

COMMON ENTRANCE TEST - 2010

DATE	SUBJECT	TIME
29-04-2010	PHYSICS	10.30 AM to 11.50 AM

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	595409

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.
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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. 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.
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IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 60 questions and each question will have four different options / choices.
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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.
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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 sheet will also be recognized 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 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.

PHYSICS

1. The dimensions of 'resistance' are same as those of where h is the Planck's constant, e is the charge.

1) $\frac{h}{e^2}$

2) $\frac{h}{e}$

3) $\frac{h^2}{e^2}$

4) $\frac{h^2}{e}$


2. A train is moving slowly on a straight track with a constant speed of 2 ms^{-1} . A passenger in that train starts walking at a steady speed of 2 ms^{-1} to the back of the train in the opposite direction of the motion of the train. So to an observer standing on the platform directly in front of that passenger, the velocity of the passenger appears to be

1) 2 ms^{-1} in the opposite direction of the train

2) zero

3) 4 ms^{-1} 4) 2 ms^{-1}

3. A ball rests upon a flat piece of paper on a table top. The paper is pulled horizontally but quickly towards right as shown. Relative to its initial position with respect to the table, the ball

- a) remains stationary if there is no friction between the  paper and the ball.
b) moves to the left and starts rolling backwards, i.e. to the left if there is a friction between the paper and the ball.
c) moves forward, i.e. in the direction in which the paper is pulled.

Here, the correct statement/s is/are

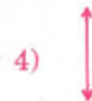
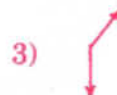
1) only a)

2) only b)

3) both a) and b)

4) only c)

4. A boy throws a cricket ball from the boundary to the wicket-keeper. If the frictional force due to air cannot be ignored, the forces acting on the ball at the position X are represented by



5. If the linear momentum of a body is increased by 50%, then the kinetic energy of that body increases by

1) 225%

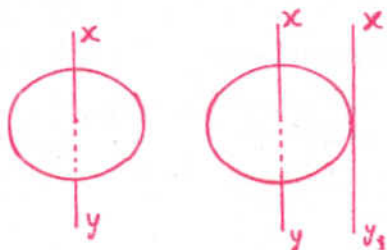
2) 25%

3) 100%

4) 125%

(Space for Rough Work)

6. The moment of inertia of a circular disc of radius 2 m and mass 1 kg about an axis passing through the centre of mass but perpendicular to the plane of the disc is 2 kgm^2 . Its moment of inertia about an axis parallel to this axis but passing through the edge of the disc is (See the given figure).



1) 10 kgm^2

2) 6 kgm^2

3) 8 kgm^2

4) 4 kgm^2

7. An astronaut on a strange planet finds that acceleration due to gravity is twice as that on the surface of Earth. Which of the following could explain this?

- 1) Both the mass and radius of the planet are twice as that of Earth.
- 2) Mass of the planet is half as that of Earth, but radius is same as that of Earth.
- 3) Both the mass and radius of the planet are half as that of Earth.
- 4) Radius of the planet is half as that of Earth, but the mass is the same as that of Earth.

8. Which of the following substances has the highest elasticity?

- 1) Rubber
- 2) Copper
- 3) Sponge
- 4) Steel

9. Three liquids of equal masses are taken in three identical cubical vessels A, B and C. Their densities are P_A , P_B and P_C respectively. But $P_A < P_B < P_C$. The force exerted by the liquid on the base of the cubical vessel is

- 1) the same in all the vessels
- 2) maximum in vessel A
- 3) maximum in vessel C
- 4) minimum in vessel C

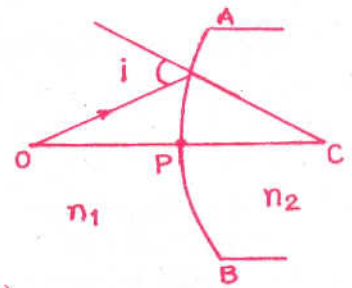
10. Water is in streamline flow along a horizontal pipe with nonuniform cross-section. At a point in the pipe where the area of cross-section is 10 cm^2 , the velocity of water is 1 ms^{-1} and the pressure is 2000 Pa. The pressure at another point where the cross-sectional area is 5 cm^2 is

- 1) 1000 Pa
- 2) 500 Pa
- 3) 4000 Pa
- 4) 2000 Pa

(Space for Rough Work)

21. A point object O is kept at a distance of $OP = u$. The radius of curvature of the spherical surface APB is $CP = R$. The refractive index of the media are n_1 and n_2 which are as shown in the diagram. Then,

- if $n_1 > n_2$, image is virtual for all values of ' u '.
- if $n_2 = 2n_1$, image is virtual when $R > u$.
- the image is real for all values of u , n_1 and n_2 .



Here, the correct statement/s is/are

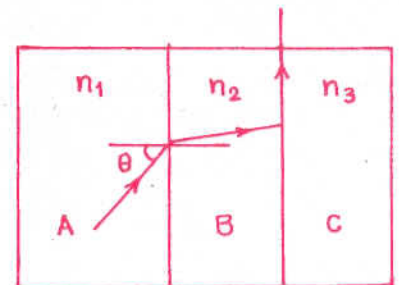
- only a)
 - only b)
 - only a), b) and c)
 - both a) and b)
22. A , B and C are the parallel sided transparent media of refractive index n_1 , n_2 and n_3 respectively. They are arranged as shown in the figure. A ray is incident at an angle θ on the surface of separation of A and B which is as shown in the figure. After the refraction into the medium B , the ray grazes the surface of separation of the media B and C . Then, $\sin \theta = \dots\dots\dots$

1) $\frac{n_2}{n_3}$

2) $\frac{n_1}{n_2}$

3) $\frac{n_3}{n_1}$

4) $\frac{n_1}{n_3}$



23. A boat has green light of wavelength $\lambda = 500$ nm on the mast. What wavelength would be measured and what colour would be observed for this light as seen by a diver submerged in water by the side of the boat? Given $n_w = 4/3$.

- Green of wavelength 500 nm
- Blue of wavelength 376 nm
- Green of wavelength 376 nm
- Red of wavelength 665 nm

24. Two beams of red and violet colours are made to pass separately through a prism of $A = 60^\circ$. In the minimum deviation position, the angle of refraction inside the prism will be

- greater for violet colour
- 30° for both the colours
- greater for red colour
- equal but not 30° for both the colours

25. The focal length of a plano convex lens is ' f ' and its refractive index is 1.5. It is kept over a plane glass plate with its curved surface touching the glass plate. The gap between the lens and the glass plate is filled by a liquid. As a result, the effective focal length of the combination becomes $2f$. Then the refractive index of the liquid is

- 1.25
- 1.33
- 1.5
- 2

(Space for Rough Work)

31. All capacitors used in the diagram are identical and each is of capacitance C . Then the effective capacitance between the points A and B is



- 1) C
- 2) $3C$
- 3) $1.5C$
- 4) $6C$

32. Two identical conducting balls A and B have positive charges q_1 and q_2 respectively. But $q_1 \neq q_2$. The balls are brought together so that they touch each other and then kept in their original positions. The force between them is

- 1) same as that before the balls touched
- 2) zero
- 3) less than that before the balls touched
- 4) greater than that before the balls touched

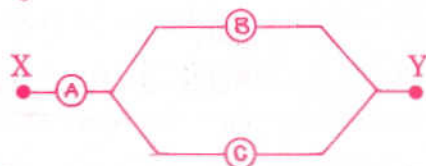
33. Red light of wavelength 625 nm is incident normally on an optical diffraction grating with $2 \times 10^5 \text{ lines/m}$. Including central principal maxima, how many maxima may be observed on a screen which is far from the grating?

