



**DATE: 31.03.2023**

- ## Physics

- 1) 4
- 3) 5

- 2) 3
- 4) <

**Q7:** A cell of internal resistance 3 ohm and emf 10 volt is connected to a uniform wire of length 500 cm and resistance 3 ohm. The potential gradient in the wire is

- 1)  $\frac{10}{500}$  V/m
- 2)  $\frac{10}{1000}$  V/m
- 3)  $\frac{10}{250}$  V/m
- 4)  $\frac{10}{50}$  V/m

**Q8:** **Assertion:** Neutrons penetrate matter more readily as compared to protons.

**Reason:** Neutrons are slightly more massive than protons.

- 1) Assertion is correct, reason is correct; reason is a correct explanation for assertion.
- 2) Assertion is correct, reason is correct; reason is not a correct explanation for assertion.
- 3) Assertion is correct, reason is incorrect
- 4) Assertion is incorrect, reason is correct.

**Q9:** Beyond which frequency, the ionosphere bands any incident electromagnetic radiation but do not reflect it back towards the earth?

- 1)  $10^6$  Hz
- 2)  $10^8$  Hz
- 3)  $10^9$  Hz
- 4)  $10^{10}$  Hz

**Q10:** A p-n junction is fabricated from a semiconductor with band gap of 2.8 eV. Can it detect a wavelength of 6000nm?

- 1) yes
- 2) No
- 3) Both
- 4) None

**Q11:** The frequency of ac mains in India is .... ?

- 1) 30 Hz or  $\frac{1}{30}$  s
- 2) 50 Hz or  $\frac{1}{50}$  s
- 3) 60 Hz or  $\frac{1}{60}$  s
- 4) 120 Hz or  $\frac{1}{120}$  s

**Q12:** The earth's magnetic field always has a vertical component except at the --- ?

- 1) magnetic equator
- 2) magnetic poles
- 3) geographic north pole
- 4) latitude  $45^\circ$

**Q13:** Choose only false statement from the following \_\_\_\_ ?

- 1) In conductors the valence and conduction band overlap
- 2) Substance with energy gap of the order of 10 eV are insulators
- 3) The resistivity of a semi conductor increase with increase in temperature
- 4) The conductivity of semiconductor increase with increase in temperature

**Q14:** A positively charged particle moving due East enters a region of uniform magnetic field directed vertically upwards. This particle will .... ?

- 1) move in a circular path with a decreased speed
- 2) move in a circular path with a uniform speed
- 3) get deflected in vertically upward direction
- 4) move in circular path with an increased speed

**Q15:** equal resistors are first connected in series and then connected in parallel. What is the ratio of the maximum to the minimum resistance

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

**Q16: Assertion:** Space waves are used for line-of-sight communication.

**Reason:** Space wave travels in a straight line from transmitting antenna to receiving antenna.

- |  |   |
|--|---|
| 1) Assertion is correct, reason is correct; reason is a correct explanation for assertion. | 2) Assertion is correct, reason is correct; reason is not a correct explanation for assertion |
| 3) Assertion is correct, reason is incorrect   | 4) Assertion is incorrect, reason is correct.   |

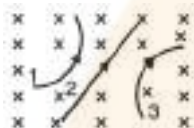
**Q17:** The sum of the number of neutrons and proton in the radio isotope of hydrogen is \_\_\_\_ ?

- |      |      |      |      |
|------|------|------|------|
| 1) 6 | 2) 5 | 3) 4 | 4) 3 |
|------|------|------|------|

**Q18:** In a plane electromagnetic wave propagating in space has an electric field of amplitude  $H$   $\sqrt{2}$ , then the amplitude of the magnetic field is \_\_\_\_ ?

