SEAL

SUBJECT : PHYSICS	DAY – 2
SESSION : MORNING	TIME : 10.30 A.M. TO 11.50 A.M.

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
60	80 MINUTES	70 MINUTES

MENTION YOUR CET NUMBER					QUESTION BOOKLET DETAILS	
					VERSION CODE	SERIAL NUMBER
					A - 1	

516561

DOs :

1. Check whether the CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. This Question Booklet is issued to you by the invigilator after the **2nd Bell i.e., after 10.30 a.m.**
3. The Serial Number of this question booklet should be entered on the OMR answer sheet.
4. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
5. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'TS :

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. The **3rd Bell rings at 10.40 a.m., till then;**
   - Do not remove the paper seals present on all the 3 sides of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

SEAL

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 60 questions and each question will have one statement and four distracters. (Four different options / choices.)
2. After the **3rd Bell is rung at 10.40 a.m.,** remove the paper seals of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 70 minutes:
   - Read each question carefully.
   - Choose the correct answer from out of the four available distracters (options / choices) given under each question / statement.
   - **Completely darken / shade the relevant circle with a BLUE OR BLACK INK BALL POINT PEN against the question number on the OMR answer sheet.**

CORRECT METHOD OF SHADING THE CIRCLE ON THE OMR SHEET IS AS SHOWN BELOW :

4. Please note that even a minute unintended ink dot on the OMR answer sheet will also be recognised and recorded by the scanner. Therefore, avoid multiple markings of any kind on the OMR answer sheet.
5. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
6. After the **last bell is rung at 11.50 a.m.,** stop writing on the OMR answer sheet and affix your LEFT HAND THUMB IMPRESSION on the OMR answer sheet as per the instructions.
7. Hand over the **OMR ANSWER SHEET** to the room invigilator as it is.
8. After separating the top sheet (Our Copy), the invigilator will return the bottom sheet replica (Candidate's copy) to you to carry home for self-evaluation.
9. Preserve the replica of the OMR answer sheet for a minimum period of ONE year.

SEAL

1. The dimensional formula of physical quantity is $M^a L^b T^c$. Then that physical quantity is

(1) surface tension if $a = 1, b = 1, c = -2$

(2) force if $a = 1, b = 1, c = 2$

(3) angular frequency if $a = 0, b = 0, c = -1$

(4) spring constant if $a = 1, b = -1, c = -2$

2. A person throws balls into air vertically upward in regular intervals of time of one second. The next ball is thrown when the velocity of the ball thrown earlier becomes zero. The height to which the balls rise is .....

(Assume, $g = 10\ ms^{-2}$)

(1) 5 m (2) 10 m

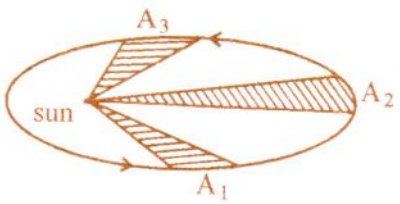
(3) 7.5 m (4) 20 m

3. The circular motion of a particle with constant speed is

(1) periodic but not SHM (2) SHM but not periodic

(3) periodic and also SHM (4) neither periodic nor SHM

4. A planet moving around sun sweeps area A_1 in 2 days, A_2 in 3 days and A_3 in 6 days. Then the relation between A_1, A_2 and A_3 is

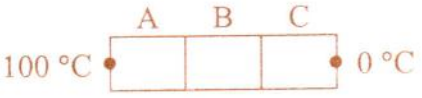


(1) $3A_1 = 2A_2 = A_3$ (2) $2A_1 = 3A_2 = 6A_3$

(3) $3A_1 = 2A_2 = 6A_3$ (4) $6A_1 = 3A_2 = 2A_3$

Space For Rough Work

5. A, B and C are the three identical conductors but made from different materials. They are kept in contact as shown.

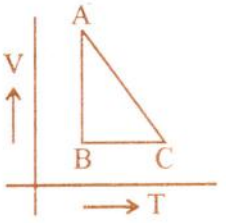


Their thermal conductivities are K, 2 K and $\frac{K}{2}$. The free end of A is at 100 °C and the free end of C is at 0 °C. During steady state, the temperature of the junction of A and B is nearly .... °C.

(1) 71 (2) 29

(3) 63 (4) 37

6. One mole of an ideal gas is taken from A to B, from B to C and then back to A. The variation of its volume with temperature for that change is as shown. Its pressure at A is P_0, volume is V_0. Then, the internal energy



(1) at A is more than at B (2) at C is less than at B

(3) at B is more than at A (4) at A and B are equal

7. Which of the following is incorrect ?

(1) If the wave is longitudinal, it must be a mechanical wave.

(2) If the wave is mechanical, it may OR may not be a transverse wave.

(3) Mechanical waves cannot propagate in vacuum.

(4) 'Diffraction' helps us to distinguish between sound wave and light wave.

Space For Rough Work

8. Intensity level of sound whose intensity is 10^{-8} wm^{-2} is ..... dB

(1) 8 (2) 4

(3) 40 (4) 80

9. A point source of light is kept below the surface of water ($n_w = 4/3$) at a depth of $\sqrt{7}$ m. The radius of the circular bright patch of light noticed on the surface of water is .....m.

(1) $\frac{3}{\sqrt{7}}$ (2) 3

(3) $\frac{\sqrt{7}}{3}$ (4) $\sqrt{7}$

10. A monochromatic beam of light is travelling from medium A of refractive index n_1 to a medium B of refractive index n_2. In the medium A, there are x number of waves in certain distance. In the medium B, there are y number of waves in the same distance. Then, refractive index of medium A with respect to medium B is ....

(1) $\frac{y}{x}$ (2) $\sqrt{\frac{x}{y}}$

(3) $\frac{x}{y-x}$ (4) $\frac{x}{y}$

11. In Young's double slit experiment, fringes of width β are produced on a screen kept at a distance of 1 m from the slit. When the screen is moved away by 5×10^{-2} m, fringe width changes by 3×10^{-5} m. The separation between the slits is 1×10^{-3} m. The wavelength of the light used is ..... nm.

