1

SUBJECT	TIME
PHYSICS	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	009281

DO's :

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.
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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 MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED/SPOILED.**
2. Until the 3rd Bell is rung at 10.40 a.m.:
   - Do not remove the seal / staple present on the right hand side of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

SEAL

INSTRUCTIONS TO CANDIDATES

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

4. Please note that even a minute unintended ink dot on the OMR 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 AND 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.
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8. After separating and retaining the top sheet (KEA 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.

P

1. The number of significant figures in the numbers 4.8000×10^4 and 48000.50 are respectively

(1) 5 and 7 (2) 2 and 7

(3) 2 and 6 (4) 5 and 6

2. β-decay means emission of electron from

(1) a stable nucleus (2) outermost electron orbit

(3) radioactive nucleus (4) innermost electron orbit

3. An electric heater rated 220 V and 550 W is connected to A.C. mains. The current drawn by it is

(1) 2.5 A (2) 0.4 A

(3) 1.25 A (4) 0.8 A

4. A body of mass 'm' moving along a straight line covers half the distance with a speed of 2 ms^{-1}. The remaining half of the distance is covered in two equal time intervals with a speed of 3 ms^{-1} and 5 ms^{-1} respectively. The average speed of the particle for the entire journey is

(1) $\frac{8}{3}$ ms^{-1} (2) $\frac{4}{3}$ ms^{-1}

(3) $\frac{16}{3}$ ms^{-1} (4) $\frac{3}{8}$ ms^{-1}

5. The moment of inertia of a circular ring of radius 'r' and mass 'M' about diameter is

(1) $\frac{Mr^2}{4}$ (2) $\frac{Mr^2}{2}$

(3) $\frac{Mr^2}{12}$ (4) $\frac{2}{5}Mr^2$

6. A body of mass 0.05 kg is observed to fall with an acceleration of 9.5 ms^{-2}. The opposing force of air on the body is _____ ($g = 9.8$ ms^{-2}).

(1) 0.15 N (2) 0.030 N

(3) Zero (4) 0.015 N

Space For Rough Work

7. The colloidal solution in which both the dispersed phase and dispersion medium are liquids called

(1) gels (2) foams

(3) liquid crystals (4) emulsions

8. In fog, photographs of the objects taken with infra-red radiations are more clear than those obtained during visible light because

(1) scattering of I-R light is more than visible light

(2) the intensity of I-R light from the object is less

(3) scattering of I-R light is less than visible light

(4) I-R radiation has lesser wavelength than visible radiation

9. Three concurrent co-planar forces 1 N, 2 N and 3 N acting along different directions on a body

(1) can keep the body in equilibrium if 1 N and 2 N act at right angles.

(2) cannot keep the body in equilibrium.

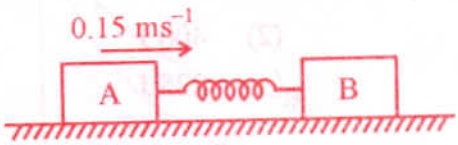
(3) can keep the body in equilibrium if 1 N and 3 N act at an acute angle.

(4) can keep the body in equilibrium if 2 N and 3 N act at right angles.

10. Sound waves transfer

(1) energy (2) momentum

(3) both energy and momentum (4) only energy not momentum

11. 

Two rectangular blocks A and B of masses 2 kg and 3 kg respectively are connected by a spring of spring constant 10.8 Nm^{-1} are placed on a frictionless horizontal surface. The block 'A' was given an initial velocity of 0.15 ms^{-1} in the direction shown in the figure. The maximum compression of the spring during the motion is

(1) 0.02 m (2) 0.05 m

(3) 0.03 m (4) 0.01 m

Space For Rough Work

12. G.P. Thomson experimentally confirmed the existence of matter waves by the phenomena

(1) refraction (2) polarisation

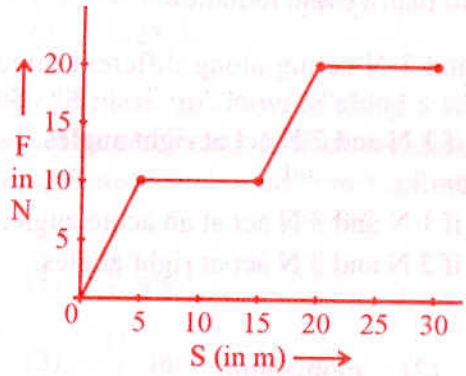
(3) scattering (4) diffraction

13. The resistance of a wire at 300 K is found to be 0.3 Ω. If the temperature co-efficient of resistance of wire is $1.5 \times 10^{-3}\ K^{-1}$, the temperature at which the resistance becomes 0.6 Ω is

(1) 345 K (2) 993 K

(3) 690 K (4) 720 K

14.



The work done by a force acting on a body is as shown in the graph. The total work done in covering an initial distance of 20 m is

(1) 200 J (2) 400 J

(3) 175 J (4) 225 J

15. Two luminous point sources separated by a certain distance are at 10 km from an observer. If the aperture of his eye is 2.5×10^{-3} m and the wavelength of light used is 500 nm, the distance of separation between the point sources are just seen to be resolved is

(1) 24.4 m (2) 2.44 m

(3) 1.22 m (4) 12.2 m

Space For Rough Work

16. A door of 1.6 m wide requires a force of 1 N to be applied at the free end to open or close it. The force that is required at a point 0.4 m distant from the hinges for opening or closing the door is

(1) 3.6 N (2) 2.4 N
(3) 4 N (4) 1.2 N

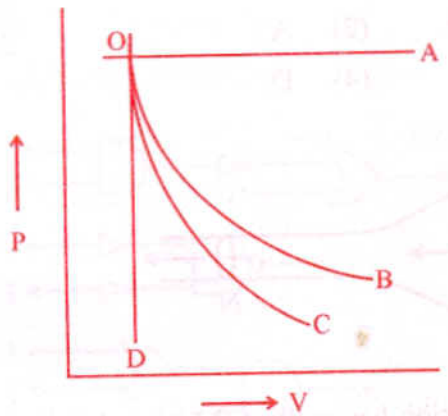
17. 0.1 m^3 of water at 80 °C is mixed with 0.3 m^3 of water at 60 °C. The final temperature of the mixture is

(1) 70 °C (2) 60 °C
(3) 75 °C (4) 65 °C

18. The spectral series of the hydrogen atom that lies in the visible region of the electromagnetic spectrum

(1) Balmer (2) Lyman
(3) Brackett (4) Paschen

19.