- |                         |                         |
|-------------------------|-------------------------|
| 1) $\frac{H}{\sqrt{2}}$ | 2) $H\sqrt{2}$          |
| 3) $\sqrt{2}H$          | 4) $\frac{H}{\sqrt{2}}$ |

**Q19:** The charges  $+5$  move in uniform transverse magnetic field then:

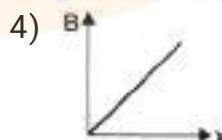
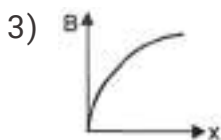
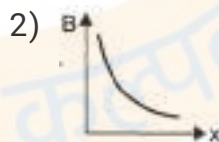
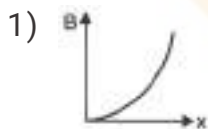


- |  |   |
|--|---|
| 1) particle '1' positive and particle 3 negative | 2) particle 1 negative and particle 3 positive          |
| 3) particle 1 negative and particle 2 neutral    | 4) particle 1 and 3 are positive and particle 2 neutral |

**Q20:** Calculate the rms value of electric field and magnetic field produced by the radiation coming from a 100 W bulb at a distance of 3 m. Assume that the efficiency of the bulb is 2.5% and it is a point source.

- |                  |                             |
|------------------|-----------------------------|
| 1) 2.9 V/m       | 2) 29 V/m                   |
| 3) 29 $\sqrt{2}$ | 4) $2.9 \times 10^{-2}$ V/m |

**Q21:** The variation of magnetic field  $B$  due to a long straight current-carrying wire with perpendicular distance from the wire is represented by the following curves. Select the correct curve.



**Q22:** The box of a pin hole camera, of length  $L$ , has a hole of radius  $a$ , It is assumed that when the hole is illuminated by a parallel beam of light of wavelength  $\lambda$  the spread of the spot (obtained on the opposite wall of the camera) is the sum of its geometrical spread and the spread due to diffraction. The spot would then have its minimum size (say  $b_{\min}$ ) when

- |      |      |      |      |
|------|------|------|------|
| 1) 2 | 2) 4 | 3) 6 | 4) 8 |
|------|------|------|------|



**Q23:** Find the angle of minimum deviation for an equilateral prism made of a material of refractive index 1.732. What is the angle of incidence for this deviation ?

- 1)  $60^\circ, 30^\circ$                       2)  $30^\circ, 60^\circ$                       3)  $90^\circ, 60^\circ$                       4)  $60^\circ, 60^\circ$

**Q24:** A parallel plate capacitor has an electric field of  $9 \times 10^5 \text{ V/m}$  between the plates. If the charge on the capacitor plate is  $1 \text{ C}$  the force on each capacitor plate is [Orissa JEE 2002]

- 1)  $9 \times 10^5 \text{ N}$                                       2)  $9 \times 10^4 \text{ N}$   
3)  $9 \times 10^9 \text{ N}$                                       4) None of these

**Q25:** Three equal charges each  $4 \text{ C}$  are placed on the corners of an equilateral triangle of side  $x$ . Then the coulomb force experienced by one charge due to the rest of the two is \_\_\_\_ ?

- 1)  $\frac{V}{x}$     2)  $\frac{V}{x}$   
3)  $\frac{V}{x}$     4) zero

**Q26:** In refraction, light waves are bent on passing from one medium to second medium, because in the second medium.

- 1) Frequency is different                      2) speed is different  
3) Coefficient of elasticity is different      4) Amplitude is smaller

**Q27:** A long wire carrying a steady current is bent into a circular loop of one turn. The magnetic field at the centre of the loop is  $F$ . It is then bent into a circular coil of  $n$  turns. The magnetic field at the centre of this coil of  $n$  turns will be \_\_\_\_ ?

- 1)  $nF$     2)  $F$   
3)  $F$     4)  $F$

**Q28:** In an AC generator, a coil with  $n$  turns, all of the same area  $A$  and total resistance  $R$ , rotates with frequency  $f$  in a magnetic field  $B$ . The maximum value of emf generated in the coil is \_\_\_\_ ?

- 1)  $nABR$     2)  $nAB$   
3)  $nABR$     4)  $nAB$

**Q29:** The frequency of incident light falling on a photosensitive metal plate is doubled, the kinetic energy of the emitted photoelectrons is \_\_\_\_ ?