(1) 500 (2) 600

(3) 700 (4) 400

Space For Rough Work

12. For sustained interference fringes in double slit experiment, essential condition/s is/are

(a) sources must be coherent

(b) the intensities of the two sources must be equal

Here, the correct option/s is/are

(1) both (a) (b) (2) only (a)

(3) only (b) (4) neither (a) nor (b)

13. In single slit experiment, the width of the slit is reduced. Then, the linear width of the principal maxima.....

(1) increases but becomes less bright

(2) decreases but becomes more bright

(3) increases but becomes more bright

(4) decreases but becomes less bright

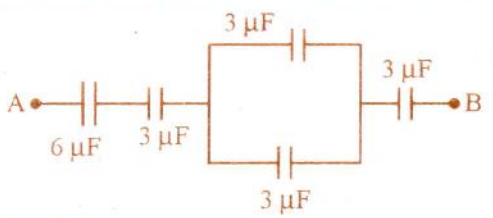
14. In the uniform electric field of $E = 1 \times 10^4\ NC^{-1}$, an electron is accelerated from rest. The velocity of the electron when it has travelled a distance of 2×10^{-2} m is nearly ..... ms^{-1}

($\frac{e}{m}$ of electron $\simeq 1.8 \times 10^{11}\ Ckg^{-1}$)

(1) 1.6×10^6 (2) 0.85×10^6

(3) 0.425×10^6 (4) 8.5×10^6

15. In this diagram, the P.D. between A and B is 60 V, The P.D. across 6 μF capacitor is V

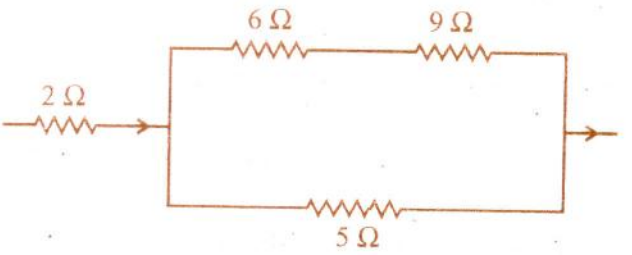


(1) 10 (2) 5

(3) 20 (4) 4

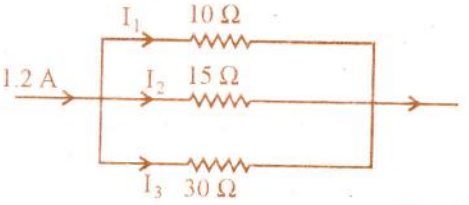
Space For Rough Work

16. In this circuit, when certain current flows, the heat produced in 5 Ω is 4.05 J in a time t. The heat produced in 2 Ω coil in the same time interval is



(1) 5.76
(2) 1.44
(3) 2.88
(4) 2.02

17. In this circuit, the value of I_2 is



(1) 0.2 A
(2) 0.3 A
(3) 0.4 A
(4) 0.6 A

18. A straight current carrying conductor is kept along the axis of circular loop carrying current. The force exerted by the straight conductor on the loop is _____.
(1) perpendicular to the plane of the loop
(2) in the plane of the loop, away from the center
(3) in the plane of the loop, towards the center
(4) zero

19. A resistor of 500 Ω, an inductance of 0.5 H are in series with an a.c. which is given by $V = 100\sqrt{2}\ \sin(1000\ t)$. The power factor of the combination is
(1) $\frac{1}{\sqrt{2}}$
(2) $\frac{1}{\sqrt{3}}$
(3) 0.5
(4) 0.6

Space For Rough Work

20. Pick out the WRONG statement.

(1) The gain in the K.E. of the electron moving at right angles to the magnetic field is zero.

(2) When an electron is shot at right angles to the electric field, it traces a parabolic path.

(3) An electron moving in the direction of the electric field gains K.E.

(4) An electron at rest experiences no force in the magnetic field.

21. A proton and an alpha particle are accelerated under the same potential difference. The ratio of de-Broglie wavelengths of the proton and the alpha particle is

(1) $\sqrt{8}$ (2) $\frac{1}{\sqrt{8}}$

(3) 1 (4) 2

22. Spectrum of sunlight is an example for

(1) Band emission spectrum (2) Line absorption spectrum

(3) Continuous emission spectrum (4) Continuous absorption spectrum

23. In hydrogen atom, electron excites from ground state to higher energy state and its orbital velocity is reduced to $\frac{1}{3}$rd of its initial value. The radius of the orbit in the ground state is R. The radius of the orbit in that higher energy state is.....

(1) 2 R (2) 3 R

(3) 27 R (4) 9 R

24. Decay constants of two radio-active samples A and B are $15x$ and $3x$ respectively. They have equal number of initial nuclei. The ratio of the number of nuclei left in A and B after a time $\frac{1}{6x}$ is

(1) e (2) e^2

(3) e^{-1} (4) e^{-2}

Space For Rough Work

25. Mass numbers of the elements A, B, C and D are 30, 60, 90 and 120 respectively. The specific binding energy of them are 5 MeV, 8.5 MeV, 8 MeV and 7 MeV respectively. Then, in which of the following reaction/s energy is released ?

(a) $D \rightarrow 2B$

(b) $C \rightarrow B + A$

(c) $B \rightarrow 2A$

(1) only in (a) (2) in (b), (c)

(3) in (a), (c) (4) in (a), (b) and (c)

26. Copper and Germanium are cooled from room temperature to 100 K. Then the resistance of

(1) Germanium decreases, Copper increases

(2) Germanium decreases, Copper decreases

(3) Germanium increases, Copper decreases

(4) Germanium increases, Copper increases

27. The most stable particle in the Baryon group is

(1) neutron (2) proton

(3) lamda particle (4) sigma particle

28. Frequencies of light incident on a system of scattering particles are in the ratio of 1 : 2. Then, the intensity of scattered light in a particular direction is .....

(1) 1 : 4 (2) 1 : 2

(3) 1 : 8 (4) 1 : 16

29. The ratio of the magnetic dipole moment to the angular momentum of the electron in the 1st orbit of hydrogen atom is

(1) $\frac{e}{2m}$ (2) $\frac{e}{m}$

(3) $\frac{2m}{e}$ (4) $\frac{m}{e}$

Space For Rough Work

30. Milk is an example for

(1) inelastic gel (2) foam

(3) elastic gel (4) emulsion

31. A body of mass 'm' is travelling with a velocity 'u'. When a constant retarding force 'F' is applied, it comes to rest after travelling a distance 's_1'. If the initial velocity is '2u', with the same force 'F', the distance travelled before it comes to rest is 's_2'. Then

(1) $s_2 = 2s_1$ (2) $s_2 = \frac{s_1}{2}$

(3) $s_2 = s_1$ (4) $s_2 = 4s_1$

32. A block kept on a rough surface starts sliding when the inclination of the surface is 'θ' with respect to the horizontal. The coefficient of static friction between the block and the surface is

(1) $\sin\theta$ (2) $\tan\theta$

(3) $\cos\theta$ (4) $\sec\theta$

33. Two bodies of masses m_1 and m_2 are acted upon by a constant force F for a time t. They start from rest and acquire kinetic energies E_1 and E_2 respectively. Then $\frac{E_1}{E_2}$ is

(1) $\frac{m_1}{m_2}$ (2) $\frac{m_2}{m_1}$

(3) 1 (4) $\frac{\sqrt{m_1 m_2}}{m_1 + m_2}$

34. The X and Y components of a force F acting at 30° to x-axis are respectively

(1) $\frac{F}{\sqrt{2}}, F$ (2) $\frac{F}{2}, \frac{\sqrt{3}}{2}F$

(3) $\frac{\sqrt{3}}{2}F, \frac{1}{2}F$ (4) $F, \frac{F}{\sqrt{2}}$

Space For Rough Work

35. Spheres of iron and lead having same mass are completely immersed in water. Density of lead is more than that of iron. Apparent loss of weight is W_1 for iron sphere and W_2 for lead sphere. Then $\frac{W_1}{W_2}$ is