A graph of pressure versus volume for an ideal gas for different processes is as shown. In the graph curve OC represents

(1) isothermal process (2) isobaric process
(3) adiabatic process (4) isochoric process

Space For Rough Work

20. Which of the following statement does **not** hold good for thermal radiation ?

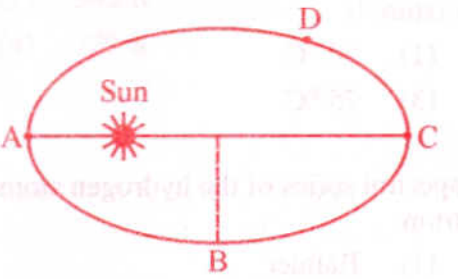
(1) The frequency changes when it travels from one medium to another.

(2) The speed changes when it travels from one medium to another.

(3) They travel in straight line in a given medium.

(4) The wavelength changes when it travels from one medium to another.

21.

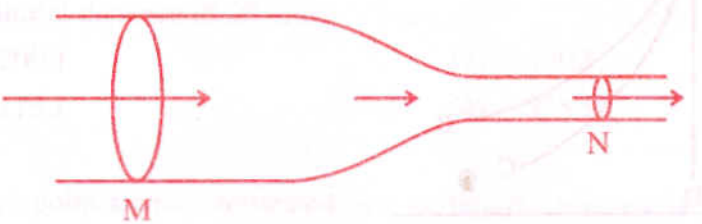


A planet revolves round the Sun in an elliptical orbit. The linear speed of the planet will be maximum at

(1) B (2) A

(3) C (4) D

22.



Horizontal tube of non-uniform cross-section has radii of 0.1 m and 0.05 m respectively at M and N. For a streamline flow of liquid the rate of liquid flow is

(1) greater at M than at N (2) greater at N than at M

(3) same at M and N (4) continuously changes with time

Space For Rough Work

23. A resistor and a capacitor are connected in series with an a.c. source. If the potential drop across the capacitor is 5 V and that across resistor is 12 V, the applied voltage is

(1) 17 V (2) 5 V

(3) 12 V (4) 13 V

24. The amount of heat energy radiated by a metal at temperature 'T' is 'E'. When the temperature is increased to 3T, energy radiated is

(1) 9 E (2) 3 E

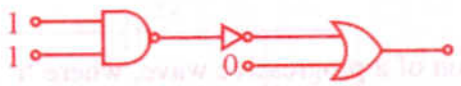
(3) 27 E (4) 81 E

25. The angle of minimum deviation for an incident light ray on an equilateral prism is equal to its refracting angle. The refractive index of its material is

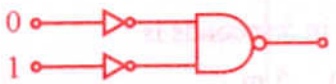
(1) $\sqrt{3}$ (2) $\frac{\sqrt{3}}{2}$

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

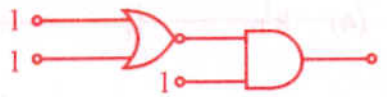
26. (A)



(B)



(C)



In the following combination of logic gates, the outputs of A, B and C are respectively

(1) 0, 1, 0 (2) 1, 1, 0

(3) 1, 0, 1 (4) 0, 1, 1

Space For Rough Work

27. A stationary point source of sound emits sound uniformly in all directions in a non-absorbing medium. Two points P and Q are at a distance of 4 m and 9 m respectively from the source. The ratio of amplitudes of the waves at P & Q is

(1) $\frac{4}{9}$ (2) $\frac{2}{3}$

(3) $\frac{9}{4}$ (4) $\frac{3}{2}$

28. A galvanometer of resistance 240 Ω allows only 4% of the main current after connecting a shunt resistance. The value of the shunt resistance is

(1) 20 Ω (2) 8 Ω

(3) 5 Ω (4) 10 Ω

29. The phenomena in which proton flips is

(1) lasers (2) radioactivity

(3) nuclear fusion (4) nuclear magnetic resonance

30. $y = 3 \sin \pi \left(\frac{t}{2} - \frac{x}{4}\right)$ represents an equation of a progressive wave, where 't' is in second and 'x' is in metre. The distance travelled by the wave in 5 seconds is

(1) 10 m (2) 5 m

(3) 32 m (4) 8 m

31. According to the quark model, it is possible to build all the hadrons using

(1) 3 quarks and 2 antiquarks (2) 3 quarks and 3 antiquarks

(3) 2 quarks and 2 antiquarks (4) 2 quarks and 3 antiquarks

Space For Rough Work

32. An α-particle of mass 6.4×10^{-27} kg and charge 3.2×10^{-19} C is situated in a uniform electric field of 1.6×10^{5} V m^{-1}. The velocity of the particle at the end of 2×10^{-2} m path when it starts from rest is

(1) 8×10^{5} ms^{-1} (2) 16×10^{5} ms^{-1}

(3) $4\sqrt{2} \times 10^{5}$ ms^{-1} (4) $2\sqrt{3} \times 10^{5}$ ms^{-1}

33. A cylindrical tube open at both the ends has a fundamental frequency of 390 Hz in air. If $1/4^{th}$ of the tube is immersed vertically in water the fundamental frequency of air column is

(1) 130 Hz (2) 390 Hz

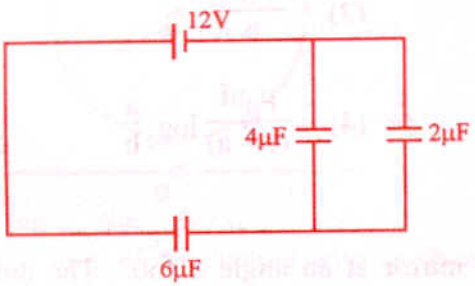
(3) 520 Hz (4) 260 Hz

34. The surface temperature of the stars is determined using

(1) Wein's displacement law (2) Rayleigh-Jeans law

(3) Kirchoff's law (4) Planck's law

35.