- 1) double the earlier value                      2) unchanged  
3) more than doubled                              4) less than doubled

**Q30:** Magnetic lines of force due to a bar magnet do not intersect because ---- ?

- 1) a point always has a single net magnetic field      2) the lines have similar charges and so repel each other  
3) the lines always diverge from a single force          4) the lines need magnetic lenses to be made to intersect

**Q31:** Electrons in the atom are held to the nucleus by .... ?

- 1) coulomb's force                                      2) nuclear force  
3) vander waal's force                                      4) gravitational force

**Q32:** In a p-n junction diode acting as a half-wave rectifier, which of the following statements is not true?

- 1) The average output voltage over a cycle is non-zero
- 2) The drift current depends on biasing
- 3) The depletion zone decreases in forward biasing
- 4) The diffusion current increases due to forward biasing

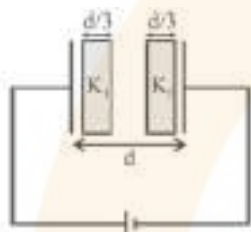
**Q33:** In a discharge tube ionization of enclosed gas is produced due to collisions between –

- 1) negative electrons and neutral atoms/molecules.
- 2) photons and neutral atoms/molecules.
- 3) neutral gas atoms/molecules.
- 4) positive ions and neutral atoms/molecules.

**Q34:** A torque of  $\sin \theta B_n$  is required to hold a magnet at  $\theta$  with the horizontal component  $d$  of the earth's magnetic field. The torque to hold it at  $2\theta$  will be \_\_\_\_ ?

- 1)  $B \sin \theta C_n$
- 2) data is insufficient
- 3)  $\frac{1}{2} \sin \theta B_n$
- 4)  $B \sin 2\theta C_n$

**Q35:**



Two dielectric slab of dielectric constant  $K_1$  and  $K_2$  and of same thickness is inserted in parallel plates capacitor and  $K_1 = 2K_2$ . Potential difference across slabs are  $V_1$  and  $V_2$  respectively then :-

- 1)  $V_1 = V_2$
- 2)  $V_1 = 2V_2$
- 3)  $2V_1 = V_2$
- 4)  $4V_1 = V_2$

**Q36:** The magnetism of magnet is due to .... ?

- 1) The spin motion of electron
- 2) Earth
- 3) Pressure of big magnet inside the earth
- 4) cosmic rays

**Q37:** The de-broglie wavelength of an electron and the wavelength of a photon are the same. The ratio between the energy of the photon and the momentum of the electron is

- 1)  $h$
- 2)  $c$
- 3)  $\frac{1}{c}$
- 4)  $\frac{h}{c}$

**Q38:** For previous objective, which of the following graphs is correct

- 1)
- 2)
- 3)
- 4)

**Q39:** In Davison-Germer experiment, an electron beam is incident on a crystal. The reflected beam consists of .... ?

- 1) photons
- 3)  $\gamma$ -rays

- 2) protons
- 4) electrons

**Q40:** Consider an electron of mass  $m$  and charge  $e$  moving around a nucleus of charge  $+Ze$  in circular orbit of radius  $r$ . The initial frequency of light emitted by the electron is given as .... ?

- 1)  $\frac{1}{A} < \frac{\pi}{B}$
- 3)  $\frac{1}{A} = \frac{\pi}{B}$

- 2)  $\frac{1}{A} > \frac{\pi}{B}$
- 4)  $\frac{1}{A} < \frac{\pi}{B}$

### Subject: Chemistry

#### Chemistry

**Q41:** How many atoms of calcium will be deposited from a solution of  $ZnCl_2$  by a current of 25 milliamperes flowing for 60 seconds