- 1) 8
- 2) 16
- 3) 15
- 4) 17

34. A battery of e.m.f. E has an internal resistance ' r '. A variable resistance R is connected to the terminals of the battery. A current I is drawn from the battery. V is the terminal P.D. If R alone is gradually reduced to zero, which of the following best describes I and V ?

- 1) I approaches E/r , V approaches E
- 2) I approaches infinity, V approaches E
- 3) I approaches zero, V approaches E
- 4) I approaches E/r , V approaches zero

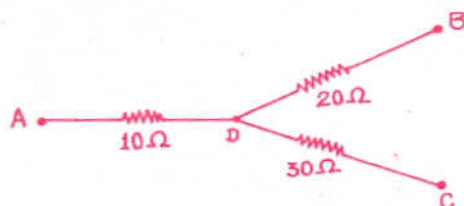
35. Three voltmeters A , B and C having resistances R , $1.5R$ and $3R$ respectively are used in a circuit as shown. When a P.D. is applied between X and Y , the reading of the voltmeters are V_1 , V_2 and V_3 respectively. Then



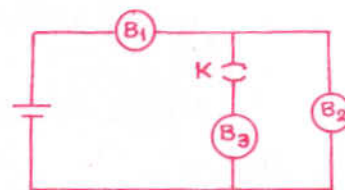
- 1) $V_1 > V_2 > V_3$
- 2) $V_1 > V_2 = V_3$
- 3) $V_1 = V_2 = V_3$
- 4) $V_1 < V_2 = V_3$

(Space for Rough Work)

36. In the circuit given here, the points A, B and C are 70 V, zero, 10 V respectively. Then



- 1) currents in the paths AD, DB and DC are in the ratio of 1 : 2 : 3.
 - 2) currents in the paths AB, DB and DC are in the ratio of 3 : 2 : 1.
 - 3) the point D will be at a potential of 60 V.
 - 4) the point D will be at a potential of 20 V.
37. B_1 , B_2 and B_3 are the three identical bulbs connected to a battery of steady e.m.f. with key K closed. What happens to the brightness of the bulbs B_1 and B_2 when the key is opened?



- 1) Brightness of the bulb, B_1 decreases and that of B_2 increases.
 - 2) Brightness of the bulbs B_1 and B_2 decreases.
 - 3) Brightness of the bulbs B_1 increases and that of B_2 decreases.
 - 4) Brightness of the bulbs B_1 and B_2 increases.
38. Magnetic field at the centre of a circular coil of radius R due to current I flowing through it is B . The magnetic field at a point along the axis at distance R from the centre is

- 1) $\frac{B}{\sqrt{8}}$
- 2) $\sqrt{8}B$
- 3) $\frac{B}{2}$
- 4) $\frac{B}{4}$

39. Two thick wires and two thin wires, all of same material and same length, form a square in three different ways P, Q and R as shown in the figure. With correct connections shown, the magnetic field due to the current flow, at the centre of the loop will be zero in case of



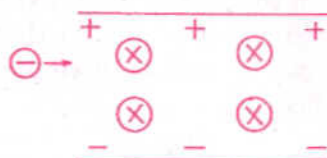
- 1) P and Q only
 - 2) P and R only
 - 3) Q and R only
 - 4) P only
40. There is a uniform magnetic field directed perpendicular and into the plane of the paper. An irregular shaped conducting loop is slowly changing into a circular loop in the plane of the paper. Then
- 1) AC is induced in the loop.
 - 2) no current is induced in the loop.
 - 3) current is induced in the loop in the anti-clockwise direction.
 - 4) current is induced in the loop in the clockwise direction.

41. PQ and RS are long parallel conductors separated by certain distance. M is the midpoint between them (see the figure). The net magnetic field at M is B . Now, the current $2A$ is switched off. The field at M now becomes



- 1) $\frac{B}{2}$
- 2) $3B$
- 3) $2B$
- 4) B

42. An electron enters the space between the plates of a charged capacitor as shown. The charge density on the plate is σ . Electric intensity in the space between the plates is E . A uniform magnetic field B also exists in that space perpendicular to the direction of E . The electron moves perpendicular to both \vec{E} and \vec{B} without any change in direction.

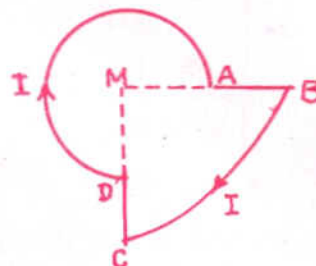


The time taken by the electron to travel a distance l in that space is

- 1) $\frac{\epsilon_0 l B}{\sigma}$
 - 2) $\frac{\epsilon_0 l}{\sigma B}$
 - 3) $\frac{\sigma l}{\epsilon_0 B}$
 - 4) $\frac{\sigma B}{\epsilon_0 l}$
43. In a series resonant R-L-C circuit, the voltage across R is 100 V and the value of $R = 1000 \Omega$. The capacitance of the capacitor is $2 \times 10^{-6} \text{ F}$; angular frequency of AC is 200 rad s^{-1} . Then the P.D. across the inductance coil is
- 1) 250 V
 - 2) 400 V
 - 3) 100 V
 - 4) 40 V
44. A capacitor and an inductance coil are connected in separate AC circuits with a bulb glowing in both the circuits. The bulb glows more brightly when
- 1) separation between the plates of the capacitor is increased.
 - 2) a dielectric is introduced into the gap between the plates of the capacitor.
 - 3) an iron rod is introduced into the inductance coil.
 - 4) the number of turns in the inductance coil is increased.
45. A horizontal metal wire is carrying an electric current from the north to the south. Using a uniform magnetic field, it is to be prevented from falling under gravity. The direction of this magnetic field should be towards the
- 1) east
 - 2) west
 - 3) north
 - 4) south

46. A current I is flowing through the loop. The direction of the current and the shape of the loop are as shown in the figure. The magnetic field at the centre of the loop is $\frac{\mu_0 I}{R}$ times ($MA = R$, $MB = 2R$, $\angle DMA = 90^\circ$)

- 1) $\frac{7}{16}$, but out of the plane of the paper.
- 2) $\frac{7}{16}$, but into the plane of the paper.
- 3) $\frac{5}{16}$, but out of the plane of the paper.
- 4) $\frac{5}{16}$, but into the plane of the paper.