(1) $= 1$
(2) between 0 and 1
(3) $= 0$
(4) > 1

36. A hot body is allowed to cool. The surrounding temperature is constant at 30 °C. The body takes time t_1 to cool from 90 °C to 89 °C and time t_2 to cool from 60 °C to 59.5 °C. Then,

(1) $t_2 = 2t_1$
(2) $t_2 = \frac{t_1}{2}$
(3) $t_2 = 4t_1$
(4) $t_2 = t_1$

37. A particle executes SHM with amplitude 0.2 m and time period 24 s. The time required for it to move from the mean position to a point 0.1 m from the mean position is

(1) 2 s
(2) 3 s
(3) 8 s
(4) 12 s

38. White light is incident normally on a glass slab. Inside the glass slab,

(1) red light travels faster than other colours
(2) violet light travels faster than other colours
(3) yellow light travels faster than other colours
(4) all colours travel with the same speed

39. Two thin plano-convex lenses each of focal length f are placed as shown in the figure. The ratio of their effective focal lengths in the three cases is

(i) (ii) (iii)

(1) 1 : 2 : 3
(2) 1 : 2 : 1
(3) 1 : 1 : 1
(4) 3 : 2 : 1

Space For Rough Work

40. If the two slits in Young's double slit experiment are of unequal width, then

(1) the bright fringes will have unequal spacing.

(2) the bright fringes will have unequal brightness.

(3) the fringes do not appear.

(4) the dark fringes are not perfectly dark.

41. The phenomenon of polarization shows that light has _____ nature.

(1) particle (2) transverse

(3) longitudinal (4) dual

42. Acceleration of a charged particle of charge 'q' and mass 'm' moving in a uniform electric field of strength 'E' is

(1) $\frac{qE}{m}$ (2) $\frac{m}{qE}$

(3) mqE (4) $\frac{q}{mE}$

43. Two fixed charges A and B of 5 μC each are separated by a distance of 6 m. C is the mid point of the line joining A and B. A charge 'Q' of –5 μC is shot perpendicular to the line joining A and B through C with a kinetic energy of 0.06 J. The charge 'Q' comes to rest at a point D. The distance CD is

(1) 3 m (2) $\sqrt{3}$ m

(3) $3\sqrt{3}$ m (4) 4 m

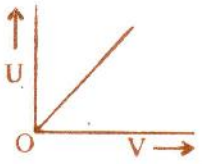
44. A capacitor of capacitance 10 μF is charged to 10 V. The energy stored in it is

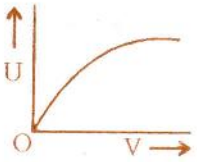
(1) 100 μJ (2) 500 μJ

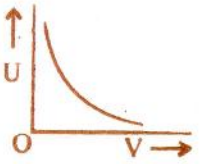
(3) 1000 μJ (4) 1 μJ

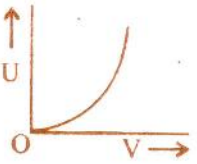
Space For Rough Work

45. Which of the following graphs correctly represents the variation of heat energy (U) produced in a metallic conductor in a given time as a function of potential difference (V) across the conductor ?

(1) 

(2) 

(3) 

(4) 

46. A current of 2 A is passing through a metal wire of cross sectional area 2×10^{-6} m^2. If the number density of free electrons in the wire is 5×10^{26} m^{-3}, the drift speed of electrons is (given $e = 1.6 \times 10^{-19}$ C)

(1) $\frac{1}{16}$ ms^{-1} (2) $\frac{1}{40}$ ms^{-1}

(3) $\frac{1}{80}$ ms^{-1} (4) $\frac{1}{32}$ ms^{-1}

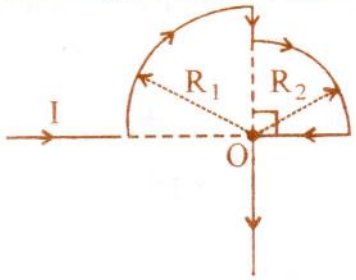
47. Magnetic field at a distance r from an infinitely long straight conductor carrying a steady current varies as

(1) $\frac{1}{r^2}$ (2) $\frac{1}{r}$

(3) $\frac{1}{r^3}$ (4) $\frac{1}{\sqrt{r}}$

Space For Rough Work

48. In the loop shown, the magnetic induction at the point 'O' is



(1) $\frac{\mu_0 I}{8}\left(\frac{R_1 - R_2}{R_1 R_2}\right)$ (2) $\frac{\mu_0 I}{8}\left(\frac{R_1 + R_2}{R_1 R_2}\right)$

(3) $\frac{\mu_0 I}{8}\left(\frac{R_1 R_2}{R_1 + R_2}\right)$ (4) Zero

49. An α-particle and a proton moving with the same kinetic energy enter a region of uniform magnetic field at right angles to the field. The ratio of the radii of the paths of α-particle to that of the proton is

(1) 1 : 1 (2) 1 : 2

(3) 1 : 4 (4) 1 : 8

50. Direction of current induced in a wire moving in a magnetic field is found using

(1) Fleming's left hand rule

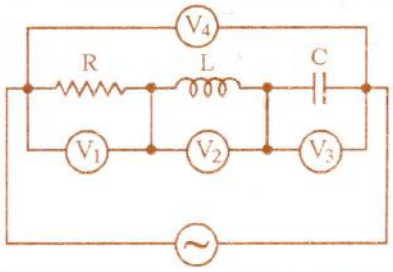
(2) Fleming's right hand rule

(3) Ampere's rule

(4) Right hand clasp rule

Space For Rough Work

51. An ideal resistance R, ideal inductance L, ideal capacitance C and AC volt meters V_1, V_2, V_3 and V_4 are connected to an AC source as shown. At resonance,



(1) reading in V_3 = reading in V_1 (2) reading in V_1 = reading in V_2

(3) reading in V_2 = reading in V_4 (4) reading in V_2 = reading in V_3

52. X-rays, gamma rays and microwaves travelling in vacuum have

(1) same wavelengths but different velocities

(2) same frequency but different velocities

(3) same velocity but different wavelengths

(4) same velocity and same frequency

53. If n is the orbit number of the electron in a hydrogen atom, the correct statement among the following is

(1) electron energy increases as n increases

(2) hydrogen emits infrared rays for the electron transition from $n = \infty$ to $n = 1$.

(3) electron energy is zero for $n = 1$

(4) electron energy varies as n^2.

