on a 230V line and a load current of $2A$. The ratio of the primary and secondary windings is $1:25$. The current in the primary is

(a) $25A$ (b) $50A$ (c) $15A$ (d) 12.5A

41. In an AC. circuit, V and I are given by $V = 100\sin(100t)volt$, $I = 100\sin\left(100t+\frac{\pi}{3}\right)A$ Then the power dissipated in the circuit is

(a) 10^4W (b) $10W$ (c) $2500W$ (d) $5W$

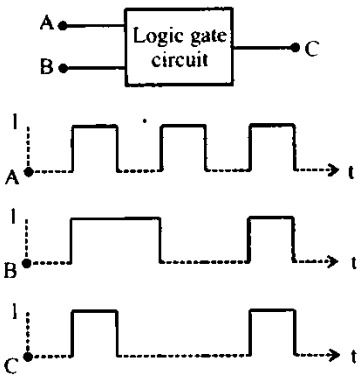
42. The magnetic flux ϕ (in weber) linked with a coil of resistance 10Ω varies with time t (in second) as $\phi = 8t^2 - 4t + 1$. The current induced in the coil at $t = 0.1\text{sec}$ is

(a) $10A$ (b) $0.24A$ (c) $0.12A$ (d) $4.8A$

43. If R, C and L denote resistance, capacitance and inductance. Which of the following will NOT have the dimensions of frequency?

(a) RL^{-1} (b) $R^{-1}C^{-1}$ (c) $L^{-1/2}C^{-1/2}$ (d) RCL

44. The following figure shows a logic gate circuit with two inputs A and B and the output C. The voltage waveform of A, B and C are as shown below



The logic circuit gate is

(a) NAND gate (b) NOR gate (c) OR gate (d) AND gate

45. If N_0 is the original mass of the substance of half-life period $t_{1/2} = 5$ years, then the amount of substance left after 15 years is

(a) $\frac{N_0}{8}$ (b) $\frac{N_0}{16}$ (c) $\frac{N_0}{2}$ (d) $\frac{N_0}{4}$

PART – B (CHEMISTRY)

46. In reaction $N_2 + 3H_2 \rightarrow 2NH_3$, 40 ml of each N_2 *and* H_2 are taken to react together so that 25% yield of NH_3 was obtained then volume of N_2 Present in container is?

(a) 10 ml (b) 36.66 ml (c) 20 ml (d) 80 ml

47. T_C of CO_2 is $31^\circ C$, CO_2 is –

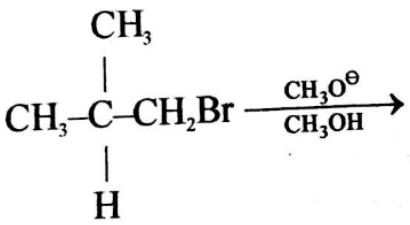
(a) gas at $40^\circ C$ (b) a gas $40^\circ C$ and vapour below $40^\circ C$

(c) vapour at both temperature (d) a gas at $40^\circ C$ and liquid $25^\circ C$

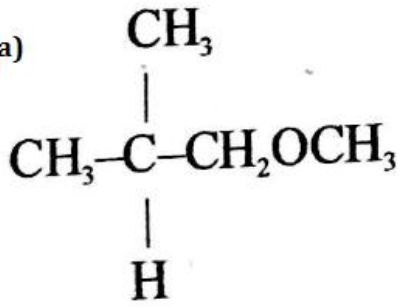
48. Which of the following properties among halogen decrease from fluorine to iodine?

(a) Size (b) Bond energy (c) Ionization energy (d) Electron affinity

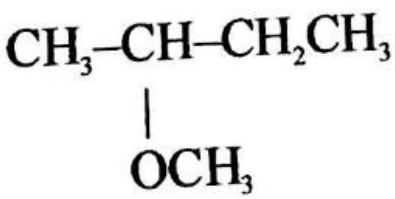
49. The major product formed in the following reaction is:-



(a)



(b)



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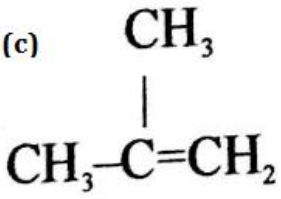
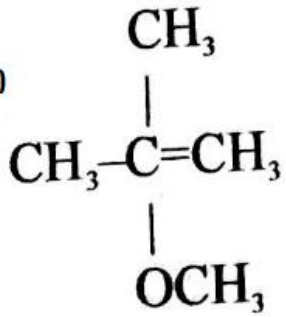