47. An ideal choke draws a current of 8A when connected to an AC supply of 100 V, 50 Hz. A pure resistor draws a current of 10 A when connected to the same source. The ideal choke and the resistor are connected in series and then connected to the AC source of 150 V, 40 Hz. The current in the circuit becomes

- 1) 18A
- 2) 10A
- 3) $\frac{15}{\sqrt{2}}$ A
- 4) 8A

48. The spectrum of an oil flame is an example for

- 1) line absorption spectrum
- 2) band emission spectrum
- 3) line emission spectrum
- 4) continuous emission spectrum

49. According to Einstein's photoelectric equation, the graph of K.E. of the photoelectron emitted from the metal versus the frequency of the incident radiation gives a straight line graph, whose slope

- 1) is same for all metals and independent of the intensity of the incident radiation.
- 2) depends on the nature of the metal.
- 3) depends on the intensity of the incident radiation.
- 4) depends on the nature of the metal and also on the intensity of incident radiation.

50. An electron is moving in an orbit of a hydrogen atom from which there can be a maximum of six transitions. An electron is moving in an orbit of another hydrogen atom from which there can be a maximum of three transitions. The ratio of the velocity of the electron in these two orbits is

- 1) $\frac{5}{4}$
- 2) $\frac{3}{4}$
- 3) $\frac{1}{2}$
- 4) $\frac{2}{1}$

(Space for Rough Work)

51. ν_1 is the frequency of the series limit of Lyman series, ν_2 is the frequency of the first line of Lyman series and ν_3 is the frequency of the series limit of the Balmer series. Then

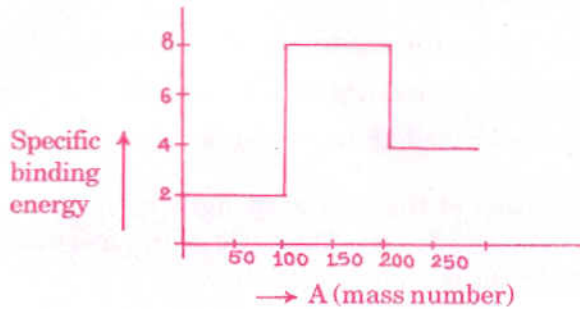
1) $\frac{1}{\nu_2} = \frac{1}{\nu_1} + \frac{1}{\nu_3}$

2) $\frac{1}{\nu_1} = \frac{1}{\nu_2} + \frac{1}{\nu_3}$

3) $\nu_1 - \nu_2 = \nu_3$

4) $\nu_1 = \nu_2 - \nu_3$

52. Assume the graph of specific binding energy versus mass number is as shown in the figure. Using this graph, select the correct choice from the following :



- 1) Fusion of two nuclei of mass number lying in the range of $1 < A < 50$ will release energy.
- 2) Fission of the nucleus of mass number lying in the range of $100 < A < 200$ will release energy when broken into two fragments.
- 3) Fusion of two nuclei of mass number lying in the range of $100 < A < 200$ will release energy.
- 4) Fusion of two nuclei of mass number lying in the range of $51 < A < 100$ will release energy.

53. Pick out the correct statement from the following :

- 1) Pu^{239} is not suitable for a fission reaction.
- 2) For stable nucleus, the specific binding energy is low.
- 3) Energy released per unit mass of the reactant is less in case of fusion reaction.
- 4) Packing fraction may be positive or may be negative

54. A radioactive sample S_1 having the activity A_1 has twice the number of nuclei as another sample S_2 of activity A_2 . If $A_2 = 2A_1$, then the ratio of half life of S_1 to the half life of S_2 is

- 1) 0.25 2) 0.75 3) 4 4) 2

55. When a neutron is disintegrated to give a β -particle,

- 1) a proton alone is emitted.
- 2) a proton and an antineutrino are emitted.
- 3) a neutrino alone is emitted.
- 4) a proton and neutrino are emitted.

56. The forbidden energy gap in Ge is 0.72 eV. Given, $hc = 12400 \text{ eV} \cdot \text{Å}$. The maximum wavelength of radiation that will generate an electron hole pair is

- | | |
|-----------------------|----------------------|
| 1) 17222 Å | 2) 1722 Å |
| 3) 172220 Å | 4) 172.2 Å |

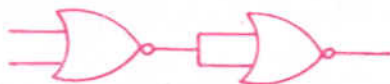
57. Pick out the statement which is NOT correct.

- 1) Width of the depletion region increases as the forward bias voltage increases in case of a N-P junction diode.
- 2) In a forward bias condition, the diode heavily conducts.
- 3) At a low temperature, the resistance of a semiconductor is very high.
- 4) Movement of holes is restricted to the valence band only.

58. In a given direction, the intensities of the scattered light by a scattering substance for two beams of light are in the ratio of 256 : 81. The ratio of the frequency of the first beam to the frequency of the second beam is

- | | |
|-------------|----------|
| 1) 64 : 27 | 2) 2 : 1 |
| 3) 64 : 127 | 4) 1 : 2 |

59. Identify the logic operation performed by the circuit given here.



- | | |
|--------|---------|
| 1) NOT | 2) NAND |
| 3) OR | 4) NOR |

60. The de-Broglie wavelength of the electron in the ground state of the hydrogen atom is (radius of the first orbit of hydrogen atom = 0.53 Å).

- | | |
|---------------------|---------------------|
| 1) 1.06 Å | 2) 0.53 Å |
| 3) 1.67 Å | 4) 3.33 Å |

(Space for Rough Work)

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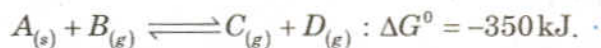
CHEMISTRY

1. In the electrolytic refining of Zinc,
- 1) the impure metal is at the cathode.
 - 2) graphite is at the anode.
 - 3) acidified zinc sulphate is the electrolyte.
 - 4) the metal ion gets reduced at the anode.
2. The wave number of the spectral line in the emission spectrum of hydrogen will be equal to $\frac{8}{9}$ times the Rydberg's constant if the electron jumps from
- 1) $n = 10$ to $n = 1$
 - 2) $n = 3$ to $n = 1$
 - 3) $n = 2$ to $n = 1$
 - 4) $n = 9$ to $n = 1$
3. Consider the following gaseous equilibria with equilibrium constants K_1 and K_2 respectively.
- $$SO_{2(g)} + \frac{1}{2}O_{2(g)} \rightleftharpoons SO_{3(g)}$$
- $$2SO_{3(g)} \rightleftharpoons 2SO_{2(g)} + O_{2(g)}$$
- The equilibrium constants are related as
- 1) $2K_1 = K_2^2$
 - 2) $K_1^2 = \frac{1}{K_2}$
 - 3) $K_2^2 = \frac{1}{K_1}$
 - 4) $K_2 = \frac{2}{K_1^2}$
4. Enthalpy of vapourization of benzene is $+35.3 \text{ kJ mol}^{-1}$ at its boiling point of 80°C . The entropy change in the transition of the vapour to liquid at its boiling point [in $\text{JK}^{-1} \text{ mol}^{-1}$] is
- 1) -100
 - 2) -441
 - 3) $+100$
 - 4) $+441$
5. Which one of the following conversions involve change in both hybridization and shape?
- 1) $NH_3 \longrightarrow NH_4^+$
 - 2) $CH_4 \longrightarrow C_2H_6$
 - 3) $H_2O \longrightarrow H_3O^+$
 - 4) $BF_3 \longrightarrow BF_4^-$

(Space for Rough Work)

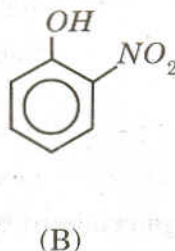
6. In chromite ore, the oxidation number of iron and chromium are respectively
- | | |
|-----------|-----------|
| 1) +3, +6 | 2) +3, +2 |
| 3) +2, +3 | 4) +2, +6 |

7. For the reversible reaction



Which one of the following statements is true?