The charge deposited on 4 μF capacitor in the circuit is

(1) 12×10^{-6} C (2) 24×10^{-6} C

(3) 36×10^{-6} C (4) 6×10^{-6} C

Space For Rough Work

36. A parallel beam of light is incident on a converging lens parallel to its principal axis. As one moves away from the lens on the other side of the principal axis, the intensity of light

(1) continuously increases

(2) continuously decreases

(3) first increases and then decreases

(4) first decreases and then increases

37. Continuous emission spectrum is produced by

(1) Mercury vapour lamp (2) Sodium vapour lamp

(3) The Sun (4) Incandescent electric lamp

38. A coil of 'n' number of turns is wound tightly in the form of a spiral with inner and outer radii 'a' and 'b' respectively. When a current of strength I is passed through the coil, the magnetic field at its centre is

(1) $\frac{\mu_0 nI}{2(b-a)}$ (2) $\frac{2\mu_0 nI}{b}$

(3) $\frac{\mu_0 nI}{2(b-a)} \log_e \frac{b}{a}$ (4) $\frac{\mu_0 nI}{(b-a)} \log_e \frac{a}{b}$

39. A ray of light is incident on a plane mirror at an angle of 60°. The angle of deviation produced by the mirror is

(1) 30° (2) 60°

(3) 90° (4) 120°

Space For Rough Work

40. The electric potential at any point x, y, z in metres is given by $V = 3x^2$. The electric field at a point (2 m, 0, 1 m) is

(1) $-6\ V\ m^{-1}$ (2) $6\ V\ m^{-1}$

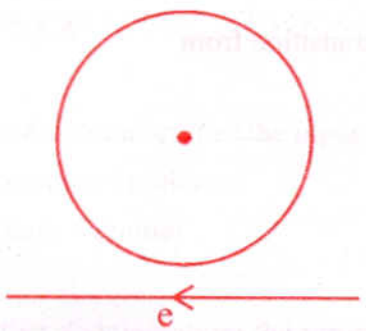
(3) $-12\ V\ m^{-1}$ (4) $12\ V\ m^{-1}$

41. Young's double slit experiment gives interference fringes of width 0.3 mm. A thin glass plate made of material of refractive index 1.5 is kept in the path of light from one of the slits, then the fringe width becomes

(1) 0.3 mm (2) 0.45 mm

(3) 0.15 mm (4) zero

42.



Near a circular loop of conducting wire as shown in the figure an electron moves along a straight line. The direction of the induced current if any in the loop is

(1) clockwise (2) anticlockwise

(3) zero (4) variable

Space For Rough Work

43. Hydrogen atom from excited state comes to the ground state by emitting a photon of wavelength λ. If R is the Rydberg constant, the principal quantum number 'n' of the excited state is

(1) $\sqrt{\frac{\lambda}{\lambda R - 1}}$ (2) $\sqrt{\frac{\lambda R^2}{\lambda R - 1}}$

(3) $\sqrt{\frac{\lambda R}{\lambda - 1}}$ (4) $\sqrt{\frac{\lambda R}{\lambda R - 1}}$

44. The magnetic dipole moment of a current loop is independent of

(1) number of turns

(2) area of the loop

(3) current in the loop

(4) magnetic field in which it is lying

45. In ruby laser, the stimulated emission is due to transition from

(1) any higher state to lower state

(2) metastable state to ground state

(3) any higher state to ground state

(4) metastable state to any lower state

46. A direct current I flows along the length of an infinitely long straight thin walled pipe, then the magnetic field

(1) is zero only along the axis of the pipe

(2) is zero at any point inside the pipe

(3) is maximum at the centre and minimum at the edges

(4) is uniform throughout the pipe but not zero

Space For Rough Work

47. A convex lens made of glass has focal length 0.15 m in air. If the refractive index of glass is $^3/_2$ and that of water is $^4/_3$, the focal length of lens when immersed in water is

(1) 0.15 m (2) 0.30 m

(3) 0.6 m (4) 0.45 m

48. Two sources are said to be coherent if they produce waves

(1) of equal wavelength

(2) of equal speed

(3) having same shape of wave front

(4) having a constant phase difference

49. Three resistors 1 Ω, 2 Ω, and 3 Ω are connected to form a triangle. Across 3 Ω resistor a 3 V battery is connected. The current through 3 Ω resistor is

(1) 1 A (2) 2 A

(3) 1.5 A (4) 0.75 A

50. In a common emitter amplifier the input signal is applied across

(1) emitter – collector (2) collector – base

(3) base – emitter (4) anywhere

51. In a radioactive disintegration, the ratio of initial number of atoms to the number of atoms present at an instant of time equal to its mean life is

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

(3) e^2 (4) $\frac{1}{e^2}$

Space For Rough Work

52. A ray of light is incident on a surface of glass slab at an angle 45°. If the lateral shift produced per unit thickness is $\frac{1}{\sqrt{3}}$ m, the angle of refraction produced is

(1) $\tan^{-1}\left(1-\sqrt{\frac{2}{3}}\right)$ (2) $\sin^{-1}\left(1-\sqrt{\frac{2}{3}}\right)$

(3) $\tan^{-1}\left(\sqrt{\frac{2}{\sqrt{3}-1}}\right)$ (4) $\tan^{-1}\left(\frac{\sqrt{3}}{2}\right)$

53. Ferromagnetic materials used in a transformer must have

(1) high permeability and low hysterisis loss

(2) high permeability and high hysterisis loss

(3) low permeability and low hysterisis loss

(4) low permeability and high hysterisis loss

54. According to Newton's Corpuscular Theory, the speed of light is

(1) lesser in rarer medium (2) lesser in denser medium

(3) independent of the medium (4) same in all the media

55. For the constructive interference the path difference between the two interfering waves must be equal to

(1) $2n\pi$ (2) $n\lambda$

(3) $(2n+1)\frac{\lambda}{2}$ (4) $(2n+1)\lambda$

Space For Rough Work

56. The accurate measurement of emf can be obtained using

(1) Voltmeter (2) Voltameter

(3) Potentiometer (4) Multimeter

57. The kinetic energy of an electron gets tripled, then the de-Broglie wavelength associated with it changes by a factor

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

(3) 3 (4) $\frac{1}{3}$

58. Which of the following is not a thermodynamic co-ordinate ?

(1) Pressure (P) (2) Volume (V)

(3) Temperature (T) (4) Gas constant (R)

59. Two solid pieces, one of steel and the other of aluminium when immersed completely in water have equal weights. When the solid pieces are weighed in air

(1) steel piece will weigh more

(2) they have the same weight

(3) aluminium piece will weigh more

(4) the weight of aluminium is half the weight of steel

60. The amount of energy released when one microgram of matter is annihilated is

(1) 9×10^{10} kWh (2) 3×10^{10} kWh

(3) 0.5×10^{5} kWh (4) 0.25×10^{5} kWh

Space For Rough Work

1

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C

1. The ore that is concentrated by Froth Floatation process is

(1) Bauxite (2) Malachite

(3) Zincite (4) Cinnabar

2. The correct set of four Quantum numbers for outermost electron of Potassium (Z = 19) is

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

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

3. A body of mass x kg is moving with a velocity of 100 ms^{-1}. Its de Broglie wavelength is 6.62×10^{-35}m. Hence x is ($h = 6.62 \times 10^{-34}$ Js)