- 1)  $1.7 \times 10^4$
- 3)  $1.7 \times 10^5$

- 2)  $1.7 \times 10^6$
- 4)  $1.7 \times 10^7$

**Q42:** The major product of the following reaction is



- 1) a hemiacetal
- 3) an ether

- 2) an acetal
- 4) an ester

**Q43:** Aryl halide is less reactive than alkyl halide towards nucleophilic substitution because ---- ?

- 1) Less stable carbonium ion
- 3) Inductive effect

- 2) Due to large  $C-H$  bond energy
- 4) Resonance stabilization and  $sp^2$ -hybridisation of  $C$  attached to halide

**Q44:** Which species is not a pseudohalide ?

- 1)  $CNO^-$
- 2)  $RCOO^-$
- 3)  $OCN^-$
- 4)  $NNN^-$

**Q45:** Which of the following type of forces are present in nylon-6, 6?

- 1) Van der Waals' forces of attraction
- 3) Three dimensional network of bonds
- 2) Hydrogen bonding
- 4) Metallic bonding

**Q46:** Statement I: A mixture of phenol and benzoic acid can be separated by extracting its ethereal solution with aq.  $NaHCO_3$  solution. Statement II: Phenol is a weaker base than carbonic acid.

- 1) Both Statement I and Statement II are correct and Statement II is the correct explanation of Statement I
- 3) Statement I is correct but Statement II is incorrect
- 2) Both Statement I and Statement II are correct but Statement II is not the correct explanation of Statement I
- 4) Statement II is correct but Statement I is incorrect

**Q47:** Aspirin is an acetylation product of  $o$ -hydroxybenzoic acid

- 1)  $o$ -hydroxybenzoic acid
- 3)  $p$ -hydroxybenzoic acid
- 2)  $o$ -dihydroxybenzene
- 4)  $p$ -dihydroxybenzene

**Q48:** Sulphur molecule is converted into sulphur ion, when it

- 1) Gains two electrons
- 2) Loses two electrons
- 3) Gains two protons
- 4) Shares two electrons

**Q49:** The catalyst used in Rosenmund reaction is \_\_\_\_ ?

- 1)  $\sqrt{8d}$
- 2)  $s \ 8V \ x r \ A$
- 3) Raney Ni
- 4) Na in Ethanol

**Q50:** Which one of the following compounds is not coloured

- 1)  $n \ \underline{Z} \ Z \ A$
- 2)  $n \ \underline{Z} \ Z \ A$
- 3)  $V_A N \pi 1 He \ 2_C$
- 4)  $V \succ N \pi 1 He \ 2_C$

**Q51:** Which one is liquid at room temperature?

- 1)  $Z d \succ Z$
- 2)  $Z = d \ B Z$
- 3)  $Z d \succ r$
- 4)  $Z = d \ B V$

**Q52:** The random or zig-zag motion of the colloidal particles in the dispersion medium is referred to as .... ?

- 1) Electro-osmosis
- 2) Electrophoresis
- 3) Brownian movement
- 4) Tyndall effect

**Q53:** Which one of the following will undergo meta-substitution on monochlorination?

- 1) Ethoxybenzene
- 2) Chlorobenzene
- 3) Ethyl benzoate
- 4) Phenol

**Q54:** When a freshly precipitated substance is converted into a colloidal solution with the help of a third substance, the process is known as .... ?

- 1) Coagulation
- 2) Peptization
- 3) Electrodipersion
- 4) Dialysis

**Q55:** Which of the following intermediate species is/are formed in the reaction of  $CH_2=CH-COOH$  (Acrylic acid) with HBr to give 3-bromo propanoic acid?