- | |
|--|
| 1) Equilibrium constant is greater than one. |
| 2) The entropy change is negative. |
| 3) The reaction is thermodynamically not feasible. |
| 4) The reaction should be instantaneous. |
8. Out of the below two compounds, the vapour pressure of (B) at a particular temperature is



- | | |
|---------------------------|---|
| 1) lower than that of (A) | 2) higher than that of (A) |
| 3) same as that of (A) | 4) higher or lower than (A), depending on the size of the vessel. |
9. The amount of heat evolved when 500 cm^3 of 0.1 M HCl is mixed with 200 cm^3 of 0.2 M NaOH is
- | | |
|-------------|-------------|
| 1) 1.292 kJ | 2) 2.292 kJ |
| 3) 3.392 kJ | 4) 0.292 kJ |
10. During the adsorption of krypton on activated charcoal at low temperature,
- | | |
|--------------------------------------|--------------------------------------|
| 1) $\Delta H < 0$ and $\Delta S < 0$ | 2) $\Delta H > 0$ and $\Delta S < 0$ |
| 3) $\Delta H < 0$ and $\Delta S > 0$ | 4) $\Delta H > 0$ and $\Delta S > 0$ |

(Space for Rough Work)

16. Generally, the first ionization energy increases along a period. But there are some exceptions. One which is NOT an exception is
- 1) *Na* and *Mg*
 - 2) *N* and *O*
 - 3) *Be* and *B*
 - 4) *Mg* and *Al*
17. 50 cm³ of 0.2 N *HCl* is titrated against 0.1 N *NaOH* solution. The titration is discontinued after adding 50 cm³ of *NaOH*. The remaining titration is completed by adding 0.5 N *KOH*. The volume of *KOH* required for completing the titration is
- 1) 10 cm³
 - 2) 12 cm³
 - 3) 10.5 cm³
 - 4) 25 cm³
18. In which one of the following, does the given amount of chlorine exert the least pressure in a vessel of capacity 1 dm³ at 273K?
- 1) 0.071 g
 - 2) 0.0355 g
 - 3) 0.02 mole
 - 4) 6.023×10^{21} molecules
19. Based on the first law of thermodynamics, which one of the following is correct?
- 1) For an adiabatic process : $\Delta U = -w$
 - 2) For an isochoric process : $\Delta U = -q$
 - 3) For a cyclic process : $q = -w$
 - 4) For an isothermal process : $q = +w$
20. For alkali metals, which one of the following trends is INCORRECT?
- 1) Ionization energy : $Li > Na > K > Rb$
 - 2) Hydration energy : $Li > Na > K > Rb$
 - 3) Atomic size : $Li < Na < K < Rb$
 - 4) Density : $Li < Na < K < Rb$

(Space for Rough Work)

26. Carbon can reduce ferric oxide to iron at a temperature above 983 K because
- 1) carbon has a higher affinity towards oxidation than iron.
 - 2) carbon monoxide formed is thermodynamically less stable than ferric oxide.
 - 3) iron has a higher affinity towards oxygen than carbon.
 - 4) free energy change for the formation of carbon dioxide is less negative than that for ferric oxide.
27. An oxygen containing organic compound upon oxidation forms a carboxylic acid as the only organic product with its molecular mass higher by 14 units. The organic compound is
- 1) a primary alcohol
 - 2) an aldehyde
 - 3) a ketone
 - 4) a secondary alcohol
28. The compound obtained when acetaldehyde reacts with dilute aqueous sodium hydroxide exhibits
- 1) optical isomerism
 - 2) geometric isomerism
 - 3) both optical and geometric isomerism
 - 4) neither optical nor geometric isomerism
29. The activation energy for a reaction at the temperature TK was found to be $2.303 RT \text{ J mol}^{-1}$. The ratio of the rate constant to Arrhenius factor is
- 1) 10^{-2}
 - 2) 10^{-1}
 - 3) 2×10^{-2}
 - 4) 2×10^{-3}
30. A dibromo derivative of an alkane reacts with sodium metal to form an alicyclic hydrocarbon. The derivative is
- 1) 2, 2-dibromobutane
 - 2) 1, 1-dibromopropane
 - 3) 1, 4-dibromobutane
 - 4) 1, 2-dibromoethane

(Space for Rough Work)

31. Time required for 100 percent completion of a zero order reaction is

1) $\frac{a}{2k}$

2) $\frac{2k}{a}$

3) ak

4) $\frac{a}{k}$

32. 0.023 g of sodium metal is reacted with 100 cm³ of water. The pH of the resulting solution is

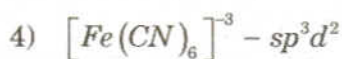
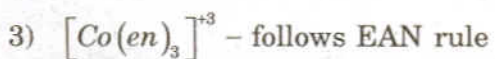
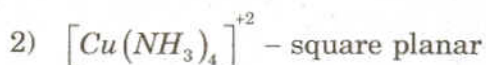
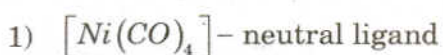
1) 11

2) 10

3) 12

4) 9

33. Which one of the following is wrongly matched?



34. Which one of the following conformations of cyclohexane is the least stable?

1) Boat

2) Half-chair

3) Chair

4) Twisted-boat

35. Which one of the following is a molecular crystal?

1) Quartz

2) Rock salt

3) Diamond

4) Dry ice

(Space for Rough Work)

41. The letter 'D' in D-glucose signifies
- 1) dextrorotatory
 - 2) configuration at all chiral carbons
 - 3) configuration at a particular chiral carbon
 - 4) that it is a monosaccharide
42. Reaction of methyl bromide with aqueous sodium hydroxide involves
- 1) S_N1 mechanism
 - 2) racemisation
 - 3) S_N2 mechanism
 - 4) inversion of configuration
43. 9.65 C of electric current is passed through fused anhydrous magnesium chloride. The magnesium metal thus obtained is completely converted into a Grignard reagent. The number of moles of the Grignard reagent obtained is
- 1) 1×10^{-4}
 - 2) 5×10^{-4}
 - 3) 1×10^{-5}
 - 4) 5×10^{-5}
44. Which one of the following does NOT involve coagulation?
- 1) Peptization
 - 2) Formation of delta regions
 - 3) Clotting of blood by the use of ferric chloride
 - 4) Treatment of drinking water by potash alum
45. In alkaline medium, alanine exists predominantly as/in
- 1) zwitterion
 - 2) anion
 - 3) covalent form
 - 4) cation