(1) 0.15 kg (2) 0.2 kg

(3) 0.1 kg (4) 0.25 kg

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

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

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

5. The oxide of an element whose electronic configuration is $1s^2\ 2s^2\ 2p^6\ 3s^1$ is

(1) Basic (2) Acidic

(3) Neutral (4) Amphoteric

Space For Rough Work

6. The characteristic not related to alkali metal is

(1) low melting point

(2) low electronegativity

(3) high ionisation energy

(4) their ions are isoelectronic with noble gases

7. Among the following, the compound that contains ionic, covalent and coordinate linkage is

(1) $NaCl$ (2) CaO

(3) NH_3 (4) NH_4Cl

8. A covalent molecule AB_3 has pyramidal structure. The number of lone pair and bond pair electrons in the molecule are respectively

(1) 3 and 1 (2) 1 and 3

(3) 2 and 2 (4) 0 and 4

9. Excess of carbon dioxide is passed through 50 ml of 0.5 M calcium hydroxide solution. After the completion of the reaction, the solution was evaporated to dryness. The solid calcium carbonate was completely neutralised with 0.1 N Hydrochloric acid. The volume of Hydrochloric acid required is (At. mass of calcium = 40)

(1) 500 cm^3 (2) 400 cm^3

(3) 300 cm^3 (4) 200 cm^3

Space For Rough Work

10. A bivalent metal has an equivalent mass of 32. The molecular mass of the metal nitrate is

(1) 192 (2) 188

(3) 182 (4) 168

11. The r.m.s. velocity of molecules of a gas of density 4 kg m^{-3} and pressure 1.2×10^5 Nm^{-2} is

(1) 120 ms^{-1} (2) 600 ms^{-1}

(3) 300 ms^{-1} (4) 900 ms^{-1}

12. 0.5 mole of each of H_2, SO_2 and CH_4 are kept in a container. A hole was made in the container. After 3 hours, the order of partial pressures in the container will be

(1) $pH_2 > pSO_2 > pCH_4$ (2) $pH_2 > pCH_4 > pSO_2$

(3) $pSO_2 > pH_2 > pCH_4$ (4) $pSO_2 > pCH_4 > pH_2$

13. The enthalpy of formation of NH_3 is – 46 kJ mol^{-1}. The enthalpy change for the reaction :

$2NH_3(g) \longrightarrow N_2(g) + 3H_2(g)$ is

(1) +92 kJ (2) +46 kJ

(3) +184 kJ (4) +23 kJ

14. 5 moles of SO_2 and 5 moles of O_2 are allowed to react. At equilibrium, it was found that 60% of SO_2 is used up. If the partial pressure of the equilibrium mixture is one atmosphere, the partial pressure of O_2 is

(1) 0.21 atm (2) 0.41 atm

(3) 0.82 atm (4) 0.52 atm

Space For Rough Work

15. $2HI(g) \rightleftharpoons H_2(g) + I_2(g)$

The equilibrium constant of the above reaction is 6.4 at 300 K. If 0.25 mole each of H_2 and I_2 are added to the system, the equilibrium constant will be

(1) 3.2 (2) 1.6

(3) 6.4 (4) 0.8

16. Rate of physical adsorption increases with

(1) decrease in pressure (2) increase in temperature

(3) decrease in surface area (4) decrease in temperature

17. IUPAC name of $(CH_3)_3CCl$

(1) 2 chloro 2 methyl propane (2) t-butyl chloride

(3) n-butyl chloride (4) 3-chloro butane

18. Lucas test is associated with

(1) Carboxylic acid (2) Alcohols

(3) Aldehydes (4) Phenols

19. An organic compound on heating with CuO produces CO_2 but no water. The organic compound may be

(1) Methane (2) Ethyl iodide

(3) Carbon tetrachloride (4) Chloroform

Space For Rough Work

20. The condensation polymer among the following is

(1) PVC (2) Polyethene

(3) Rubber (4) Protein

21. The order of stability of metal oxides is

(1) $Fe_2O_3 < Cr_2O_3 < Al_2O_3 < MgO$

(2) $Fe_2O_3 < Al_2O_3 < Cr_2O_3 < MgO$

(3) $Al_2O_3 < MgO < Fe_2O_3 < Cr_2O_3$

(4) $Cr_2O_3 < MgO < Al_2O_3 < Fe_2O_3$

22. The temperature of the slag zone in the metallurgy of Iron using blast furnace is

(1) 400 – 700 °C

(2) 800 – 1000 °C

(3) 1200 – 1500 °C

(4) 1500 – 1600 °C

23. The function of $Fe(OH)_3$ in the contact process is

(1) to remove moisture

(2) to remove dust particles

(3) to remove arsenic impurity

(4) to detect colloidal impurity

Space For Rough Work

24. In which of the following, NH_3 is not used ?

(1) Group reagent for the analysis of IV group basic radical.

(2) Group reagent for the analysis of III group basic radical.

(3) Tollen's reagent

(4) Nessler's reagent

25. Argon is used

(1) in high temperature welding

(2) in radiotherapy for treatment of cancer

(3) in filling airships

(4) to obtain low temperature

26. The incorrect statement in respect of Chromyl chloride test is

(1) formation of Chromyl chloride

(2) liberation of Chlorine

(3) formation of red vapours

(4) formation of lead chromate

27. The magnetic moment of a transition metal ion is $\sqrt{15}$ B.M. Therefore the number of unpaired electrons present in it is

(1) 1 (2) 2

(3) 3 (4) 4

Space For Rough Work

28. The IUPAC name of $[Co(NH_3)_5\ ONO]^{2+}$ ion is

(1) Penta ammine nitro cobalt (III) ion

(2) Penta ammine nitro cobalt (IV) ion

(3) Penta ammine nitrito cobalt (IV) ion

(4) Penta ammine nitrito cobalt (III) ion

29. The oxidation state of Fe in the brown ring complex : $[Fe(H_2O)_5\ NO]SO_4$ is

(1) +2 (2) +1

(3) +3 (4) 0

30. The correct statement with regard to H_2^+ and H_2^- is

(1) H_2^- is more stable than H_2^+

(2) H_2^+ is more stable than H_2^-

(3) Both H_2^+ and H_2^- are equally stable

(4) Both H_2^+ and H_2^- do not exist

31. Arrange the following in the increasing order of their bond order :

O_2, O_2^+, O_2^- and O_2^{--}

(1) $O_2^+, O_2, O_2^-, O_2^{--}$ (2) $O_2, O_2^+, O_2^-, O_2^{--}$

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

Space For Rough Work

32. 2 gm of a radioactive sample having half life of 15 days was synthesised on 1st Jan 2009. The amount of the sample left behind on 1st March, 2009 (including both the days)