(d)



50. Which of the following compound gives a positive iodoform test ?
(a) Pentan – 3 – 0l (b) 1 – Phenyl ethanol
(c) Pentanal (d) 2 – Phenyl ethanol

51. The number of orbitals present for $\ell = 2$ is :-
(a) 10 (b) 5 (c) 2 (d) 1

52. Which solution will show maximum elevation in boiling point?
(a) 0.1 M KCl (b) 0.1 M Ba CI_2 (c) 0.1 M $FeCI_3$ (d) 0.1 M $Fe_2(SO_4)_3$

53. On heating $NaNO_3$, it gives : -
(a) $O_2 + N_2$ (b) NO_2 (c) $O_2 + NO_2$ (d) $NaNNO_2 + O_2$

54. Which of the following are free radical reactions?

(1) $CH_3CH = CH_2 + HBr \longrightarrow CH_3CH_2CH_2 - Br$

(2) $CH_3CH = CH_2 + CI_2 \longrightarrow CH_3CH\,(CI)CH_3$

(3) $CH_3CH = CH_2 + HCI \longrightarrow$

$$CI - CH_2CH = CH_2$$

(4) $CH_3CH_3 + Cl_2 \xrightarrow{hr} CI - CH_2CH = CH_2$

(a) Only d (b) a, c (c) a, b, d (d) a, c, d

55. The product of the following reaction is

$$CH_3CH_2OCH_2CH_3 + CH_3COCI \xrightarrow[AICI_3]{\text{Anhydrous}} ?$$

(a) $CH_3CH_2COOCH_3$ (b) CH_3COOCH_3 (c) $CH_3COOCH_2CH_3$ (d) CH_3CH_2OH

56. Given $E^{\circ}_{Cr^{3+}/Cr} = -0.72V$

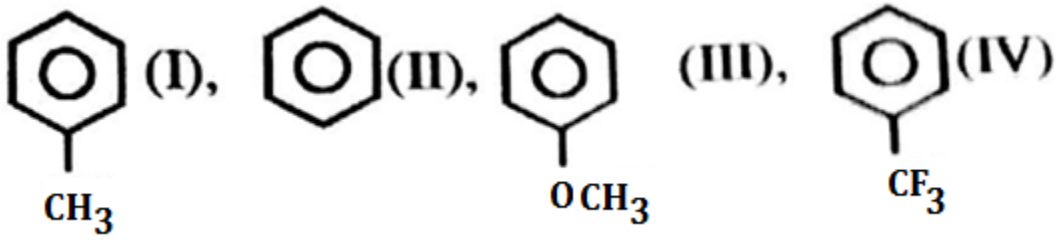
$E^{\circ}_{Fe^{2+}/Fe} = -0.42V$

The potential for the cell
$Cr/Cr^{3+}(0.1M)||Fe^{2+}(0.01M)|Fe$ is
(a) $-0.339\ V$ (b) $-0.26\ V$ (c) 0.26 V (d) 0.339 V

57. The reduction potential of hydrogen half – cell will be negative if:-
(a) $p(H_2) = 2$ atm and $[H^+]$= 2.0 M (b) $p(H_2) = 1$ atm and $[H^+]$= 2.0 M
(c) $p(H_2) = 1$ atm and $[H^+]$= 1.0 M (d) $p(H_2) = 2$ atm and $[H^+]$= 1.0 M

58. The product formed by complete hydrolysis of PCI_3 are: -
(a) $H_3PO_3$and HCI (b) $POCI_3$and HCI (c) H_3PO_4 and HCI (d) $H_4P_2O_7$ and HCI

59. Among the following compounds the decreasing order of reactivity towards electrophilic substitution reaction is :-



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

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

60. Which of the following complex can exhibit both optical and geometrical isomerism?
(a) $[Co(en)_3]CI_3$ (b) $[Pt(gly)_2]$ (c) $[Co(gly)_3]$ (d) $[Co(NH_3)_4CI_2]^+$

61. ΔH^0_f for AI_2O_3 is – 1200kJ. Calculate the internal energy change for reaction
$2Al_2O_{3(s)} \rightarrow 4AI_{(s)} + 3O_{2(g)}$at 300 K.