(Space for Rough Work)

51. The correct sequence of steps involved in the mechanism of Cannizzaro's reaction is
- 1) transfer of H^- , transfer of H^+ and nucleophilic attack
 - 2) nucleophilic attack, transfer of H^- and transfer of H^+
 - 3) electrophilic attack by OH^- , transfer of H^+ and transfer of H^-
 - 4) transfer of H^+ , nucleophilic attack and transfer of H^-
52. Which one of the following is an example for homogeneous catalysis?
- 1) Manufacture of ammonia by Haber's process
 - 2) Manufacture of sulphuric acid by contact process
 - 3) Hydrogenation of oil
 - 4) Hydrolysis of sucrose in presence of dilute hydrochloric acid
53. The empirical formula of a nonelectrolyte is $C_1H_2O_1$. A solution containing 6 g of the compound exerts the same osmotic pressure as that of 0.05 M glucose solution at the same temperature. The molecular formula of the compound is
- 1) $C_3H_6O_3$
 - 2) $C_2H_4O_2$
 - 3) $C_4H_8O_4$
 - 4) $C_5H_{10}O_5$
54. A white crystalline salt *A* reacts with dilute *HCl* to liberate a suffocating gas *B* and also forms a yellow precipitate. The gas *B* turns potassium dichromate acidified with dilute H_2SO_4 to a green coloured solution *C*. *A*, *B* and *C* are respectively
- 1) $Na_2S_2O_3$, SO_2 , $Cr_2(SO_4)_3$
 - 2) Na_2SO_3 , SO_2 , $Cr_2(SO_4)_3$
 - 3) Na_2SO_4 , SO_2 , $Cr_2(SO_4)_3$
 - 4) Na_2S , SO_2 , $Cr_2(SO_4)_3$
55. Molecules of a noble gas do not possess vibrational energy because a noble gas
- 1) is chemically inert
 - 2) is monoatomic
 - 3) is diamagnetic
 - 4) has completely filled shells

(Space for Rough Work)

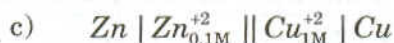
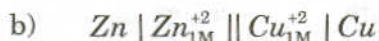
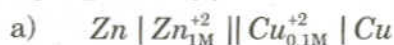
56. One dm^3 solution containing 10^{-5} moles each of Cl^- ions and CrO_4^{2-} ions is treated with 10^{-4} mole of silver nitrate. Which one of the following observations is made?

$$[K_{SP} \text{Ag}_2\text{CrO}_4 = 4 \times 10^{-12}]$$

$$[K_{SP} \text{AgCl} = 1 \times 10^{-10}]$$

- 1) Silver chromate gets precipitated first.
 - 2) Precipitation does not occur.
 - 3) Both silver chromate and silver chloride start precipitating simultaneously.
 - 4) Silver chloride gets precipitated first.
57. pH value of which one of the following is not equal to one?
- 1) 0.05 M H_2SO_4
 - 2) 0.1 M HNO_3
 - 3) 50 cm^3 of 0.4 M HCl + 50 cm^3 of 0.2 M NaOH
 - 4) 0.1 M CH_3COOH

58. E_1 , E_2 and E_3 are the emf values of the three galvanic cells respectively.



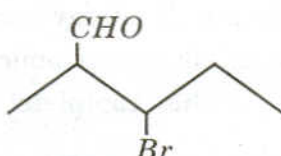
Which one of the following is true?

1) $E_3 > E_2 > E_1$

2) $E_2 > E_3 > E_1$

3) $E_1 > E_3 > E_2$

4) $E_1 > E_2 > E_3$

59. The IUPAC name of  is

- 1) 3-bromo-2-methylbutanal
- 2) 2-methyl-3-bromohexanal
- 3) 3-bromo-2-methylpentanal
- 4) 2-methyl-3-bromobutanal

60. Which one of the following forms propanenitrile as the major product?

- 1) Propyl bromide + alcoholic KCN
- 2) Ethyl bromide + alcoholic KCN
- 3) Ethyl bromide + alcoholic AgCN
- 4) Propyl bromide + alcoholic AgCN

(Space for Rough Work)

COMMON ENTRANCE TEST - 2010

DATE	SUBJECT	TIME
28-04-2010	BIOLOGY	10.30 AM to 11.50 AM
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	149809

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. 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.

IMPORTANT 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 BALLPOINT 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 sheet will also be recognized 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 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.

BIOLOGY

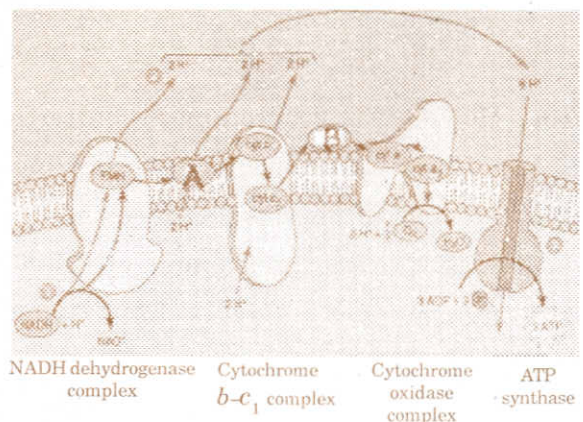
1. Due to nondisjunction of chromosomes during spermatogenesis, sperms carry both sex chromosomes (22A + XY) and some sperms do not carry any sex chromosome (22A + O). If these sperms fertilize normal eggs (22A + X), what types of genetic disorders appear among the offsprings?
 - 1) Down's syndrome and Klinefelter's syndrome
 - 2) Turner's syndrome and Klinefelter's syndrome
 - 3) Down's syndrome and Cri-du-chat syndrome
 - 4) Down's syndrome and Turner's syndrome

2. When a fresh water protozoan is placed in marine water,
 - 1) the number of contractile vacuoles increase.
 - 2) the contractile vacuoles become bigger in size.
 - 3) the contractile vacuoles remain unchanged.
 - 4) the contractile vacuoles disappear.

3. Which one of the following pairs is an example for lateral meristem?
 - 1) Interfascicular cambium and phellem
 - 2) Procambium and phelloderm
 - 3) Phellogen and fascicular cambium
 - 4) Phellogen and phelloderm

4. In peritoneal dialysis,
 - 1) the blood is not removed from the body and a natural filter is used.
 - 2) the blood is removed from the body and a natural filter is employed.
 - 3) the blood is removed from the body and an artificial filter is employed.
 - 4) the blood is not removed from the body and an artificial filter is used.