(1) 1 gm (2) 0.5 gm

(3) 0 gm (4) 0.125 gm

33. For a chemical reaction A $\rightarrow$ B, the rate of the reaction is 2×10^{-3} mol dm^{-3} s^{-1}, when the initial concentration is 0.05 mol dm^{-3}. The rate of the same reaction is 1.6×10^{-2} mol dm^{-3} s^{-1} when the initial concentration is 0.1 mol dm^{-3}. The order of the reaction is

(1) 3 (2) 1

(3) 2 (4) 0

34. For the decomposition of a compound AB at 600 K, the following data were obtained :

[AB] mol dm^{-3}	Rate of decomposition of AB in mol $dm^{-3}s^{-1}$
0.20	2.75×10^{-8}
0.40	11.0×10^{-8}
0.60	24.75×10^{-8}

The order for the decomposition of AB is

(1) 1 (2) 2

(3) 1.5 (4) 0

Space For Rough Work

35. The rate equation for a reaction : $A \rightarrow B$ is $r = K[A]^{\circ}$. If the initial concentration of the reactant is a mol dm^{-3}, the half life period of the reaction is

(1) $\frac{a}{K}$ (2) $\frac{2a}{K}$

(3) $\frac{a}{2K}$ (4) $\frac{K}{a}$

36. 30 cc of $\frac{M}{3}$ HCl, 20 cc of $\frac{M}{2}$ HNO_3 and 40 cc of $\frac{M}{4}$ NaOH solutions are mixed and the volume was made up to 1 dm^3. The pH of the resulting solution is

(1) 1 (2) 3

(3) 8 (4) 2

37. An aqueous solution containing 6.5 gm of $NaCl$ of 90% purity was subjected to electrolysis. After the complete electrolysis, the solution was evaporated to get solid NaOH. The volume of 1 M acetic acid required to neutralise NaOH obtained above is

(1) 100 cm^3 (2) 200 cm^3

(3) 1000 cm^3 (4) 2000 cm^3

38. The standard electrode potential for the half cell reactions are :

$Zn^{++} + 2e^- \longrightarrow Zn \quad E^{\circ} = -0.76$ V

$Fe^{++} + 2e^- \longrightarrow Fe \quad E^{\circ} = -0.44$ V

The E.M.F. of the cell reaction :

$Fe^{++} + Zn \longrightarrow Zn^{++} + Fe$ is

(1) +1.20 V (2) +0.32 V

(3) −0.32 V (4) −1.20 V

Space For Rough Work

39. 10^{-6} M NaOH is diluted 100 times. The pH of the diluted base is

(1) between 6 and 7 (2) between 10 and 11

(3) between 7 and 8 (4) between 5 and 6

40. In the electrolysis of acidulated water, it is desired to obtain 1.12 cc of Hydrogen per second under S.T.P. condition. The current to be passed is

(1) 19.3 Amp (2) 0.965 Amp

(3) 1.93 Amp (4) 9.65 Amp

41. The one which decreases with dilution is

(1) Specific conductance (2) Equivalent conductance

(3) Molar conductance (4) Conductance

42. Vapour pressure of pure 'A' is 70 mm of Hg at 25 °C. It forms an ideal solution with 'B' in which mole fraction of A is 0.8. If the vapour pressure of the solution is 84 mm of Hg at 25 °C, the vapour pressure of pure 'B' at 25 °C is

(1) 70 mm (2) 140 mm

(3) 28 mm (4) 56 mm

43. A 6% solution of urea is isotonic with

(1) 6% solution of Glucose (2) 25% solution of Glucose

(3) 1 M solution of Glucose (4) 0.05 M solution of Glucose

Space For Rough Work

44. In countries nearer to polar region, the roads are sprinkled with $CaCl_2$. This is

(1) to minimise pollution

(2) to minimise the accumulation of dust on the road

(3) to minimise the wear and tear of the roads

(4) to minimise the snow fall.

45. For the reaction $H_2O\ (l) \rightleftharpoons H_2O(g)$ at 373 K and one atmospheric pressure

(1) $\Delta H = T\Delta S$ (2) $\Delta H = \Delta E$

(3) $\Delta H = 0$ (4) $\Delta E = 0$

46. A compound of 'A' and 'B' crystallises in a cubic lattice in which the 'A' atoms occupy the lattice points at the corners of the cube. The 'B' atoms occupy the centre of each face of the cube. The probable empirical formula of the compound is

(1) AB (2) AB_3

(3) AB_2 (4) A_3B

47. In electrophillic aromatic substitution reaction, the nitro group is meta directing because it

(1) increases electron density at meta position

(2) increases electron density at ortho and para positions

(3) decreases electron density at ortho and para positions

(4) decreases electron density at meta position

Space For Rough Work

48. $CH_3COOH \xrightarrow{LiAlH_4} X \xrightarrow[300\,^\circ C]{Cu} Y \xrightarrow[NaOH]{dilute} Z$

In the above reaction Z is

(1) Ketol (2) Acetal

(3) Butanol (4) Aldol

49. The best method for the conversion of an alcohol into an alkyl chloride is by treating the alcohol with

(1) $SOCl_2$ in presence of pyridine

(2) Dry HCl in the presence of anhydrous $ZnCl_2$

(3) PCl_3

(4) PCl_5

50. The electrophile involved in the sulphonation of Benzene is

(1) H_3^+O (2) SO_3

(3) $S\overset{+}{O}_3$ (4) SO_3^{--}

51. The carbon-carbon bond length in Benzene is

(1) in between C_2H_6 and C_2H_2 (2) in between C_2H_4 and C_2H_2

(3) in between C_2H_6 and C_2H_4 (4) same as in C_2H_4

52. The compound which is not formed during the dry distillation of a mixture of calcium formate and calcium acetate is

(1) Propanone (2) Ethanal

(3) Methanal (4) Propanal

Space For Rough Work

53. An organic compound X is oxidised by using acidified $K_2Cr_2O_7$. The product obtained reacts with Phenyl hydrazine but does not answer silver mirror test. The possible structure of X is

(1) $(CH_3)_2CHOH$ (2) CH_3CHO

(3) CH_3CH_2OH (4) $CH_3 - \underset{\underset{O}{\|}}{C} - CH_3$

54. The reaction involved in the oil of Winter Green test is Salicylic acid $\xrightarrow[\text{Conc. } H_2SO_4]{\Delta}$ product. The product is treated with Na_2CO_3 solution. The missing reagent in the above reaction is