54. In a Ruby laser, the colour of laser light is due to _____ atom.

(1) Oxygen (2) Aluminium

(3) Xenon (4) Chromium

Space For Rough Work

55. The radius of $_{29}Cu^{64}$ nucleus in Fermi is (given $R_0 = 1.2 \times 10^{-15}$ m)

(1) 4.8 (2) 1.2

(3) 7.7 (4) 9.6

56. In a radioactive decay, an element $_ZX^A$ emits four α-particles, three β-particles and eight gamma photons. The atomic number and mass number of the resulting final nucleus are

(1) Z – 11, A – 16 (2) Z – 5, A – 13

(3) Z – 5, A – 16 (4) Z – 8, A – 13

57. For a transistor, $\beta = 100$. The value of α is

(1) 1.01 (2) 0.99

(3) 100 (4) 0.01

58. The following truth table with A and B as inputs is for _____ gate.

A	B	Output
1	0	1
1	1	0
0	1	1
0	0	0

(1) AND (2) OR

(3) XOR (4) NOR

59. 'n' photons of wavelength 'λ' are absorbed by a black body of mass 'm'. The momentum gained by the body is

(1) $\frac{h}{m\lambda}$ (2) $\frac{mnh}{\lambda}$

(3) $\frac{nh}{m\lambda}$ (4) $\frac{nh}{\lambda}$

60. A radioactive nucleus has specific binding energy 'E_1'. It emits an α-particle. The resulting nucleus has specific binding energy 'E_2'. Then

(1) $E_2 = E_1$ (2) $E_2 < E_1$

(3) $E_2 > E_1$ (4) $E_2 = 0$

Space For Rough Work

SEAL

SEAL

A-1

SEAL

SEAL

SUBJECT : CHEMISTRY	DAY – 2
SESSION : AFTERNOON	TIME : 02.30 P.M. TO 03.50 P.M.

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5. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
6. After the **last bell is rung at 03.50 p.m.,** stop writing on the OMR answer sheet and affix your LEFT HAND THUMB IMPRESSION on the OMR answer sheet as per the instructions.
7. Hand over the **OMR ANSWER SHEET** to the room invigilator as it is.
8. After separating the top sheet (Our Copy), the invigilator will return the bottom sheet replica (Candidate's copy) to you to carry home for self-evaluation.
9. Preserve the replica of the OMR answer sheet for a minimum period of ONE year.

SEAL

1. The mass of a non-volatile solute of molar mass 40 g mol^{-1} that should be dissolved in 114 g of octane to lower its vapour pressure by 20% is ·

(1) 10 g (2) 11.4 g

(3) 9.8 g (4) 12.8 g

2. During the adsorption of a gas on the surface of a solid, which of the following is TRUE ?

(1) $\Delta G < O, \Delta H > O, \Delta S < O$

(2) $\Delta G > O, \Delta H < O, \Delta S < O$

(3) $\Delta G < O, \Delta H < O, \Delta S < O$

(4) $\Delta G < O, \Delta H < O, \Delta S > O$

3. The approximate time duration in hours to electroplate 30g of calcium from molten calcium chloride using a current of 5 amp is

[At. mass of Ca = 40]

(1) 8 (2) 80

(3) 10 (4) 16

4. The pH of the solution obtained by mixing 100 ml of a solution of pH = 3 with 400 ml of a solution of pH = 4 is

(1) 3 – log 2.8 (2) 7 – log 2.8

(3) 4 – log 2.8 (4) 5 – log 2.8

Space For Rough Work

5. The equilibrium constant of the reaction :

$$A_{(s)} + 2B^{+}_{(aq)} \rightleftharpoons A^{2+}_{(aq)} + 2B_{(s)};\ E^{\circ}_{cell} = 0.0295\ V \text{ is}$$

$$\left[\frac{2.303\ RT}{F} = 0.059\right]$$

(1) 10 (2) 2×10^2

(3) 3×10^2 (4) 2×10^5

6. An oxygen containing organic compound was found to contain 52% carbon and 13% of hydrogen. Its vapour density is 23. The compound reacts with sodium metal to liberate hydrogen. A functional isomer of this compound is

(1) Ethanol (2) Ethanal

(3) Methoxy Methane (4) Methoxy Ethane

7. Which one of the following is NOT true regarding electromeric effect ?

(1) It results in the appearance of partial charges on the carbon atoms.

(2) It is a temporary effect.

(3) It operates on multiple bonds.

(4) It requires an attacking reagent.

8. Which one of the following is NOT formed when a mixture of methyl bromide and bromobenzene is heated with sodium metal in the presence of dry Ether ?

(1) Ethane (2) Diphenyl

(3) Propane (4) Toluene

Space For Rough Work

9. Power alcohol is a mixture of

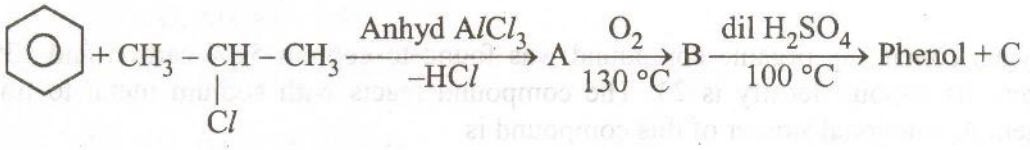
(1) 80% Petrol + 20% Benzene + Small quantity of Ethanol

(2) 80% Petrol + 20% Ethanol + Small quantity of Benzene

(3) 80% Ethanol + 20% Benzene + Small quantity of Petrol

(4) 50% Petrol + 50% Ethanol + Small quantity of Benzene

10. Identify 'C' in the following :



(1) Water (2) Ethanol

(3) Propanone (4) Cumene hydroperoxide

11. 20 ml of methane is completely burnt using 50 ml of oxygen. The volume of the gas left after cooling to room temperature is

(1) 80 ml (2) 40 ml

(3) 60 ml (4) 30 ml

12. 100 ml of 0.1 M acetic acid is completely neutralized using a standard solution of NaOH. The volume of Ethane obtained at STP after the complete electrolysis of the resulting solution is

(1) 112 ml (2) 56 ml

(3) 224 ml (4) 560 ml

Space For Rough Work

13. Saccharin, an artificial sweetner, is manufactured from

(1) Cellulose (2) Toluene

(3) Cyclohexane (4) Starch

14. Which of the following is NOT TRUE for S_N1 reaction ?

(1) Favoured by polar solvents.

(2) 3° – alkyl halides generally react through S_N1 reaction.

(3) The rate of the reaction does not depend upon the molar concentration of the nucleophile.

(4) 1° – alkyl halides generally react through S_N1 reaction.

15. Oil of winter green is

(1) an ester (2) a carboxylic acid

(3) an alcohol (4) a ketone

16. An organic compound 'A' burns with a sooty flame. It is negative towards Tollen's reagent test and positive for Borsche's reagent test. The compound 'A' is