(a) – 2392. 72 kJ (b) – 2407. 9 kJ (c) 2392.72 kJ (d) 1192. 72 kJ

62. The relative decrease in the vapour pressure of an aqueous solution containing 2 mol NaCl in 3 mol H_2O is 0.5. This solution, on reaction with $AgNO_3$ will form:-
(a) 1 mol AgCl (b) 0.25 mol AgCl (c) 2 mol AgCl (d) 0.5 mol AgCl

63. Which among the following does not exist:-
(a) PH_4I (b) ClF_3 (c) CsI_3 (d) PH_5

64. Which among the following compounds has maximum boiling point –
(a) Butane (b) Butanal (c) Butanone (d) Butanol

65. Which among the following statement is correct?
(a) $[Fe(CO)_5]$ is dsp^3 hybridised and paramagnetic
(d) d^4 (High spin) has t_{2g^3}, eg^1 configuration
(c) $KMnO_4$ is colour due to d-d transition of unpaired electron
(d) The Value of C.F.S.E. of $[FeF_6]^{3-}$ is greater than $[Fe(CN)_6]^{3-}$

66. In a process, temperature of 2 mole of Ar gas is increased by 1^0C then.

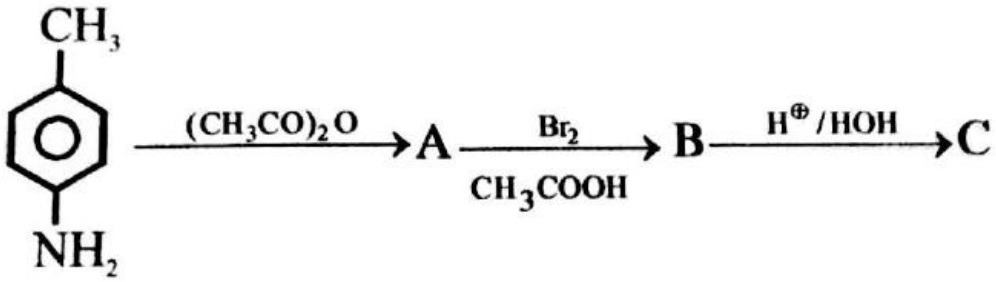
(a) $\Delta H > O\&\ ;\ \Delta G > 0$ (b) $\Delta S > O\&\ ;\ \Delta G > 0$

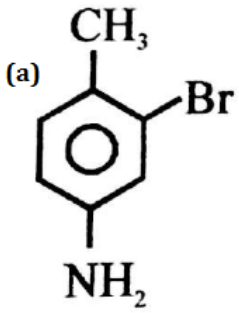
(c) $\Delta E > O\&\ ;\ \Delta S > 0$ (d) All of these

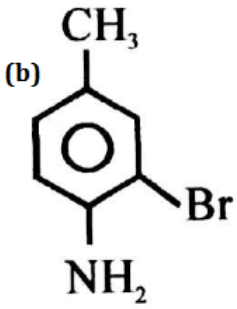
67. In $Na_2S_2O_2$, the two S – atoms have O.N. as :-
(a) – 2, − 2 (b) + 6, +6 (c) −2, +6 (d) None of these

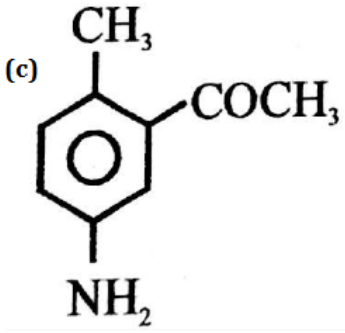
68. The product of $I^{\ominus}$ with $MnO_4^{\ominus}$ in acidic medium:-
(a) I_2 (b) $IO_3^{\ominus}$ (c) $IO^{\ominus}$ (d) $IO_4^{\ominus}$

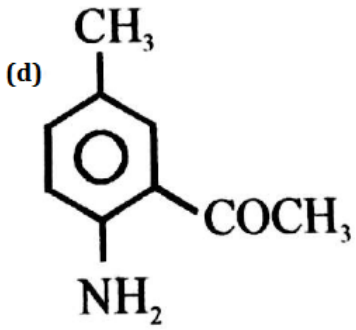
69. In the given reaction sequence final product (c) will be:-