- 1) I and II
- 2) III and IV
- 3) II, III and IV
- 4) I, II, III and IV

**Q56:** Phenyl isocyanides are prepared from which of the following reactions  $[Z \ V x] \ s \ m z \ < H H \rightarrow$

- 1) Rosenmund's reaction
- 2) Carbylamine reaction
- 3) Reimer-Tiemann reaction
- 4) Wurtz reaction

**Q57:** Which of the following silver compounds finds maximum use in photography

- 1)  $C \phi H$
- 2)  $T \ V$
- 3)  $C \phi S$
- 4)  $C \phi e \ g >$

**Q58:** Green chemistry means such reactions which \_\_\_\_ ?



- 1) produce colour during reactions
- 2) reduce the use and production of hazardous chemicals
- 3) are related to the depletion of ozone layer
- 4) study the reactions in plants

**Q59:** The metallic oxide which impart purple colour to pottery is \_\_\_\_ ?

- 1) Copper oxide
- 2) Chromium oxide
- 3) Lead oxide
- 4) Manganese oxide

**Q60:** Dimethyl glyoxime reagent is used as co-ordinating reagent in the quantitative estimation of \_\_\_\_ ?

- 1) Copper
- 2) Palladium
- 3) Silver
- 4) Nickel

**Q61:** In the body centred tetragonal crystal system formed by square sheets, the co-ordination number is equal to - \_\_\_\_ ?

- 1) 6
- 2) 8
- 3) 12
- 4) none of these

**Q62:**



. The correct product is .... ?

- 1)
- 2)
- 3)
- 4)

**Q63:** In the catalytic oxidation of ammonia an oxide is formed which is used in the preparation of  $\text{d n r} >$ . This oxide is \_\_\_\_ ?

- 1)  $e = g \text{ B}$
- 2)  $e = g \text{ A}$
- 3)  $e = g =$
- 4)  $\text{n r}$

**Q64:** Only stable organic functional group in which carbon is divalent is \_\_\_\_ ?

- 1)  $\text{HH} =$
- 2)  $\text{HR} =$
- 3)  $\text{HF} =$
- 4)  $\text{R-NC}$

**Q65:** Methylphenyl ether can be obtained by reacting

- 1) phenolate ions and methyl iodide
- 2) methoxide ions and bromobenzene
- 3) methanol and phenol
- 4) bromo benzene and methyl bromide

**Q66:** The E.A.N. of iron in  $\text{[Zn}_2\text{C}_2\text{]}^{2-}$  is \_\_\_\_ ?

- 1) 32
- 2) 35
- 3) 38
- 4) 41

**Q67:** Which of the following statements is not applicable to chemisorption



- 1) It is slow
- 2) It is irreversible
- 3) It is highly specific
- 4) It is independent of temperature

**Q68:** Chemical formula of rust is

- 1)  $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$
- 2)  $\text{Fe}_2\text{O}_3$
- 3)  $\text{Fe}_3\text{O}_4$
- 4)  $\text{FeO}$

**Q69:** Ethyl alcohol is industrially prepared from ethylene by .... ?

- 1) Permanganate oxidation
- 2) Catalytic reduction
- 3) Absorbing in  $\text{H}_2\text{SO}_4$  followed by hydrolysis
- 4) Fermentation

**Q70:** In the electrolytic cell, flow of electrons is from

- 1) cathode to anode in solution
- 2) cathode to anode through external supply
- 3) cathode to anode through internal supply
- 4) anode to cathode through internal supply

**Q71:** Acetone reacts with iodine  $\text{I}_2$  to form iodoform in the presence of

- 1) Sodium iodide
- 2) Sodium hypoiodide
- 3) Iodine
- 4) None of the above

**Q72:** n-Butyl alcohol on dehydration forms  $\beta$ -butylene as the chief product. This happens because of the rearrangement- \_\_\_\_ ?

- 1)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$  to  $\text{CH}_3\text{CH}=\text{CHCH}_3$
- 2)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$  to  $(\text{CH}_3)_2\text{CHCH}=\text{CH}_2$
- 3)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$  to  $(\text{CH}_3)_3\text{CCH}_2\text{OH}$
- 4)  $(\text{CH}_3)_3\text{CCH}_2\text{OH}$  to  $\text{CH}_3\text{CH}=\text{CHCH}_3$

**Q73:** Match the Column I and Column II.

Column I	Column II
(A) Impurity defect	(p) $\text{NaCl}$ with anionic sites F-centres
(B) Metal excess defect	(q) $\text{NaCl}$ with a $\text{Na}^+$
(C) Metal deficiency defect	(r) $\text{NaCl}$ with $x\text{Na}^+$ and some cationic sites vacant