5. The following is a scheme showing the electron transport system. Identify the electron carrier molecules indicated as A and B. Choose the correct option.
 - 1) A = Cytochrome C, B = Coenzyme Q
 - 2) A = Coenzyme Q, B = Cytochrome C
 - 3) A = FMN, B = Fe-S protein
 - 4) A = Fe-S protein, B = FMN



(Space for Rough Work)

6. The sugar present in milk is
- 1) Sucrose
 - 2) Fructose
 - 3) Lactose
 - 4) Glucose
7. According to Steward's starch hydrolysis theory, which one of the following is the principal reason for the opening of stomata during daytime?
- 1) Conversion of sugar into starch in guard cells.
 - 2) Influx of K^+ ions into guard cells under the influence of ABA hormone.
 - 3) Photosynthetic utilization of CO_2 in guard cells.
 - 4) Efflux of K^+ ions from guard cells under the influence of ABA hormone.
8. Which one of the following processes results in the formation of a clone of bacteria?
- 1) Conjugation
 - 2) Binary fission
 - 3) Transduction
 - 4) Transformation
9. Match the types of immunity listed in Column I with the examples listed in Column II. Choose the answer that gives the correct combination of alphabets of the two columns :

Column I Types of immunity		Column II Example	
A.	Natural active	p.	Immunity developed by heredity
B.	Artificial passive	q.	From mother to foetus through placenta
C.	Artificial active	r.	Injection of antiserum to travellers
D.	Natural passive	s.	Fighting infections naturally
		t.	Induced by vaccination

- 1) A = t, B = s, C = r, D = p 2) A = s, B = t, C = q, D = r
 3) A = s, B = r, C = t, D = q 4) A = p, B = q, C = r, D = t
10. How do you differentiate a butterfly from a moth?
- 1) Moth has one pair of wings but butterfly has two pairs of wings.
 - 2) Moth has feathery antennae but butterfly has club shaped antennae.
 - 3) Moth has simple eyes but butterfly has compound eyes.
 - 4) Moth is diurnal but butterfly is nocturnal.

(Space for Rough Work)

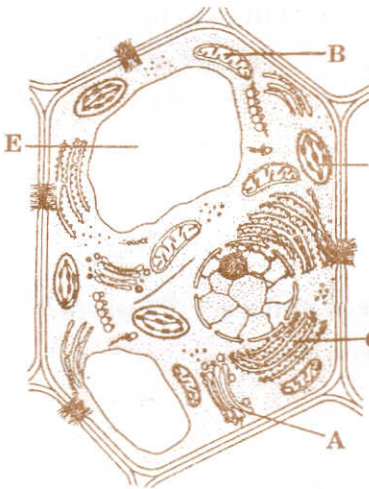
11. Which one of the following statement is *NOT* correct?
During Protein synthesis,

- 1) Tyrosine is coded by UAU and UAC codons.
- 2) Cysteine is coded by UGU and UGC codons.
- 3) UGG codon codes for Tryptophan.
- 4) UAA codon codes for Lysine.

12. In the absence of acrosome, the sperm

- 1) cannot get energy
- 2) cannot penetrate the egg
- 3) cannot swim
- 4) cannot get food

13. The diagram of the ultrastructure of a plant cell is given below. Identify the functions of the organelles labelled A, B, C, D, E in the diagram.



- 1) A = Principal director of macromolecular traffic,
B = Site of oxidative phosphorylation, C = Intracellular transport,
D = Site of photophosphorylation, E = Storage of cell sap.
- 2) A = Intracellular transport, B = Site of oxidative phosphorylation
C = Principal director of macromolecular traffic,
D = Site of photophosphorylation, E = Storage of cell sap.
- 3) A = Storage of cell sap, B = Site of oxidative phosphorylation,
C = Principal director of macromolecular traffic
D = Site of photophosphorylation, E = Intracellular transport.
- 4) A = Site of photophosphorylation, B = Storage of cell sap
C = Intracellular transport, D = Site of oxidative phosphorylation
E = Principal director of macromolecular traffic.

14. Which one of the following species of earthworm is *NOT* recommended for vermicomposting?

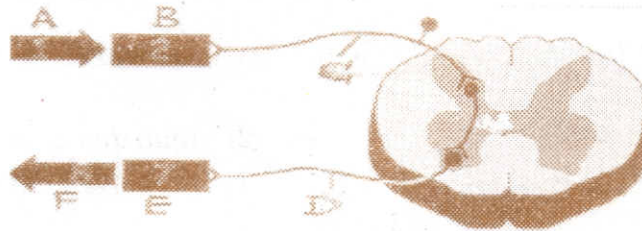
- 1) *Eisenia fetidae*
- 2) *Eudrilus eugeniae*
- 3) *Pheretima Posthuma*
- 4) *Perionyx excavatus*

15. The main aim of the human genome project is

- 1) to identify and sequence all the genes present in human DNA.
- 2) to introduce new genes into humans.
- 3) to remove disease causing genes from human DNA.—
- 4) to develop better techniques for comparing two different human DNA samples.

(Space for Rough Work)

16. The species, though insignificant in number, determine the existence of many other species in a given ecosystem. Such species is known as
- 1) Sacred species
 - 2) Endemic species
 - 3) Keystone species
 - 4) Extinct species
17. Compare the statements A and B.
Statement A : Sclerenchyma cells do not have plasmodesmata.
Statement B : The cell walls of some permanent tissues are heavily lignified.
 Select the correct description :
- 1) Both the statements A and B are wrong.
 - 2) Statement A is correct and B is wrong.
 - 3) Statement A is wrong and B is correct.
 - 4) Both the statements A and B are correct.
18. Which one of the following is *NOT* the reason for very high load of bilirubin in a newborn?
- 1) The liver of the newborn is too young to cope up with the heavy load of bilirubin.
 - 2) Excessive red blood corpuscles in the newborn burst, releasing the bilirubin.
 - 3) Insoluble bilirubin in the intestine is reabsorbed by the blood.
 - 4) Mother's milk contain a high amount of bilirubin.
19. Which one of the following diseases is caused by *Nosema bombycis* in mulberry silkworm?
- 1) Pebrine
 - 2) Muscadine
 - 3) Flacherie
 - 4) Grasserie
20. The following is the scheme showing the path of reflex arc. Identify the different labellings A, B, C, D, E, F in the reflex arc.



- 1) A = Stimulus, B = Receptor, C = Sensory nerve, D = Motor nerve, E = Effector, F = Response
- 2) A = Stimulus, B = Effector, C = Sensory nerve, D = Motor nerve, E = Receptor, F = Response
- 3) A = Stimulus, B = Receptor, C = Motor nerve, D = Sensory nerve, E = Effector, F = Response
- 4) A = Stimulus, B = Effector, C = Motor nerve, D = Sensory nerve, E = Receptor, F = Response

21. Identify the pair that exhibit "Cercinate vernation".
- 1) Equisetum and Selaginella
 - 2) Psilotum and Riccia
 - 3) Riccia and Nephrolepis
 - 4) Nephrolepis and Cycas
22. Pyruvate dehydrogenase complex, needed for the conversion of Pyruvic acid to Acetyl CO-A is located in
- 1) Intermembranal space of mitochondria
 - 2) Matrix of mitochondria
 - 3) Cytoplasm
 - 4) Grana of chloroplast
23. The presence of corollary corona, sagittate anthers and dumb-bell shaped stigma are the characteristic features of
- 1) *Hibiscus rosa-sinensis*
 - 2) *Musa paradisiaca*
 - 3) *Ravenala madagascariensis*
 - 4) *Catheranthus roseus*
24. Everytime, when the dosage of a drug has to be increased to achieve the same 'kick' that initially occurred in response to a smaller dose, this condition is known as
- 1) Tolerance
 - 2) Rebound effect
 - 3) Addiction
 - 4) Withdrawal symptoms
25. DNA gyrase, the enzyme that participates in the process of DNA replication is a type of
- 1) Reverse Transcriptase
 - 2) DNA Topoisomerase
 - 3) DNA Polymerase
 - 4) DNA Ligase

(Space for Rough Work)

26. Mendel found that the reciprocal crosses yielded identical results. From that he concluded that
- 1) sex plays a role in deciding the dominance of a trait.
 - 2) there is independent assortment of traits.
 - 3) sex has no influence on the dominance of traits.
 - 4) there is no dominance of any trait.