(1) Benzaldehyde (2) Acetophenone

(3) Acetone (4) Salicylic acid

Space For Rough Work

17. For a reaction : A + B → Products, the rate of the reaction at various concentrations are given below :

Expt No	[A]	[B]	rate (mol dm^{-3} s^{-1})
1	0.2	0.2	2
2	0.2	0.4	4
3	0.6	0.4	36

The rate law for the above reaction is

(1) $r = K[A]^2 [B]$ (2) $r = K[A] [B]^2$

(3) $r = K[A]^3 [B]$ (4) $r = K[A]^2 [B]^2$

18. Which one of the following has NO unpaired electrons ?

(1) O_2 (2) O_2^-

(3) O_2^+ (4) O_2^{--}

19. The atomic number of cobalt is 27. The EAN of cobalt in $Na_3[Co(NO_2)_4Cl_2]$ is

(1) 35 (2) 24

(3) 36 (4) 34

20. The "spin only" magnetic moment of Ni^{2+} in aqueous solution would be [At No. of Ni = 28]

(1) $\sqrt{6}$ BM (2) $\sqrt{15}$ BM

(3) $\sqrt{2}$ BM (4) $\sqrt{8}$ BM

Space For Rough Work

21. Impossible orbital among the following is

(1) 2s (2) 3f

(3) 2p (4) 4d

22. The total number of electrons in 18 ml of water (density = 1 g ml^{-1}) is

(1) 6.02×10^{23} (2) 6.02×10^{25}

(3) 6.02×10^{24} (4) $6.02 \times 18 \times 10^{23}$

23. The number of moles of hydrogen that can be added to 1 mole of an oil is the highest in

(1) Linseed oil (2) Groundnut oil

(3) Sunflower seed oil (4) Mustard oil

24. The reaction between sodium and water can be made less vigorous by

(1) lowering the temperature (2) adding a little alcohol

(3) amalgamating sodium (4) adding a little acetic acid

25. All colloidal dispersions have

(1) very high osmotic pressure (2) low osmotic pressure

(3) no osmotic pressure (4) high osmotic pressure

26. Silver iodide is used for producing artificial rain because AgI

(1) is easy to spray at high altitude

(2) is easy to synthesize

(3) has crystal structure similar to ice

(4) is insoluble in water

Space For Rough Work

27. The equilibrium constant of a reaction is 0.008 at 298 K. The standard free energy change of the reaction at the same temperature is

(1) +11.96 kJ (2) –11.96 kJ

(3) –5.43 kJ (4) –8.46 kJ

28. The function of potassium ethyl xanthate in froth floatation process is to make the ore

(1) attracted towards water (2) water repellant

(3) lighter (4) heavier

29. The correct order of electronegativities of N, O, F & P is

(1) F > N > P > O (2) F > O > P > N

(3) F > O > N > P (4) N > O > F > P

30. The s-block element used as a catalyst in the manufacture of Buna-S rubber is

(1) Mg (2) Ca

(3) Ba (4) Na

31. Which of the following is NOT a characteristic of a covalent compound ?

(1) Low melting point

(2) No definite geometry

(3) Insoluble in polar solvent

(4) Small difference in electronegativity between the combining atoms.

Space For Rough Work

32. The volume of 0.1 M oxalic acid that can be completely oxidized by 20 ml of 0.025 M $KMnO_4$ solution is

(1) 125 ml (2) 25 ml

(3) 12.5 ml (4) 37.5 ml

33. A ligand is

(1) Lewis acid

(2) Bronsted acid

(3) either a Lewis acid or a Lewis base

(4) Lewis base

34. The vapour pressures of two liquids A and B in their pure states are in the ratio of 1 : 2. A binary solution of A and B contains A and B in the mole proportion of 1 : 2. The mole fraction of A in the vapour phase of the solution will be

(1) 0.33 (2) 0.2

(3) 0.25 (4) 0.52

35. Which of the following statements is TRUE ?

(1) The total entropy of the universe remains constant.

(2) The total entropy of the universe is continuously decreasing.

(3) The total energy of the universe is continuously decreasing.

(4) The total energy of the universe remains constant.

Space For Rough Work

36. 5 ml of 0.4 N NaOH is mixed with 20 ml of 0.1 N HCl. The pH of the resulting solution will be

(1) 6 (2) 7

(3) 8 (4) 5

37. On adding which of the following, the pH of 20 ml of 0.1 N HCl will not alter ?

(1) 1 ml of 1 N HCl (2) 20 ml of distilled water

(3) 1 ml of 0.1 N NaOH (4) 500 ml of HCl of pH = 1

38. Which one of the following has a potential more than zero ?

(1) $Pt, \frac{1}{2} H_2$ (1 atm) | HCl (1 M)

(2) $Pt, \frac{1}{2} H_2$ (1 atm) | HCl (2 M)

(3) $Pt, \frac{1}{2} H_2$ (1 atm) | HCl (0.1 M)

(4) $Pt, \frac{1}{2} H_2$ (1 atm) | HCl (0.5 M)

39. HCHO was treated with a reagent X. The product formed upon hydrolysis in the presence of an acid gave C_2H_5OH. The reagent X is

(1) aqueous KOH (2) alcoholic KOH

(3) alcoholic KCN (4) CH_3MgI

Space For Rough Work

40. Benzylamine is a stronger base than aniline because

(1) The lone pair of electrons on the nitrogen atom in benzylamine is delocalised.

(2) The lone pair of electrons on the nitrogen atom in aniline is delocalised.

(3) The lone pair of electrons on the nitrogen atom in aniline is not involved in resonance.

(4) Benzylamine has a higher molecular mass than aniline.

41. The relative acidic strengths of benzoic acid, o-toluic acid and p-toluic acid is of the decreasing order :

(1) p-toluic acid > o-toluic acid > benzoic acid

(2) o-toluic acid > p-toluic acid > benzoic acid

(3) p-toluic acid > benzoic acid > o-toluic acid

(4) o-toluic acid > benzoic acid > p-toluic acid

42. The C-H bond and C-C bond in ethane are formed by which of the following types of overlap ?

(1) $sp^3 - s$ and $sp^3 - sp^3$ (2) $sp^2 - s$ and $sp^2 - sp^2$

(3) $sp - s$ and $sp - sp$ (4) $p - s$ and $p - p$

43. The IUPAC name of

is

(1) 4-Hydroxy-2-pentanone (2) 2-Hydroxy-4-pentanone

(3) 2-Oxo-4-pentanol (4) 4-Keto-2-pentanol

Space For Rough Work

44. A first order reaction is 60% complete in 20 minutes. How long will the reaction take to be 84% complete ?

(1) 54 mins (2) 68 mins

(3) 40 mins (4) 76 mins

45. A given sample of milk turns sour at room temperature (27 °C) in 5 hours. In a refrigerator at –3 °C, it can be stored 10 times longer. The energy of activation for the souring of milk is

(1) $2.303 \times 10\ R\ kJ \cdot mol^{-1}$ (2) $2.303 \times 5\ R\ kJ \cdot mol^{-1}$

(3) $2.303 \times 3\ R\ kJ \cdot mol^{-1}$ (4) $2.303 \times 2.7\ R\ kJ \cdot mol^{-1}$

46. At 300 K, a gaseous reaction :

$A \rightarrow B + C$

was found to follow first order kinetics. Starting with pure A, the total pressure at the end of 20 minutes was 100 mm of Hg. The total pressure after the completion of the reaction is 180 mm of Hg. The partial pressure of A (in mm of Hg) is