- 1) (A)→(r); (B)→(p); (C)→(q)
- 2) (A)→(p); (B)→(q); (C)→(r)
- 3) (A)→(r); (B)→(q); (C)→(p)
- 4) (A)→(q); (B)→(p); (C)→(r)

**Q74:** Which of the following has lowest boiling point

- 1) o-nitrophenol
- 2) m-nitrophenol
- 3) p-nitrophenol
- 4) phenol

**Q75:** Among the following substances the lowest vapour pressure is exerted by .... ?

- 1) Water
- 2) Mercury
- 3) Kerosene
- 4) Rectified spirit

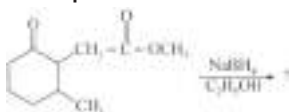
**Q76:** When phenyl magnesium bromide reacts with t-butanol, the product would be .... ?

- 1) Benzene
- 2) Phenol
- 3) t-butyl benzene
- 4) t-butyl phenyl ether

**Q77:** In the titration between oxalic acid and acidified potassium permanganate, the manganous salt formed catalyses the reaction. The manganous salt is \_\_\_\_ ?

- 1) A promoter
- 2) A positive catalyst
- 3) An autocatalyst
- 4) None of these

**Q78:** The product formed in the following chemical reaction is :



- 1)
- 2)
- 3)
- 4)

**Q79:** Sulpha drugs are used for

- 1) Precipitating bacteria
- 2) Removing bacteria
- 3) Decreasing the size of bacteria
- 4) Stopping the growth of bacteria

**Q80:** If the bond length of  $\text{Zr}$  bond in carbon monoxide is  $\text{Zr} \text{---} \text{C} \text{---} \text{O}$ , then what is the value of  $\text{Zr}$  bond length in a  $\text{Zr} \text{---} \text{C} \text{---} \text{O}$ ?

- 1)  $\text{Zr} \text{---} \text{C}$
- 2)  $\text{Zr} \text{---} \text{O}$
- 3)  $\text{Zr} \text{---} \text{C}$
- 4)  $\text{Zr} \text{---} \text{O}$

### Subject: Botany

#### Section A

**Q81:** When the value of ' ' is significantly low as compared to other. It is better known by .... ?

- 1) Competition exclusion
- 2) Resource partition
- 3) Interference competition
- 4) Competition release

**Q82:** The 'niche' of a species is meant for

- 1) habitat and specific functions of a species
- 2) specific place where an organism lives
- 3) specific species function and its competitive power
- 4) none of these.

**Q83:** Which of the following is the result of double fertilization?

- 1) Cotyledon
- 2) Nucellus
- 3) Endosperm
- 4) None of these

**Q84:** Which of the following would appear as the pioneer organisms on bare rocks?

- 1) Mosses
- 2) Green algae
- 3) Lichens
- 4) Liverworts

**Q85:** Net primary productivity of an ecosystem is calculated as .... ?

- |                                  |  |
|----------------------------------|--|
| 1) GPP + Secondary productivity. | 2) Secondary productivity – Respiratory losses.        |
| 3) GPP – Respiratory losses.     | 4) (GPP + Secondary productivity) - Respiratory losses |

**Q86:** Assertion: Ants, bees and termite show parthenogenesis.

Reason: Parthenogenesis is the process in which new organism is formed without fertilization.