(1) Ethanol (2) Methanol

(3) Phenol (4) NaOH

55. The compound which forms acetaldehyde when heated with dilute NaOH is

(1) 1 Chloro ethane (2) 1, 2 Dichloro ethane

(3) 1, 1 Dichloro ethane (4) 1, 1, 1 Trichloro ethane

56. Arrange the following in the increasing order of their basic strengths :

CH_3NH_2, $(CH_3)_2NH$, $(CH_3)_3N$, NH_3

(1) $(CH_3)_3N < NH_3 < CH_3NH_2 < (CH_3)_2 NH$

(2) $CH_3NH_2 < (CH_3)_2NH < (CH_3)_3N < NH_3$

(3) $NH_3 < (CH_3)_3N < (CH_3)_2NH < CH_3NH_2$

(4) $NH_3 < (CH_3)_3N < CH_3NH_2 < (CH_3)_2NH$

Space For Rough Work

57. The one which has least Iodine value is

(1) Ghee (2) Groundnut oil

(3) Sunflower oil (4) Ginger oil

58. A diabetic person carries a pocket of Glucose with him always, because

(1) Glucose reduces the blood sugar level.

(2) Glucose increases the blood sugar level almost instantaneously.

(3) Glucose reduces the blood sugar level slowly.

(4) Glucose increases the blood sugar level slowly.

59. There are 20 naturally occurring amino acids. The maximum number of tripeptides that can be obtained is

(1) 7465 (2) 5360

(3) 8000 (4) 6470

60. Cooking is fast in a pressure cooker, because

(1) food is cooked at constant volume.

(2) loss of heat due to radiation is minimum.

(3) food particles are effectively smashed.

(4) water boils at higher temperature inside the pressure cooker.

Space For Rough Work

1

SUBJECT	TIME
BIOLOGY	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	416449

DO's :

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 MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED/SPOILED.**
2. Until the 3rd Bell is rung at 10.40 a.m.:
   - Do not remove the seal / staple present on the right hand side of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

SEAL

INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 60 questions and each question will have four different options / choices.
2. After the 3rd Bell is rung at 10.40 a.m., remove the seal / staple present on the right hand side of this question booklet 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 options / choices given under each question.
   - **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 SHOWN BELOW :

4. Please note that even a minute unintended ink dot on the OMR 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 AND 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 and retaining the top sheet (KEA 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.

B

1. Which of the following hormones **does not** naturally occur in plants ?

(1) IAA (2) GA

(3) ABA (4) 2, 4 – D

2. A large quantity of fluid is filtered every day by the nephrons in the kidneys. Only about 1% of it is excreted as urine. The remaining 99% of the filtrate

(1) is lost as sweat

(2) is stored in the urinary bladder

(3) is reabsorbed into the blood

(4) gets collected in the renal pelvis

3. When DNA replication starts

(1) The hydrogen bonds between the nucleotides of two strands break.

(2) The phosphodiester bonds between the adjacent nucleotides break.

(3) The bonds between the nitrogen base and deoxyribose sugar break.

(4) The leading strand produces okazaki fragments.

4. Fleshy fruits with stony endocarp are called

(1) Berries (2) Pomes

(3) Drupes (4) Capsules

5. Which statement about photosynthesis is **false** ?

(1) Photosynthesis is a redox process in which water is oxidised and carbon dioxide is reduced.

(2) The enzymes required for carbon fixation are located only in the grana of chloroplasts.

(3) In green plants, both PS I and PS II are required for the formation of $NADPH + H^+$.

(4) The electron carriers involved in photophosphorylation are located on the thylakoid membranes

Space For Rough Work

6. Darwinism explains all the following **except**

(1) Organisms tend to produce more number of offspring than can survive

(2) Offspring with better traits that overcome competition are best suited for the environment

(3) Variations are inherited from parents to offspring through genes

(4) Within each species, there are variations

7. Pollen grains of a plant whose $2n = 28$ are cultured to get callus by tissue culture method. What would be the number of chromosomes in the cells of the callus ?

(1) 21 (2) 14

(3) 56 (4) 28

8. A true breeding plant producing red flowers is crossed with a pure plant producing white flowers. Allele for red colour of flower is dominant. After selfing the plants of first filial generation, the proportion of plants producing white flowers in the progeny would be

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

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

9. Which of the following prevents the conversion of prothrombin to thrombin in an undamaged blood vessel ?

(1) Calcium ions (2) Thromboplastin

(3) Fibrinogen (4) Heparin

10. The characteristic that is shared by urea, uric acid and ammonia is/are

A. They are nitrogenous wastes

B. They all need very large amount of water for excretion

C. They are all equally toxic

D. They are produced in the kidneys

(1) A and D (2) A, C and D

(3) A only (4) A and C

Space For Rough Work

11. A RBC and a plant cell (with thick cell wall) are placed in distilled water. The solute concentration is the same in both the cells. What changes would be observed in them ?

(1) The RBC would increase in size and burst while the plant cell would remain about the same size.

(2) The plant cell would increase in size and burst while the RBC would remain about the same size.

(3) Both plant cell and RBC would decrease in size and collapse.

(4) Both plant cell and RBC would not undergo any change.

12. Which of the following hormones **does not** contain a polypeptide ?

(1) Oxytocin (2) Insulin

(3) Antidiuretic hormone (4) Prostaglandin

13. Ribose sugar is present in

(1) RNA only

(2) RNA polymerase and ATP

(3) RNA and ATP

(4) RNA polymerase, RNA and ATP

14. Most of the endangered species are the victims of

(1) Habitat destruction

(2) Over-hunting

(3) Acid rain

(4) Competition with introduced species

Space For Rough Work

15. Damage to thymus in a child may lead to

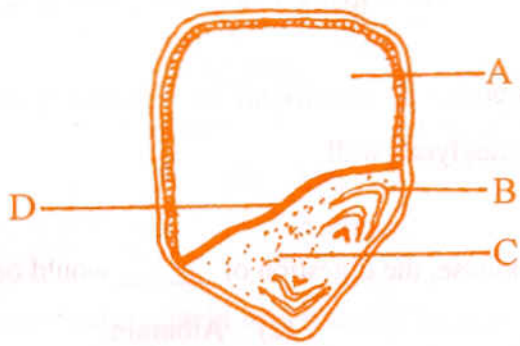
(1) a reduction in the haemoglobin content in blood