(a) 

(b) 

(c) 

(d) 

70. Which one of the following has highest Ionic conductivity?
(a) $PtCl_4.3NH_3$ (b) $PtCl_4.5NH_3$ (c) $PtCl_4.6NH_3$ (d) $PtCl_4.4NH_3$

71. Equilibrium constant for the reaction
$OCl^-_{(aq)} + H_2O_{(\ell)} \rightleftharpoons HOCl_{(aq)} + OH^-_{(aq)}$ is
8.0×10^{-5}; Hence K_a for HOCl is –
(a) 1.2×10^{-10} (b) 8×10^{9} (c) $\frac{1}{8 \times 10^{-5}}$ (d) 8×10^{-5}

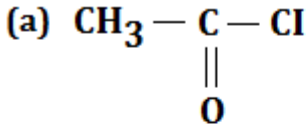
72. N_2O_5 dissociates as: $2N_2O_5 \longrightarrow 4NO_2 + O_2$If concentration of 4 mol L^{-1} reduces to 2.5 mol L^{-1} in 3 minutes, what is the rate of production of NO_2?

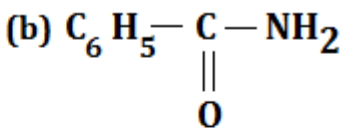
(a) 0.5 mol $L^{-1}min^{-1}$ (b) 1.0 mol $L^{-1}min^{-1}$

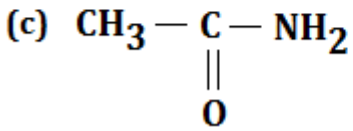
(c) 1.5 mol $L^{-1}min^{-1}$ (d) 1.85 mol $L^{-1}min^{-1}$

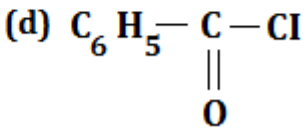
73. In which of the following solvent, KI has highest solubility:- (E = dielectric constant)
(a) C_6H_6 (E=0) (b) $(CH_3)_2\,CO\ (E = 2)$
(c) $CH_3OH\ (E = 32)$ (d) $CCl_4 (E = 0)$

74. Which one of the following is least reactive with water: -

(a) 

(b) 

(c) 

(d) 

75. Which is incorrect reaction in following :-

(a) Glucose $\xrightarrow{Br_2 \text{ water}}$ Gluconic acid

(b) Glucose $\xrightarrow{NH_2OH}$ Gluconic acid

(c) Glucose $\xrightarrow{Na-Hg/H_20}$ Sorbitol

(d) Glucose $\xrightarrow{Ag_2O}$ Gluconic acid

76. Conjugate base of Ca^{++} is –

(a) CaO (b) $Ca_4(OH)_2$ (c) $Ca(H_2O)^{2+}$ (d) $Ca(OH)^{+}$

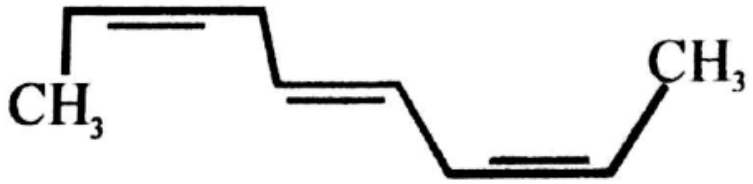
77. Coagulation of 100 mL of a negative sol requires 10 mL of 0.5 M NaCl. The coagulation value of NaCl is :-

(a) 25 (b) 50 (c) 75 (d) 100

78. In which of the following compound B – F bond length is shortest?

(a) $BF_4^{\ominus}$ (b) $BF_3 \leftarrow NH_3$ (c) BF_3 (d) $BF_3 \leftarrow N(CH_3)_2$

79. The IUPAC name of the compound is: -



(a) (2E, 4E, 6Z) – octa – 2, 4, 6 – triene (b) (2E, 4E, 6E) – octa – 2, 4, 6 – triene

(c) (2Z, 4E, 6Z) – octa – 2, 4, 6 – triene (d) (2Z, 4Z, 6Z) – octa – 2, 4, 6 – triene