- |  |  |
|--|--|
| 1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion. | 2) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion. |
| 3) If Assertion is true but Reason is false.   | 4) If both Assertion and Reason are false.   |

**Q87:** Which is the major crop in Asia?

- |         |              |          |           |
|---------|--------------|----------|-----------|
| 1) Rice | 2) Sugarcane | 3) Jowar | 4) Millet |
|---------|--------------|----------|-----------|

**Q88:** Which of the following are advantages of ecological sanitation?

- I. It is a practical, hygienic and efficient method of waste disposal
- II. It is cost effective
- III. Human excreta can be recycled into natural fertilisers, to replace chemical fertilisers

- |               |                  |
|---------------|------------------|
| 1) I and II   | 2) I and III     |
| 3) II and III | 4) I, II and III |

**Q89:** Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their

- |                    |                           |
|--------------------|---------------------------|
| 1) Defence action  | 2) Effect on reproduction |
| 3) Nutritive value | 4) Growth response        |

**Q90:** The age pyramid with broad base indicates

- |                                       |  |
|---------------------------------------|--|
| 1) high percentage of old individuals | 2) low percentage of young individuals   |
| 3) a stable population                | 4) high percentage of young individuals. |

**Q91:** Pollen grains can be stored for several years in liquid nitrogen having a temperature of .... ?

- |                           |                           |
|---------------------------|---------------------------|
| 1) $-9^{\circ}\text{C}$   | 2) $-19^{\circ}\text{C}$  |
| 3) $-195^{\circ}\text{C}$ | 4) $-196^{\circ}\text{C}$ |

**Q92:** Apomictic embryos in Citrus arise from

- |                    |   |
|--------------------|---|
| 1) Synergids       | 2) Maternal sporophytic tissue in ovule |
| 3) Antipodal cells | 4) Diploid egg                          |

**Q93:** Which group of plants show clear cut vegetative, reproductive and senescent phases in their life cycle?

- |                           |                              |
|---------------------------|------------------------------|
| 1) Mustard, Radish, Mango | 2) Peepal, Mango, Banyan     |
| 3) Wheat, Rice, Cabbage   | 4) Peepal, Bryophyllum, Rice |

**Q94:** The term 'biomagnification' refers to the ---- ?

- |  |   |
|--|---|
| 1) Growth of organisms due to food consumption | 2) Increase in population size  |
| 3) Blowing up of environmental issues by man   | 4) Increasing in the concentration of non-degradable pollutants as they pass through food chain |

**Q95:** Sexual reproduction involves

- |                              |                                   |
|------------------------------|-----------------------------------|
| 1) meiosis only.             | 2) meiosis and fusion of gametes. |
| 3) both mitosis and meiosis. | 4) all of the above               |

**Q96:** The straight-breeding technique of crossing the related animals to increase the genetic purity and homozygosity of progeny is \_\_\_\_ ?

- |                |                  |
|----------------|------------------|
| 1) outbreeding | 2) inbreeding    |
| 3) outcrossing | 4) crossbreeding |

**Q97:** Carbon monoxide is a pollutant because ---- ?

- |                            |                                  |
|----------------------------|----------------------------------|
| 1) reacts with haemoglobin | 2) makes nervous system inactive |
| 3) it reacts with $O_2$    | 4) it inhibits glycolysis.       |

**Q98:** In an upright pyramid of biomass, the herbivores generally occupy which of the following position?

- |                   |                    |
|-------------------|--------------------|
| 1) First position | 2) Second position |
| 3) Third position | 4) Fourth position |

**Q99:** Which of the following statements regarding the asexual reproduction is incorrect?

- |   |   |
|---|---|
| 1) Both mitotic and meiotic division occurs.                      | 2) It does not contribute to evolution and speciation.                            |
| 3) It is uniparental and usually occurs in unicellular organisms. | 4) There is no variation and the offsprings have the same phenotype and genotype. |

**Q100:** The parameters carried out for managing dairy farm are

- I. selection of both the male and female animals having high yielding potential and resistance to diseases
- II. regular visits by a veterinary doctor
- III. each animal should be fed on a balance ratio
- IV. pay attention to good animal management and general supervision

Which of the above statement are correct?