(2) a reduction in the amount of plasma proteins

(3) loss of antibody mediated immunity

(4) loss of cell mediated immunity

16. The diagram of the section of a maize grain is given below. Identify the parts labelled A, B, C and D.



(1) A – Cotyledon, B – Coleoptile, C – Scutellum, D – Epithelium

(2) A – Endosperm, B – Coleoptile, C – Scutellum, D – Epithelium

(3) A – Endosperm, B – Coleorrhiza, C – Scutellum, D – Epithelium

(4) A – Endosperm, B – Coleoptile, C – Scutellum, D – Aleurone layer

17. Examples for lateral meristems are

(1) Fascicular cambium and procambium

(2) Procambium and dermatogen

(3) Fascicular cambium and cork cambium

(4) Phellogen and procambium

Space For Rough Work

18. Vitellogenesis occurs during the formation of

(1) Oogonial cell in the Graafian follicle

(2) Ootid in the fallopian tube

(3) Secondary oocyte in the fallopian tube

(4) Primary oocyte in the Graafian follicle

19. A bacterium is capable of withstanding extreme heat, dryness and toxic chemicals. This indicates that it is probably able to form

(1) Endospores

(2) Endotoxins

(3) Endogenous buds

(4) A thick peptidoglycan wall

20. In the absence of enterokinase, the digestion of _____ would be affected in our intestine.

(1) Amino acid (2) Albumin

(3) Starch (4) Maltose

21. The greatest threat to genetic diversity in agricultural crops is

(1) extensive mixed cropping

(2) introduction of high yielding varieties

(3) extensive use of fertilisers

(4) extensive use of insecticides and pesticides

22. *Nosema bombycis* which causes pebrine in silk worms is a

(1) Virus (2) Bacterium

(3) Protozoan (4) Fungus

Space For Rough Work

23. Palaeontologists unearthed a human skull during excavation. A small fragment of the scalp tissue was still attached to it. Only little DNA could be extracted from it. If the genes of the ancient man need to be analysed, the best way of getting sufficient amount of DNA from this extract is

(1) Subjecting the DNA to polymerase chain reaction
(2) Subjecting the DNA to gel electrophoresis
(3) Treating the DNA with restriction endonucleases
(4) Hybridising the DNA with a DNA probe

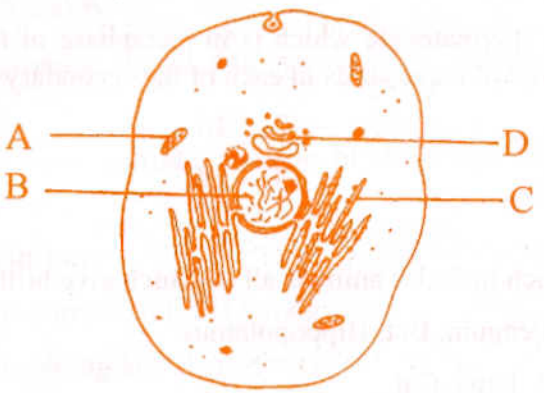
24. Which of the following would be in insignificant amount in xylem sap ?

(1) Nitrates (2) Phosphates
(3) Water (4) Sugar

25. If the person shows the production of interferons in his body, chances are that he is suffering from

(1) Malaria (2) Measles
(3) Tetanus (4) Anthrax

26. The RER in the cell synthesised a protein which would be later used in building the plasma membrane. But it is observed that the protein in the membrane is slightly different from the protein made in the RER. The protein was probably modified in another cell organelle. Identify that organelle in the given diagram.



(1) A (2) B
(3) C (4) D

Space For Rough Work

27. The respiratory quotient during cellular respiration would depend on

(1) the nature of the substrate

(2) the amount of carbon dioxide released

(3) the amount of oxygen utilised

(4) the nature of enzymes involved

28. Which of the following is **not** a green house gas ?

(1) Carbon monoxide (2) Methane

(3) Oxygen (4) Water vapour

29. Both husband and wife have normal vision though their fathers were colour blind and mothers did not have any gene for colour blindness. The probability of their daughters becoming colour blind is

(1) 75 % (2) 0 %

(3) 25 % (4) 50 %

30. An animal which has both exoskeletal and endoskeletal structures is

(1) Tortoise (2) Frog

(3) Jelly fish (4) Fresh water mussel

31. 2n = 16 in a primary spermatocyte which is in metaphase of first meiotic division. What shall be the total number of chromatids in each of the secondary spermatocyte ?

(1) 8 (2) 16

(3) 24 (4) 32

32. Identify the group which includes animals all of which give birth to young ones directly.

(1) Platypus, Penguin, Bat, Hippopotamus

(2) Shrew, Bat, Kiwi, Cat

(3) Lion, Whale, Ostrich, Bat

(4) Dolphin, Kangaroo, Bat, Cat

Space For Rough Work

33. Compare the statements A and B :

Statement A : Blood sugar level falls rapidly after hepatectomy.

Statement B : The glycogen of the liver is the principal source of blood sugar.

Select the correct description :

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

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

(3) Both the statements A and B are correct and B is not the reason for A.

(4) Both the statements A and B are correct and B is the reason for A.

34. What is/are true about heart wood ?

A. It does not help in water conduction.

B. It is also called alburnum.

C. It is dark in colour but very soft.

D. It has tracheary elements which are filled with tannin, resin, etc.

(1) A and D (2) B and D

(3) A, B and C (4) B, C and D

35. Compare the statements A and B.

Statement A : Auxins promote apical dominance by suppressing the activity of lateral buds.

Statement B : In moriculture, periodic pruning of shoot tips is done to make mulberry plants bushy.

Select the correct description :

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

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

(3) Both the statements A and B are correct and A is not the reason for B.

(4) Both the statements A and B are correct and A is the reason for B.

Space For Rough Work

36. Bryophytes resemble algae in the following aspects :

(1) Differentiation of plant body into root, stem and leaves and autotrophic nutrition.

(2) Thallus like plant body, presence of roots and autotrophic nutrition.

(3) Thallus like plant body, lack of vascular tissues and autotrophic nutrition.

(4) Filamentous body, presence of vascular tissues and autotrophic nutrition.

37. Compare the statements A and B .

Statement A : A monocistronic mRNA can produce several types of polypeptide chains.

Statement B : The terminator codon is present on the mRNA.

Select the correct description :

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

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

(3) Both the statements A and B are correct.

(4) Both the statements A and B are wrong.

38. Stoma opens when

(1) Guard cells swell by endosmosis due to influx of hydrogen ions (protons)

(2) Guard cells swell by endosmosis due to efflux of potassium ions.

(3) Guard cells swell due to a decrease in their water potential.

(4) Guard cells swell due to an increase in their water potential.