27. Compare the statements A and B.

Statement A : Synthesis of DNA takes place in the S-phase of interphase.

Statement B : Every chromosome, during metaphase, has two chromatids.

Choose the correct description :

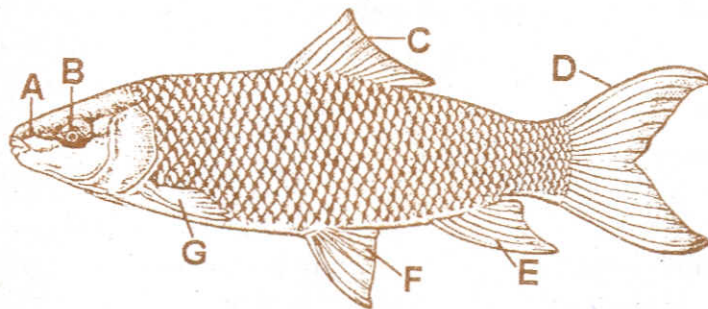
- 1) Statement A is correct and B is wrong.
 - 2) Statement A is wrong and B is correct.
 - 3) Both the statements A and B are correct and A is not the reason for B.
 - 4) Both the statements A and B are correct and A is the reason for B.
28. Match the animals listed in Column I with their of nature of blood listed in Column II. Choose the answer which gives the correct combination of alphabets of the two columns.

Column I		Column II	
A.	Man	p.	Plasma and cells are colourless
B.	Earthworm	q.	Plasma is colourless and nucleated RBC
C.	Cockroach	r.	Plasma is colourless and enucleated RBC
D.	Frog	s.	Plasma is red and nucleated, colourless RBC
		t.	Plasma and RBC have haemoglobin.

- 1) A = s, B = t, C = r, D = q
 - 2) A = r, B = s, C = p, D = q
 - 3) A = t, B = r, C = p, D = s
 - 4) A = p, B = s, C = q, D = r
29. During Lactic acid fermentation,
- 1) neither O_2 is used, nor CO_2 is liberated.
 - 2) O_2 is used, CO_2 is liberated.
 - 3) O_2 is not used, CO_2 is liberated.
 - 4) O_2 is used, CO_2 is not liberated.
30. Which one of the following is *NOT* the function of insulin?
- 1) Increase the oxidation of glucose in the cells.
 - 2) Increases the permeability of cell membrane to glucose.
 - 3) Initiates the formation of hepatic glycogen from excess of glucose.
 - 4) Initiates the conversion of glycogen to glucose.

(Space for Rough Work)

31. Which one of the following is a unicellular, nonmotile desmid?
- 1) Clostridium
 - 2) Chlorobium
 - 3) Cosmarium
 - 4) Chromatium
32. Some of the steps involved in the production of Humulin are given below. Choose the correct sequence.
- i) Synthesis of gene (DNA) for human insulin artificially.
 - ii) Culturing recombinant *E.coli* in bioreactors.
 - iii) Purification of humulin.
 - iv) Insertion of human insulin gene into plasmid.
 - v) Introduction of recombinant plasmid into *E.coli*.
 - vi) Extraction of recombinant gene product from *E.coli*.
- 1) i, iii, v, vi, ii, iv
 - 2) ii, i, iv, iii, v, vi
 - 3) iii, v, ii, i, vi, iv
 - 4) i, iv, v, ii, vi, iii
33. Cockroaches can climb smooth or steep surfaces due to the presence of adhesive pads found on the torses of their legs. They are called
- 1) Tibia
 - 2) Plantulae
 - 3) Arolium
 - 4) Pretarsus
34. Gastrula has a pore which is known as
- 1) Gonophore
 - 2) Blastopore
 - 3) Oospore
 - 4) Zoospore
35. The diagram of *Labeo rohita* is given below. Identify the parts labelled A, B, C, D, E, F, G.



- 1) A = Nostril, B = eye, C = Anal fin, D = Caudal fin, E = Dorsal fin, F = Pectoral fin, G = Pelvic fin
- 2) A = Nostril, B = eye, C = Dorsal fin, D = Anal fin, E = Caudal fin, F = Pectoral fin, G = Pelvic fin
- 3) A = Nostril, B = eye, C = Dorsal fin, D = Caudal fin, E = Pectoral fin, F = Anal fin, G = Pelvic fin
- 4) A = Nostril, B = eye, C = Dorsal fin, D = Caudal fin, E = Anal fin, F = Pelvic fin, G = Pectoral fin

(Space for Rough Work)

36. Compare the statements **A** and **B**.

Statement A : To counteract the increase in turgour pressure in plant cells, the cell wall produces an equal and opposite pressure, i.e., wall pressure.

Statement B : When plant cells undergo endosmosis, they swell but do not burst.

- 1) Statement A is correct and B is wrong.
- 2) Both the statements A and B are correct and A is the reason for B.
- 3) Both the statements A and B are correct and A is not the reason for B.
- 4) Statement A is wrong and B is correct.

37. When red blood corpuscles containing both A and B antigens are mixed with your blood serum, they agglutinate. Hence your blood group is type.

- 1) O
- 2) AB
- 3) B
- 4) A

38. Bovine spongiform encephalopathy is a disease caused by prions in a

- 1) cow
- 2) sheep
- 3) man
- 4) potato

39. Compare the statements **A** and **B**.

Statement A : When the urine moves through the descending limb, it becomes hypertonic and as it passes through the ascending limb of Henle's loop, it becomes hypotonic.

Statement B : The descending limb is permeable to sodium ions, while the ascending limb is impermeable to sodium ions.

- 1) Statement A is wrong and B is correct.
- 2) Statement A is correct and B is wrong.
- 3) Both statements A and B are correct.
- 4) Both statements A and B are wrong.

40. To meet the demands of the society, *in vitro* production of a large number of plantlets in a short duration is practised in floriculture and horticulture industry today. This is called

- 1) Soma clonal variation
- 2) Hybridoma technology
- 3) Micropropagation
- 4) Somatic hybridization

(Space for Rough Work)

41. With reference to enzymes, turnover number means
- 1) the number of substrate molecules that a molecule of an enzyme converts into products per second.
 - 2) the number of substrate molecules that a molecule of an enzyme converts into products per hour.
 - 3) the number of substrate molecules that a molecule of an enzyme converts into products per day.
 - 4) the number of substrate molecules that a molecule of an enzyme converts into products per minute.