80. Identify the (D) in the reaction:-

$\xrightarrow[60^\circ C]{HNO_3 + H_2SO_4}$ (A) $\xrightarrow{Sn + HCl}$ (B) $\xrightarrow[273k - 278\,k]{NaNO_2 + HCl}$ (C) $\xrightarrow{H_2O}$ (D)

(a) Nitrobenzene (b) Aniline (c) Benzene diazonium salt (d) Phenol

81. Maximum pH will be:-

(a) 0.001 N H_2SO_4 (b) 0.001 N H_2CO_3 (c) 0.001 N H_3PO_2 (d) All have same

82. In which among the following species $d_{x^2-y^2}$ orbital is involved in hybridization:-

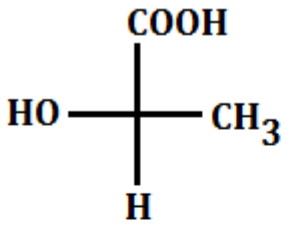
(a) $[Ni(CO)_4]$ (b) $SOCl_2$ (c) $XeOF_2$ (d) ICl_4^-

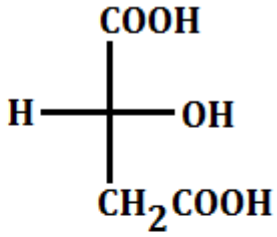
83. In terms of polar character, which of the following order is correct?

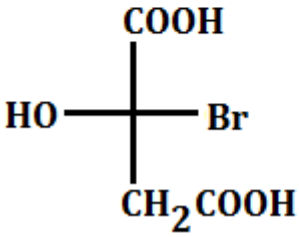
(a) $NH_3 < H_2O < HF < H_2S$ (b) $H_2S < NH_3 < H_2O < HF$

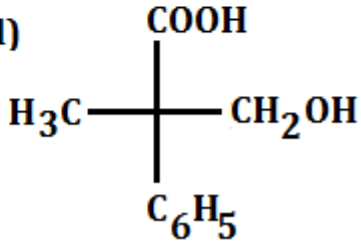
(c) $H_2O < NH_3 < H_2S < HF$ (d) $HF < H_2O < NH_3 < H_2S$

84. Which one of the following has s-configuration

(a) 

(b) 

(c) 

(d) 

85. Buna – S is obtained when 1, 3, – butadiene adds to : -
(a) Acroline (b) Isoprene (c) Vinyl benzene (d) Acrylonitrile

86. If Agl follows Zns zinc blended structure. If I^- is at all lattice points then fraction of total voids the are occupied by Ag^+.
(a) 50% (b) 75 % (c) 75% (d) 33.3%

87. Arrange N, O and S in order of decreasing electron affinity?
(a) S> $O > N$ (b) O > $S > N$ (c) N > $O > S$ (d) S > $N > O$

88. Which among the following pair contain both paramagnetic species:-
(a) O_2^{2-} and N_2^- (b) O_2^- and N_2 (c) O_2 and N_2 (d) O_2 and N_2^-

89. Acetamide react with NaOBr is alkaline medium to form:-
(a) NH_3 (b) $CH_3 - NH_2$ (c) $CH_3 - CN$ (d) $CH_3CH_2 - NH_2$

90. Dettol consists of:-
(a) Cresol + Chlorobenzene (b) Chlorobenzene + Terpineol
(c) Terpineol + Chloroxylenol (d) Cresol + Terpineol

PART – C (BIOLOGY)

91. A system of classification which is based on ancestry of plants is called
(a) Natural system (b) **Phylogenetic system**
(c) Homologous system (d) Analogous system

92. Taxonomic group of any rank is
(a) Class (b) Order (c) **Taxon** (d) Phylum

93. Which of the following are double stranded RNA viruses
(a) Arboviruses (b) Riboviruses (c) **Reoviruses** (d) Ribovira

94. Entamoeba histolytica in humans causes which of the following pathogenic effect?
(a) **Dysentery** (b) Diarrhoea (c) Hepatitis (d) All the above

95. Which among the following classes are considered higher bryophytes?
(a) **Bryopsida** (b) Hepaticopsida (c) Anthoceropsida (d) Marchinatiales

96. Coniferales and cycadales have respectively
(a) Motile sperms (b) Motile and non-motile sperms
(c) **Non-motile and motile sperms** (d) Non-motile sperms