39. Which of the following is properly matched ?

(1) Echinodermata – Asteroidea – Star fish

(2) Arthropoda – Insecta – Spider

(3) Mollusca – Cephalopoda – Unio

(4) Platyhelminthes – Trematoda – Planaria

Space For Rough Work

40. A man is admitted to a hospital. He is suffering from an abnormally low body temperature, loss of appetite and extreme thirst. His brain scan would probably show a tumor in

(1) Pons (2) Cerebellum

(3) Hypothalamus (4) Medulla Oblongata

41. Identify the **incorrect** statement with respect to Calvin cycle.

(1) The first stable intermediate compound formed is phosphoglycerate.

(2) 18 molecules of ATP are synthesised during carbon fixation.

(3) NADPH + H^+ produced in light reaction is used to reduce diphosphoglycerate.

(4) The carboxylation of RuBP is catalysed by rubisco.

42. The agents which are known to cause CJD are

(1) A class of bacteria (2) A class of viruses

(3) Fungi (4) Protein particles

43. In crop improvement programmes, virus-free clones can be obtained through

(1) Hybridization (2) Embryo culture

(3) Shoot apex culture (4) Grafting

44. A person is suffering from frequent episodes of nasal discharge, nasal congestion, reddening of eyes and watery eyes. These are the symptoms of

(1) Bronchitis (2) Rhinitis

(3) Bronchial carcinoma (4) Cyanosis

45. Some important events in the human female reproductive cycle are given below. Arrange the events in a proper sequence.

A – Secretion of FSH, B – Growth of corpus luteum, C – Growth of the follicle and oogenesis, D – Ovulation, E – Sudden increase in the levels of LH

(1) A → C → E → D → B (2) A → D → C → E → B

(3) B → A → C → D → E (4) C → A → D → B → E

Space For Rough Work

46. Compare the statements A and B.

Statement A : Ranikhet disease is the disease of poultry.

Statement B : It is caused by a virus.

Select the correct description :

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

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

(3) Both the statements A and B are wrong.

(4) Both the statements A and B are correct.

47. The offspring produced from a marriage have only O or A blood groups. Of the genotypes given below, the possible genotypes of the parents would be

(1) I^OI^O and I^OI^O (2) I^AI^A and I^OI^O

(3) I^AI^O and I^OI^O (4) I^AI^A and I^AI^O

48. A dorsal horn is present on the _____ of mulberry silk worm (caterpillar).

(1) 8^{th} abdominal segment (2) 5^{th} abdominal segment

(3) 2^{nd} thoracic segment (4) Head

49. A plant has an androecium with monadelphous stamens, monothecous and reniform anthers. The corolla exhibits contorted aestivation.

The plant could be

(1) *Vinca* (2) *Nerium*

(3) *Hibiscus* (4) *Rauwolfia*

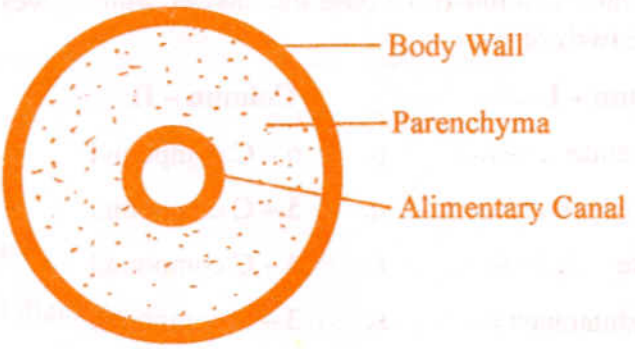
50. Transpiration facilitates

(1) Opening of stomata (2) Absorption of water by roots

(3) Excretion of minerals (4) Electrolyte balance

Space For Rough Work

51. The cross section of the body of an invertebrate is given below. Identify the animal which has this body plan.



(1) Round worm (2) Planaria

(3) Earthworm (4) Cockroach

52. In an experiment demonstrating the evolution of oxygen in Hydrilla, Sodium bicarbonate is added to water in the experimental set-up. What would happen if all other conditions are favourable ?

(1) Amount of oxygen evolved increases as the availability of carbon dioxide increases.

(2) Amount of oxygen evolved decreases as the availability of carbon dioxide increases.

(3) Amount of oxygen evolved increases as carbon dioxide in water is absorbed by sodium bicarbonate.

(4) Amount of oxygen evolved decreases as carbon dioxide in water is absorbed by sodium bicarbonate.

53. Which substance is in higher concentration in blood than in glomerular filtrate ?

(1) Glucose (2) Urea

(3) Plasma proteins (4) Water

54. All the following are included under *in situ* conservation except

(1) Biosphere reserve (2) National park

(3) Sanctuary (4) Botanical garden

Space For Rough Work

55. Match the compounds given in column-I with the number of carbon atoms present in them which are listed under column-II. Choose the answer which gives the correct combination of alphabets of the two columns.

	Column – I		Column – II
A.	Oxaloacetate	p.	6 – C compound
B.	Phosphoglyceraldehyde	q.	5 – C compound
C.	Isocitrate	r.	4 – C compound
D.	α-Ketoglutarate	s.	3 – C compound
		t.	2 – C compound

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

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

56. Identify the correctly matched pair/pairs of the germ layers and their derivatives :

A. Ectoderm – Epidermis

B. Endoderm – Dermis

C. Mesoderm – Muscles

D. Mesoderm – Notochord

E. Endoderm – Enamel of teeth

(1) A, B, C and E only (2) A and D only

(3) A and B only (4) A, C and D only

57. Identify the correct statement :

(1) The age of the plant can be determined by its height.

(2) Healing of damaged tissue is because of the activity of sclerenchyma cells.

(3) Grafting is difficult in monocot plants as they have scattered vascular bundles.

(4) Because of marked climatic variations, plants growing near the sea shore do not produce annual rings.

Space For Rough Work

58. Blood stains are found at the site of a murder. If DNA profiling technique is to be used for identifying the criminal, which of the following is ideal for use ?

(1) Erythrocytes (2) Leucocytes

(3) Platelets (4) Serum

59. During endocytosis,

(1) the cell digests itself

(2) the cell engulfs and internalises materials using its membrane

(3) the cell enables the extracellular digestion of large molecules

(4) the cell divides its cytoplasm during mitosis

60. Match the names of the economically important plants (or their products) listed in Column-I with the families to which they belong given in column-II. Choose the answer which gives the correct combination of alphabets of the two columns :

	Column – I		**Column – II**
A.	Sunflower	p.	Acanthaceae
B.	Tulsi	q.	Compositae
C.	Coffee	r.	Labiatae
D.	Vasaka	s.	Rubiaceae
		t.	Euphorbiaceae

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

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

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

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

Space For Rough Work