(1) 100 (2) 90

(3) 180 (4) 80

47. From the Ellingham graphs on carbon, which of the following statements is FALSE ?

(1) CO_2 is more stable than CO at less than 983 K

(2) CO reduces Fe_2O_3 to Fe at less than 983 K

(3) CO is less stable than CO_2 at more than 983 K

(4) CO reduces Fe_2O_3 to Fe in the reduction zone of Blast furnace

Space For Rough Work

48. Which of the following is a negatively charged bidentate ligand ?

(1) Dimethyl glyoximato (2) Cyano

(3) Ethylene diamine (4) Acetato

49. The secondary valency of platinum in tetra ammine dichloroplatinum (IV) chloride is

(1) +4 (2) +2

(3) 3 (4) 6

50. Which one of the following has a magnetic moment of 1.75 BM ?

(1) Ti^{3+} (2) V^{3+}

(3) Cr^{3+} (4) Fe^{3+}

51. The correct order of ionisation energy of C, N, O & F is

(1) F < N < C < O (2) C < N < O < F

(3) C < O < N < F (4) F < O < N < C

52. The correct set of four quantum numbers for the outermost electron of sodium (Z = 11) is

(1) $3, 1, 0, \frac{1}{2}$ (2) $3, 1, 1, \frac{1}{2}$

(3) $3, 2, 1, \frac{1}{2}$ (4) $3, 0, 0, \frac{1}{2}$

Space For Rough Work

53. The ore that is concentrated by the Froth Floatation process is

(1) Chalcopyrites (2) Cryolite

(3) Cuprite (4) Calamine

54. The equivalent mass of a certain bivalent metal is 20. The molecular mass of its anhydrous chloride is

(1) 91 (2) 111

(3) 55.5 (4) 75.5

55. 2 moles of $N_2O_{4(g)}$ is kept in a closed container at 298 K and under 1 atm pressure. It is heated to 596 K when 20% by mass of $N_2O_{4(g)}$ decomposes to NO_2. The resulting pressure is

(1) 2.4 atm (2) 1.2 atm

(3) 4.8 atm (4) 2.8 atm

56. Sucrose is NOT a reducing sugar since

(1) it is chemically stable

(2) it contains no free aldehyde or keto group adjacent to a $\diagdown$CHOH$\diagup$ group

(3) it is built up of a fructose unit

(4) it is optically active

Space For Rough Work

57. Which one of the following contains ionic, covalent and co-ordinate bonds ?

(1) NaOH (2) NaCl

(3) NaCN (4) NaNC

58. Dialysis can be used to separate

(1) glucose & fructose (2) protein & starch

(3) glucose & protein (4) glucose & NaCl

59. The percentage of p-character of the hybrid orbitals in graphite and diamond are respectively :

(1) 33 and 25 (2) 50 and 75

(3) 67 and 75 (4) 33 and 75

60. A gas expands from a volume of 1 m^3 to a volume of 2 m^3 against an external pressure of 10^5 Nm^{-2}. The work done by the gas will be

(1) 10^5 kJ (2) 10^2 kJ

(3) 10^2 J (4) 10^3 J

Space For Rough Work

SEAL

A-1

SEAL

SEAL

SEAL

SUBJECT : BIOLOGY	DAY – 1
SESSION : MORNING	TIME : 10.30 A.M. TO 11.50 A.M.

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
60	80 MINUTES	70 MINUTES

MENTION YOUR CET NUMBER	QUESTION BOOKLET DETAILS	
	VERSION CODE	SERIAL NUMBER
	A - 1	127857

DOs :

1. Check whether the CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. This Question Booklet is issued to you by the invigilator after the **2nd Bell i.e., after 10.30 a.m.**
3. The Serial Number of this question booklet should be entered on the OMR answer sheet.
4. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
5. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'TS :

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. The **3rd Bell rings at 10.40 a.m., till then;**
   - Do not remove the paper seals present on all the 3 sides of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

SEAL

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 60 questions and each question will have one statement and four distracters. (Four different options / choices.)
2. After the **3rd Bell is rung at 10.40 a.m.,** remove the paper seals of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 70 minutes:
   - Read each question carefully.
   - Choose the correct answer from out of the four available distracters (options / choices) given under each question / statement.
   - **Completely darken / shade the relevant circle with a BLUE OR BLACK INK BALL POINT PEN against the question number on the OMR answer sheet.**

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[Turn Over

SEAL

1. Which of the following is **not** a character of cancerous tissues in our body ?

(1) Contact inhibition (2) Neoplasia

(3) Metastasis (4) Inability for differentiation

2. Which of the following statements is **not true** for *Nostoc* ?

(1) It is prokaryotic (2) It is autotrophic

(3) It is filamentous (4) It is macroscopic

3. The system of classification of plants proposed by these two botanists is claimed to be a natural system.

(1) Engler and Prantl (2) Bentham and Hooker

(3) Aristotle and Theophrastus (4) Darwin and Wallace

4. Match the entries in Column I with those of Column II and choose the correct answer :

Column I (Name of pollination)	**Column II** (Type of pollination)
(a) Cleistogamy	(m) Insect pollination
(b) Geitonogamy	(n) Bud pollination
(c) Entomophily	(o) Pollination between flowers in the same plant
(d) Xenogamy	(p) Wind pollination
	(q) Cross pollination

(1) a – o; b – m; c – q; d – n (2) a – m; b – q; c – n; d – o

(3) a – n; b – o; c – m; d – q (4) a – q; b – p; c – o; d – n

Space For Rough Work

5. The host for *Cercospora personata* belongs to this family of angiosperms :

(1) Graminae (2) Leguminosae

(3) Malvaceae (4) Asclepiadaceae

6. The final stage in the tissue culture programme before the new plants are taken out for cultivation in the fields is known as :

(1) Micropropagation (2) Hardening

(3) Caulogenesis (4) Embryogenesis

7. An osmometer is filled with 0.5 M solution of NaCl in water. In which of the following solutions it must be immersed in order to make it shrink ?

(1) 0.5 M solution (2) 0.05 M solution

(3) Distilled water (4) 0.75 M solution

8. Perishable vegetables can be maintained fresh for a longer period by spraying on them with a solution of :

(1) ABA (2) Cytokinin

(3) Ethephon (4) Phenyl mercuric acetate

9. The prebiotic atmosphere of the earth was of a reducing nature. It was transformed into an oxidizing atmosphere of present day due to the emergence of :

(1) Cyanobacteria (2) Angiosperms

(3) Photosynthetic bacteria (4) Eukaryotic algae

Space For Rough Work

10. Match the contraceptive methods given under Column – I with their examples given under Column – II. Select the correct choice from those given below :

	Column – I (Contraceptive Method)		Column – II (Examples)
A.	Chemical	p.	Tubectomy and Vasectomy
B.	IUDs	q.	Copper T and Loop
C.	Barriers	r.	Condom and Cervical cap
D.	Sterilization	s.	Spermicidal Jelly and foam
		t.	Coitus interruptus and calendar method

(1) A = s, B = q, C = r, D = p (2) A = s, B = t, C = q, D = r

(3) A = p, B = r, C = q, D = t (4) A = s, B = q, C = t, D = p

11. One of the following movements in our body is not completely involuntary. Identify it.

(1) Deglutition (2) Peristalsis

(3) Systole of the ventricles (4) Dilation of pupil of the eye

12. This is **not** a GMO.

(1) Bt brinjal (2) Golden rice

(3) Tracy (4) Dolly

13. The site of Krebs cycle is

(1) Cytoplasm

(2) Mitochondrial matrix

(3) Intermembrane space of mitochondria

(4) Racker's particles

14. Which is the cutting organ in the mouth parts of cockroach ?

(1) Labium (2) Maxillary palp

(3) Mandible (4) Labrum

Space For Rough Work

15. If this enzyme were to be absent in our small intestine, digestion of proteins in our body would be severely affected.