97. Ctenophores differ from cnidarians in
(a) Having medusa form (b) Having epidermis and gastrodermis
(c) **Having smooth muscle fibres in mesoglea** (d) All of these

98. Nature of excretory organs in mollusca is
(a) **Metanephridia** (b) Malpighian tubules (c) Green glands (d) Kidneys

99. Which of the following is the edible portion in pears?
(a) Epicarp and mesocarp (b) Mesocarp and endocarp
(c) **Pesudocarp** (d) Pericarp and pseudocarp

100. Aleurone layer in the monocot seed helps in
(a) Embryo protection (b) Utilization of stored foods
(c) Storage of food in endosperm (d) **All the above**

101. Hypodermis is unique to monocot stem and if it is present in roots, it is
(a) Collenchymatous (b) Parenchymatous
(c) **Sclerenchymatous** (d) Both a and b

102. The outer region of secondary wood is lighter in colour and is known as
(a) Autumn wood (b) Alburnum (c) Sap wood (d) **Both b and c**
103. High contents of myoglobin and cytochromes are present in
(a)**Red muscles** (b) White muscles (c) Intermediate muscles (d) None of these

104. Uric acid is the chief nitrogenous component of the excretory products of
(a)**Cockroach** (b) Frog (c) Man (d) Earthworm

105. In which of the ways mitosis and meiosis are similar?

(a) Both are preceded by the replication of DNA (b) Both occur in all kinds of cells
(c) Both includes the separation of chromosomes (d)**Both a and c**

106. Necessity of meiosis II is
(a) To reduce the number of chromosomes (b)**To induce haploidy of DNA**
(c) To increase number of cells (d) None of the above

107. Coenzyme is
(a) Always protein (b) Often metal (c) Always inorganic compound (d)**Often a vitamin**

108. Carbonic anhydrase is the best known example of
(a) Hydrolase (b) Transferase (c)**Lyase** (d) Coagulase

109. Deficiency of vitamin D causes
(a)**Rickets** (b) Beriberi (c) Scurvy (d) Night blindness

110. Hydrogen cyanide is an example of
(a) Coenzyme (b) Cofactor (c)**Non-competitive inhibitor** (d) Allosteric modulator

111. The turgidity of guard cells is maintained by
(a)**OP** (b) TP (c) WP (d) DP

112. Which part of the root is mainly concerned with the absorption of minerals?
(a)**Root hairs** (b) Cells of meristematic zone
(c) Cells of maturation zone (d) Cells of root cap

113. In field capacity, the soil contains
(a) Capillary and gravitational water (b) Capillary and runaway water
(c) Hygroscopic and capillary water (d)**Hygroscopic, capillary and bound water**

114. Main function of lenticels is
(a) Transpiration (b) Guttation (c)**Gas exchange** (d) Mineral nutrition

115. Removal of a ring of bark from the trunk of a tree kills it because
(a) Water can't go up (b) Minerals can't go up
(c) Photosynthesis stops (d)**Roots get starved**

116. One of the following is a micronutrient in plants
(a) Nitrogen (b) Calcium (c)**Copper** (d) Carbon

117. Discovery of Emerson effect showed the existence of
(a) Photorespiration (b) Light and dark reaction in photosynthesis
(c) Photophosphorylation (d)**Two distinct photochemical reactions**

118. The following reactions of glycolysis are irreversible except
(a) Glucose to Glucose – 6 – phosphate

(b) Glucose – 6 – phosphate to fructose – 6 – phosphate
(c) Reactions catalysed by kinases
(d) Fructose – 6 – phosphate to fructose 1,6 bisphosphate

119. Photoperiodism is associated with one of the following
(a) Cytokinins (b) Auxins (c) Gibberlins (d)**Florigens**

120. Transparent part of human nail is made up of
(a)**Living protein eledein** (b) Dead protein keratin
(c) Collagen fibres (d) All of the above

121. Gastro colic reflex means
(a) Expulsion of bacteria from gut (b)**Removal of faeces**
(c) Aminoacid synthesis (d) Both b and c

122. Achalasia is a condition related to digestive tract that means
(a) Failure of pyloric sphincter relaxation (b)**Failure of cardiac sphincter relaxation**
(c) Both the above (d) Abnormal ileocaecal valve

123. Respiratory distress syndrome occurs in patients which lack
(a) Larynx (b) Dipalmitoyl lecithin (c) Surfactant (d)**Both b and c**