42. The following diagrams A, B, C, D and E show the different types of arrangement of stamens based on the cohesion of their parts in different plants. Assign the stamens to their respective plants. Choose the correct answer.

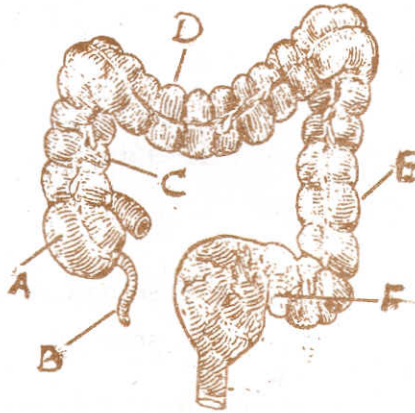


- 1) A = *Hibiscus rosa-sinensis*, B = *Bombax ceiba*, C = *Cucurbita pepo*
D = *Crotolaria juncea*, E = *Helianthus annus*.
 - 2) A = *Hibiscus rosa-sinensis*, B = *Helianthus annus*, C = *Cucurbita pepo*
D = *Crotolaria juncea*, E = *Bombax ceiba*.
 - 3) A = *Hibiscus rosa-sinensis*, B = *Crotolaria juncea*, C = *Bombax ceiba*
D = *Helianthus annus*, E = *Cucurbita pepo*.
 - 4) A = *Hibiscus rosa-sinensis*, B = *Bombax ceiba*, C = *Helianthus annus*
D = *Cucurbita pepo*, E = *Crotolaria juncea*.
43. The single horned Rhinoceros is protected at
- 1) Kaziranga National Park
 - 2) Kahna National Park
 - 3) Rajiv Gandhi National Park
 - 4) Anashi National Park
44. According to Boyle's law, the product of pressure and volume is a constant. Hence,
- 1) if volume of lungs is increased, the pressure also increases proportionately.
 - 2) if volume of lungs is increased, the pressure decreases proportionately.
 - 3) if volume of lungs is increased, the pressure remains the same.
 - 4) if volume of lungs is increased, the pressure decreases disproportionately.
45. According to Darwin, evolution is
- 1) a slow, gradual and continuous process.
 - 2) a sudden but discontinuous process.
 - 3) a slow and discontinuous process.
 - 4) a slow, sudden and discontinuous process.

46. *Succus entericus* is secreted by
- 1) Brunner's glands
 - 2) Auerbach's plexus
 - 3) Crypts of Lieberkuhn
 - 4) Peyers patches
47. Cell A and cell B are adjacent plant cells. In cell A, $\psi_s = -20$ bars and $\psi_p = 8$ bars .
In cell B, $\psi_s = -12$ bars and $\psi_p = 2$ bars . Then,
- 1) there is no movement of water between cell A and cell B.
 - 2) water moves from cell A to cell B.
 - 3) equal amount of water is simultaneously exchanged between cell A and cell B.
 - 4) water moves from cell B to cell A.
48. Populations are said to be sympatric when
- 1) two populations are physically isolated by natural barriers.
 - 2) two populations live together and freely interbreed to produce sterile offspring.
 - 3) two populations share the same environment but cannot interbreed.
 - 4) two populations are isolated but occassionally come together to interbreed.
49. In which of the following situations, is there a risk factor for children of incurring *Erythroblastosis foetalis*?
- 1) Mother is Rh -ve and father is Rh+ve
 - 2) Mother is Rh -ve and father is Rh -ve
 - 3) Mother is Rh +ve and father is Rh -ve
 - 4) Mother is Rh +ve and father is Rh +ve
50. Compare the statements A and B.
- Statement A** : RNA produced during transcription in eukaryotic cells cannot be straight away used in photosynthesis.
- Statement B** : RNA splicing phenomena helps in the removal of exons.
- Choose the correct description.
- 1) Both the statements A and B are correct.
 - 2) Both the statements A and B are wrong.
 - 3) Statement A is wrong and B is correct.
 - 4) Statement A is correct and B is wrong.

(Space for Rough Work)

51. The diagram of large intestine of man is given below. Identify the parts labelled A, B, C, D, E and F.



- 1) A = Caecum, B = Vermiform appendix, C = Sigmoid, D = Ascending colon, E = Transverse colon, F = Descending colon.
 - 2) A = Sigmoid, B = Vermiform appendix, C = Ascending colon, D = Transverse colon, E = Descending colon, F = Caecum.
 - 3) A = Sigmoid, B = Vermiform appendix, C = Descending colon, D = Transverse colon, E = Ascending colon, F = Caecum.
 - 4) A = Caecum, B = Vermiform appendix, C = Ascending colon, D = Transverse colon, E = Descending colon, F = Sigmoid.
52. In genetic fingerprinting, the 'probe' refers to
- 1) a radioactively labelled single stranded RNA molecule.
 - 2) a radioactively labelled single stranded DNA molecule.
 - 3) a radioactively labelled double stranded DNA molecule.
 - 4) a radioactively labelled double stranded RNA molecule.
53. Which one of the following is *NOT* a method of soil conservation?
- | | |
|------------------|-------------------|
| 1) Overgrazing | 2) Mulching |
| 3) Crop rotation | 4) Strip cropping |
54. In C_4 pathway, the CO_2 fixation in mesophyll cells is carried out by the enzyme
- | | |
|---------------------------|---------------------------|
| 1) Rubisco | 2) PEP carboxylase |
| 3) Pyruvate decarboxylase | 4) Pyruvate dehydrogenase |
55. Which one of the following is a driving force for the process of passive absorption of water in roots?
- 1) Root pressure
 - 2) The increase in imbibitional pressure in root cells.
 - 3) Transpiration in leaves
 - 4) Activity of aquaporins

56. If the systolic pressure is 120 mm Hg and diastolic pressure is 80 mm Hg, the pulse pressure is
- 1) $120 + 80 = 200$ mm Hg 2) $120 \times 80 = 9600$ mm Hg
3) $\frac{120}{80} = 1.5$ mm Hg 4) $120 - 80 = 40$ mm Hg
57. Tyloses are found in
- 1) secondary xylem 2) secondary phloem
3) sclerenchyma fibres 4) sclereids
58. Which one of the following synthetic growth regulators is used to promote synchronized flowering in pineapple?
- 1) Phenylmercuric Acetate 2) Benzyl Aminopurine
3) 2-chloroethylphosphonic acid 4) Indolebutyric acid
59. Sporopollenin, a chemical substance is found in
- 1) Exine of pollen grain 2) Intine of pollen grain
3) Tapetum of anther 4) Endothecium of anther
60. Which one of the following statements about the events of noncyclic photophosphorylation is *NOT* correct?
- 1) ATP and NADPH are not produced.
2) Only one photosystem participates.
3) O_2 is released.
4) Photolysis of water takes place.

(Space for Rough Work)