(1) Pancreatic amylase (2) Maltase

(3) Lipase (4) Enterokinase

16. The frequency of heart beat in our body is maintained by :

(1) AV Node (2) SA Node

(3) Node of Ranvier (4) Chordae tendinae

17. Hypothalamus of the brain is **not** involved in this function :

(1) Sleep-wake cycle

(2) Osmoregulation & thirst

(3) Temperature control

(4) Accuracy of muscular movement

18. The Hardy-Weinburg principle **cannot** operate if

(1) the population is very large

(2) frequent mutations occur in the population

(3) the population has no chance of interaction with other populations

(4) free interbreeding occurs among all members of the population

19. The adult animal in this phylum is radially symmetrical; but its larva exhibits bilateral symmetry :

(1) Echinodermata (2) Coelenterata

(3) Arthropoda (4) Protozoa

20. Identify the sense codon from the following :

(1) UGA (2) AUG

(3) UAG (4) UAA

Space For Rough Work

21. Select a suitable name for this process :

$C_6H_{12}O_6 + 2ADP + 2Pi \longrightarrow 2C_2H_5OH + 2ATP + 2CO_2\uparrow$

(1) Alcoholic fermentation (2) Photorespiration

(3) Lactate fermentation (4) Aerobic respiration

22. The condition of erythroblastosis foetalis occurs **only when**

(1) the husband is Rh^+ and wife is Rh^-

(2) the husband is Rh^- and wife is Rh^+

(3) the mother is Rh^+ and the foetus is Rh^-

(4) the mother is Rh^- and the foetus is Rh^+

23. This is a nonbiodegradable pollutant :

(1) Sewage (2) Sulphur dioxide

(3) Oxides of nitrogen (4) Lead vapour

24. The time for optimum chances of conception in a woman is _____ starting from the day of menstruation.

(1) 1^{st} day (2) 4^{th} day

(3) 14^{th} day (4) 26^{th} day

25. The fourth cleavage plane during development of frog's egg is

(1) Double meridional (2) Single meridional

(3) Single latitudinal (4) Double latitudinal

Space For Rough Work

26. Which of the following parts of the vertebrate body arises from the mesoderm ?

(1) Spinal cord
(2) Bony skeleton
(3) Epidermis
(4) Lens of the eye

27. Point out the correct method of showing scientific name of coconut palm derived by binomial nomenclature :

(1) *Cocos nucifera*
(2) *Cocos Nucifera*
(3) *cocos Nucifera*
(4) *cocos nucifera*

28. Find out the **wrong** statement about angiosperm roots :

(1) Cuticle is absent in young stages.
(2) The apex is protected by root cap.
(3) Vascular bundles are collateral.
(4) Xylem is centripetal in growth in the young roots.

29. Given below is the floral diagram of a flower. Which of the following descriptions of the flower matches the floral diagram ?

(1) Heterochlamydeous, gamopetalous, pentamerous and bisexual
(2) Heterochlamydeous, gamopetalous, tetramerous and bisexual
(3) Homochlamydeous, polypetalous, pentamerous and bisexual
(4) Homochlamydeous, gamopetalous, tetramerous and unisexual

Space For Rough Work

30. An interconnecting membranous network of the cell composed of vesicles, flattened sacs and tubules is :

(1) Nucleus (2) Mitochondrion

(3) Endoplasmic reticulum (4) Lysosome

31. Read the statements given below and identify the **incorrect** statement.

(1) Scientific names are used all over the world.

(2) Scientific names are often descriptive and tell us some important character of an organism.

(3) Scientific names indicate relationship between species.

(4) Scientific names favour multiple naming for the same kind of an organism.

32. The Lac Operon is turned on when allolactose molecules bind to :

(1) Promoter site (2) Operator site

(3) mRNA (4) Repressor protein

33. Fearing that the child to be born may have a genetic disorder, a couple goes to a doctor. Which one of the following techniques is likely to be suggested by the doctor to cure the genetic disorder ?

(1) Hybridoma technology (2) Gene therapy

(3) r DNA technology (4) Embryo transfer

34. Select the group having only buffalo breeds of India from the following :

(1) Surti, Mehsana, Murrah, Nagapuri

(2) Mehsana, Murrah, Nagapuri, Haryana

(3) Murrah, Nagapuri, Haryana, Ongole

(4) Nagapuri, Haryana, Ongole, Sindhi

Space For Rough Work

35. With regard to the ABO blood typing system, if a man who has type B blood and a woman who has type O blood were to have children, what blood types could the children have ?

(1) A or O
(2) B or O
(3) AB or O
(4) A, B, AB or O

36. Secretin and Cholecystokinin are the hormones secreted in :

(1) Pyloric stomach
(2) Duodenum
(3) Ileum
(4) Oesophagus

37. Carbon dioxide is called a "greenhouse" gas, because

(1) it is involved in photosynthesis
(2) it emits light
(3) it traps Infrared radiations
(4) it traps Ultraviolet radiations

38. A fruit that develops from a single flower with a syncarpous pistil is :

(1) Simple fruit
(2) Aggregate fruit
(3) Multiple fruit
(4) Pseudocarp

39. The volume of blood that enters into the aorta with each ventricular systole is called :

(1) Cardiac cycle
(2) Stroke volume
(3) Cardiac output
(4) Vital capacity

Space For Rough Work

40. The chromosomal complement of individuals with Turner's syndrome is :

(1) 44A + XX (2) 44A + XY

(3) 44A + XO (4) 44A + XXY

41. Choose the mismatched pair from the following :

(1) Insulin – Gluconeogenesis

(2) Glucagon – Glycogenolysis

(3) Oxytocin – Contraction of uterine muscles

(4) Prolactin – Milk production in mammary glands

42. One of the following **is not a** wildlife conservation project :

(1) Project Dodo (2) Project Indian Bustard

(3) Project Tiger (4) Project Hangul

43. Visible expression of the genetic phenomenon of crossing over is called

(1) Recombination (2) Condensation

(3) Chiasmata (4) Spiralization

44. 3′AAA TGC GCG ATA 5′ is the sequence of nucleotides on a gene; after transcription the mRNA formed against it and the sequence of bases in the corresponding binding anticodon will be :

(1) 5′UUU ACG CGC UAU 3′ and 3′AAA–UGC–GCG–AUA5′

(2) 5′UAU CGC GCA UUU 3′ and 3′AUA–GCG–CGU–AAA5′

(3) 5′UUU ACC TUG UAU 3′ and 3′AAA–UGG–UAC–AUA5′

(4) 5′UAU GUT CCA UUU 3′ and 3′AUA–CAU–GGU–AAA5′

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45. Secondary cortex is also known as :

(1) Phellem (2) Phelloderm

(3) Phellogen (4) Bark

46. Pteridophytes are called vascular cryptogams, because they are non-seeded plants containing :

(1) Xylem and Phloem (2) Only Xylem

(3) Only Phloem (4) Neither Xylem nor Phloem

47. The enzymes which are absolutely necessary for recombinant DNA technology are :

(1) Restriction endonucleases and topoisomerases

(2) Endonucleases and polymerases

(3) Restriction endonucleases and Ligases

(4) Peptidases and Ligases

48. Stomata on the surface of the leaf open by :

(1) decreasing the solute concentration in the guard cells

(2) increasing the solute concentration in the guard cells

(3) weakening of the cell walls of the guard cells to allow them to stretch

(4) increasing the water potential in the guard cells

Space For Rough Work

49. Read the two statements A and B and identify the correct choice from those given :

Statement A : *Agrobacterium tumefaciens* is the causative agent of crown gall disease of dicots.