124. To balance the bicarbonate ion loss in RBC, the chloride ions move into RBC; it is known as
(a) Chloride shift (b) Hamburger's phenomenon (c) Bohr effect (d)**Both a and b**

125. Transudation is associated with
(a) Arteries (b)**Capillaries and tissue fluid**
(c) WBC and veins (d) RBC and arteries

126. Fibrinogen is formed in
(a) Bone marrow (b) Lungs (c)**Liver** (d) Spleen

127. The reabsorption of sodium from glomerular filtrate is regulated by the hormone
(a) Glucagon (b) Secretin (c) **Aldosterone** (d) Adrenaline

128. Presence of high levels of urea in blood is referred to as
(a)**Uraemia** (b) Haematuria (c) Anuria (d) Diurea

129. Which of the following is made up of a single bone in mammals
(a) Hyoid (b) Maxilla (c)**Mandible** (d) Zygomatic arch

130. Centre of autonomic nervous system is located in
(a) Hypothalamus (b) Medulla oblongata (c) Cerebellum (d)**Both a and b**

131. Alzheimer's disease in humans is associated with the deficiency of
(a)**Acetylcholine** (b) Gamma Amino Butyric Acid (GABA)
(c) Dopamine (d) Glutamic acid

132. Sequence of eye layers from outside to inside is
(a)**Sclera, choroid, retina** (b) Choroid, sclera, retina
(c) Retina, choroid, sclera (d) Sclera, retina, choroid

133. The shape of eye lens is changed by
(a) Pupil (b) Iris (c) Optic nerve (d)**Ciliary muscle**

134. Corpus luteum produces
(a) Oestrogen (b) Prolactin (c) FSH (d)**Progesterone**

135. Which disease is caused by the under secretion of adrenal cortex?
(a) Cretinism (b) Dwarfism (c) Sterility (**d) Addison's disease**

136. Asexual reproduction involves
(a)Amphimixis (b) Syngamy (c) Fusion (d)**None of these**

137. When a cut portion of plant forms a full adult plant, it is called as
(a)**Cutting** (b) Layering (c) Grafting (d) Stock

138. Pollen tube releases sperms in
(a) Egg cell (b) Antipodals (c) Central cell (d)**Synergids**

139. Number of pollen grains produced per microspore mother cell in gymnosperm is
(a)**4** (b) 2 (c) 6 (d) 10

140. What happens to pollen tube after fertilization?
(a) It becomes haustorial (b) It becomes nutritive
(c)**It gets collapsed** (d) It becomes branched

141. In a cereal grain, the single cotyledon of embryo is represented by
(a) Coleoptile (b) Coleorhiza (c)**Scutellum** (d) Prophyll

142. One of the following is not functionally analogous with others in the group
(a) Oogonium (b) Archegonium (c)**Antheridium**(d) Ovule

143. The muscles that help in keeping the testicles warm is
(a) Cremaster (b)**Dartos** (c) Gubernaculum (d) Mesorchium

144. The female organ equivalent to glans penis of male is
(a) Vestibule (b) Hymen (c) Baculum (d)**Clitoris**

145. The cells of the follicle synthesise
(a)**Oestrogen** (b) Progesterone (c) Both a and b (d) None of the above

146. Origin of bone is
(a) Ectodermal (b) Endodermal (c)**Mesodermal** (d) Both b and c

147. When pregnancy occurs in ovary itself it is called
(a) Tubal pregnancy (b) **Ectopic pregnancy**
(c) Abdominal pregnancy (d) None of the above

148. Relaxin is released from
(a) Pituitary (b)**Ovary** (c) Testis (d) Adrenals

149. Absence of sperms in semen is called as
(a) Oligospermia (b) Polyspermia (c)**Azoospermia** (d) None of these

150. Contraceptive pills help in birth control by
(a) Killing the sperms in uterus (b) Forming barriers between sperms and ova
(c)**Preventing ovulation** (d) Killing the ova

151. Infection by which of the following leads to the formation of lesions called chancre on genitals?
(a) Niesseria gonorrhoea (b)**Treponema pallidum**
(c) Herpes simplex (d) Trichomonas vaginalis

152. In a mendelian cross, the characters appearing in first generation are
(a) Recessive (b)**Dominant** (c) Co-dominant (d) Intermittent

153. Inheritance of skin colour in man is an example of
(a) Blending inheritance (b) Pleiotropism (c) Codominance (d)**Cumulative genes**

154. Continuous variation is attributed to
(a) Mutation (b)**Crossing over** (c) Chromosomal aberration (d) Polyploidy

155. The possible blood groups of children born to parents having A x AB groups are
(a) O, A, B (b) O, A, B, AB (c) O, A (d)**A,B,AB**

156. Lampbrush chromosome found in the oocytes of amphibians is seen in
(a) Leptotene (b)**Diplotene** (c) Pachytene (d) None of the above

157. Which enzyme is needed for the production of DNA from RNA
(a) RNA polymerase (b)**Reverse transcriptase** (c) DNA polymerase (d) Helicase

158.One of the parents of a cross has a mutation in its mitochondria. In that cross, that parent is taken as a male. During segregation of F_2 progenies, that mutation is found in
(a) One third of the progenies (b)**None of the progenies**
(c) All the progenies (d) Fifty percent of the progenies

159. Which of the following disorders is not hereditary
(a) Haemophilia (b)**Cataract** (c) Thalassemia (d) Cystic fibrosis

160. Identify the group which contains only pyrimidines
(a) Adenine, thymine, guanine (b) Guanine, cytosine, uracil

(c)**Thymine, cytosine, uracil** (d) Adenine, uracil, cytosine

161. Lac operon has
(a) Y genes (b) Z genes (c) A genes (d)**All the above**

162. Which of the following evolved first?
(a) Photosynthesis (b) Respiration
(c) Transpiration (d)**Formation of macromolecules**

163. The 'Devonian period' is considered to be
(a)**Age of fishes** (b) Age of amphibians (c) Age of reptiles (d) Age of mammals

164. Which of the following does not support evolution
(a) Mutualism (b) Parasitism (c) Commensalism (d)**None of these**

165. Which of these is not a connecting link?
(a) Duck billed platypus (b) Spiny ant eater (c)**Tortoise** (d) Lung fish

166. Neanderthal man became extinct due to
(a) Earthquakes (b) Forest fire (c) Meteorite strike (d) **Origin of active humans**

167. Which of the following is not a viral disease?
(a) Yellow fever **(b) Plague** (c) Mountain fever (d) Q-fever

168.Kwashiorkar is caused due to deficiency of
(a) Minerals (b) Fats (c)**Essential amino acids** (d) Carbohydrates

169. Antibodies are
(a)**Gamma globulins** (b) Albumins (c) Vitamins (d) Both a and b

170. People recovering from long illnesses are often advised to include the alga spirulina in their diet because it
(a) Makes the food easy to digest (b)**Is rich in proteins**
(c) Has antibiotic properties (d) Restores the intestinal microflora

171. Ranikhet disease is of
(a)**Poultry** (b) Fish (c) Pigs (d) Honeybee

172. Genetic erosion is due to
(a) Deforestation (b) Shifting cultivation
(c) Adopting genetically uniform varieties (d)**All the above**

173.Sporeine is primarily a
(a) Herbicide (b)**Insecticide** (c) Pesticide (d) Mycoherbicide

174. Prophage comprises of
(a)**Viral DNA attached to host DNA** (b) Viral DNA found in host
(c) DNA and protein particles in host (d) Naked viral DNA

175. c-DNA probes are copied from the mRNA molecules with the help of
(a) restriction enzymes (b)**reverse transcriptase**
(c) DNA polymerase (d) Adenosine deaminase

176. The ecological rule which suggests that animals have short and small extremities in colder regions is
(a) Bergman's rule (b) Blackman's rule (c)**Allen's rule** (d) Cope's rule

177. Altruism is shown by
(a) Vertebrates (b) Honeybee (c) Wasps (d) **Both b and c**

178. The frog that feeds on an insect is a
(a) Tertiary consumer (b) Decomposer
(c) Primary consumer (d)**Secondary consumer**

179. Edaphic nutrient cycles include
(a) Gaseous types (b) Partial sedimentary types
(c) Total sedimentary types (d)**All the above**

180.Kyoto protocol is
(a)**To mitigate the climate change** (b) To check depletion of ozone layer
(c) To check soil erosion (d) To preserve water resources