Statement B : *Agrobacterium tumefaciens* cause infection by entering the plant through wounds and injuries.

(1) Statement A is correct and B is wrong.

(2) Statement B is correct and A is wrong.

(3) Both statements A and B are correct.

(4) Both statements A and B are wrong.

50. Which of the following is the correct pathway of absorbed water in the roots of plants ?

(1) Soil water → root hair cell → cortical cells → pericycle → passage cells → xylem.

(2) Soil water → root hair cell → passage cells → cortical cells → xylem → pericycle.

(3) Soil water → root hair cell → pericycle → cortical cells → passage cells → xylem.

(4) Soil water → root hair cell → cortical cells → passage cells → pericycle → xylem.

51. Usually the whorl in a flower that attracts insects and protects the essential parts is :

(1) Calyx (2) Androecium

(3) Gynoecium (4) Corolla

52. Vein loading is the active transport of sugars from :

(1) Mesophyll cells to vessels

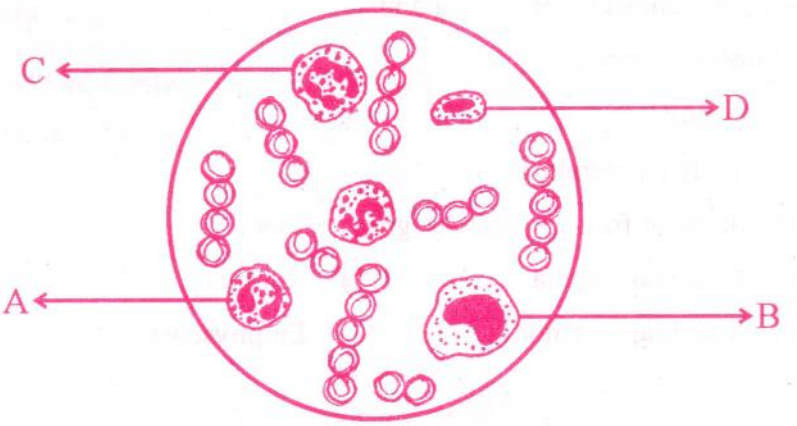
(2) Vessels to mesophyll cells

(3) Mesophyll cells to sieve tubes

(4) Sieve tubes to mesophyll cells

Space For Rough Work

53. Study the diagram given below and identify the cells labelled as A, B, C and D, and choose the correct option.



(1) A = Eosinophil, B = Erythrocyte, C = Neutrophil and D = Basophil

(2) A = Eosinophil, B = Lymphocyte, C = Neutrophil and D = Monocyte

(3) A = Erythrocyte, B = Basophil, C = Neutrophil and D = Lymphocyte

(4) A = Eosinophil, B = Monocyte, C = Neutrophil and D = Lymphocyte

54. The sexually transmitted disease, that can affect both the male and the female genitals and may damage the eyes of babies born of infected mothers is

(1) AIDS (2) Syphilis

(3) Gonorrhoea (4) Hepatitis

55. Chemiosmotic theory of ATP synthesis in the mitochondrion is based on

(1) Ca^+ gradient (2) K^+ gradient

(3) H^+ gradient (4) Na^+ gradient

Space For Rough Work

56. Following are few characters of a disorder in human body :

(a) inflammation of the mucous membrane of nasal passage

(b) watery secretions by mucous glands

(c) continuous sneezing

(d) eye watering

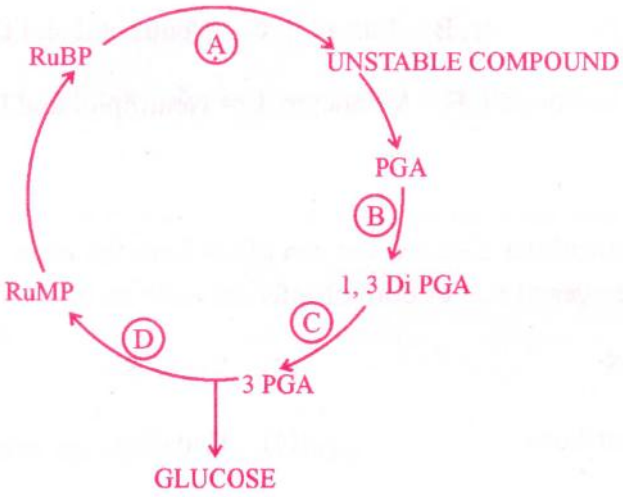
(e) rise in body temperature

Identify the disorder from the choices given below :

(1) Bronchial asthma (2) Rhinitis

(3) Bronchial carcinoma (4) Emphysema

57. In a condensed schematic representation of Dark reaction of photosynthesis given below, steps are indicated by alphabets. Select the option where the alphabets are correctly identified.



(1) A = CO_2 fixation, B = Reduction, C = Phosphorylation, D = Regeneration.

(2) A = Regeneration, B = CO_2 fixation, C = Reduction, D = Phosphorylation.

(3) A = CO_2 fixation, B = Phosphorylation, C = Reduction, D = Regeneration.

(4) A = CO_2 fixation, B = Phosphorylation, C = Regeneration, D = Reduction.

Space For Rough Work

58. Match the plants of economic importance given under Column I with their scientific names given under Column II and choose the correct option.

	Column I (Plants of Economic importance)		Column II (Scientific names)
A.	Spices	p.	*Syzigium aromaticum*
B.	Pulses	q.	*Cajanus cajan*
C.	Medicinal	r.	*Adathoda vasica*
D.	Cereals	s.	*Sorghum vulgare*
		t.	*Thea chinensis*

(1) A = p, B = r, C = s, D = t (2) A = p, B = s, C = r, D = q

(3) A = t, B = r, C = q, D = p (4) A = p, B = q, C = r, D = s

59. If father shows normal genotype and mother shows a carrier trait for haemophilia :

(1) All the female offspring will be normal.

(2) All the female offspring will be carriers.

(3) A male offspring has 50% chances of active disease.

(4) Female offspring has probability of 50% to have active disease.

60. According to Best and Taylor's Theory, which of the following does not play any role in blood clotting ?

(1) Prothrombin (2) Fibrinogen

(3) Platelets (4) Calcium ions

Space For Rough Work

SEAL

SEAL

A-1

SEAL