- |                   |                      |
|-------------------|----------------------|
| 1) I and II       | 2) I, II and III     |
| 3) II, III and IV | 4) I, II, III and IV |



## Subject: Zoology

### Section A

**Q101:** Chemical theory of origin of life was given by .... ?

- |                   |                       |
|-------------------|-----------------------|
| 1) Stanley Miller | 2) Oparin and Haldane |
| 3) Louis Pasteur  | 4) Spallanzani        |

**Q102:** in gene therapy of Adenosine Deaminase (ADA) deficiency, the patient requires periodic infusion of genetically engineered lymphocytes because :

- |   |   |
|---|---|
| 1) Retroviral vector is introduced into these lymphocytes.                  | 2) Gene isolated from marrow cells producing ADA is introduced into cells at embryonic stages |
| 3) Lymphocytes from patient's blood are grown in culture, outside the body. | 4) Genetically engineered lymphocytes are not immortal cells.                                 |

**Q103:**  $\lambda$ -plasmid used in genetic engineering is obtained from

- |                              |                             |
|------------------------------|-----------------------------|
| 1) Bacillus thuringiensis    | 2) Agrobacterium rhizogenes |
| 3) Agrobacterium tumefaciens | 4) Pseudomonas syringae     |

**Q104:** X-rays are used in .... ?

- |        |        |            |              |
|--------|--------|------------|--------------|
| 1) ECG | 2) EEG | 3) CT-scan | 4) Endoscopy |
|--------|--------|------------|--------------|

**Q105:** Biological concept of species is mainly based on

- |                                 |   |
|---------------------------------|---|
| 1) Reproductive isolation       | 2) Morphological features only            |
| 3) Methods of reproduction only | 4) Morphology and methods of reproduction |

**Q106:** First polar body is formed during the formation of \_\_\_\_\_ and completion of \_\_\_\_ meiotic division.

- |                                |                             |
|--------------------------------|-----------------------------|
| 1) Primary oocytes, II         | 2) Secondary oocytes, I     |
| 3) Secondary spermatocytes, II | 4) Primary spermatocytes, I |

**Q107:** Hepatitis-B and HIV spreads through

- |                             |                         |
|-----------------------------|-------------------------|
| 1) Sharing needles          | 2) Transfusion of blood |
| 3) Infected mother to child | 4) All of the above     |

**Q108:** High increase in human population is due to \_\_\_\_ ?

- |                                  |                              |
|----------------------------------|------------------------------|
| 1) Increase in average life span | 2) Better medical facilities |
| 3) Decrease in death rate        | 4) All of these              |

**Q109:** The use of antihistamine, adrenaline and steroids quickly reduce the symptoms of .... ?

- |                   |                       |
|-------------------|-----------------------|
| 1) fungal disease | 2) viral disease      |
| 3) allergy        | 4) helminthes disease |

**Q110:** In 1997, the first transgenic cow Rosie produced human protein – enriched milk (2.4 grams per litre), milk contains : -

- 1) Alpha-lactaglobulin
- 3) Beta-lactaglobulin

- 2) Alpha-lactalbumin
- 4) Beta-lactalbumin

**Q111:** Receptors for sperm binding in mammals are present on \_\_\_\_ ?

- 1) Corona radiata
- 3) Perivitelline space
- 2) Vitelline membrane
- 4) Zona pellucida

**112:** Stirred-tank bioreactors have been designed for

- 1) addition of preservatives to the product.
- 3) ensuring anaerobic conditions in the culture vessel.
- 2) purification of the product.
- 4) availability of oxygen throughout the process.

**Q113:** What is the correct chronological sequence of human evolution

- 1) Ramapithecus    Australopithecus    2) Ramapithecus    Homo habilis    Homo sapiens sapiens
- 3) Ramapithecus - Australopithecus - Homo habilis - Homo erectus
- 4) Homo habilis    Australopithecus    Homo sapiens sapiens

**Q114:** In vitro clonal propagation in plants is characterized by .... ?

- 1) PCR and RAPD
- 3) electrophoresis and HPLC
- 2) Northern blotting
- 4) microscopy.

**Q115:** Copper-T prevents \_\_\_\_ ?

- 1) Ovulation
- 3) Implantation
- 2) Fertilization of egg
- 4) Both (B) and (C)

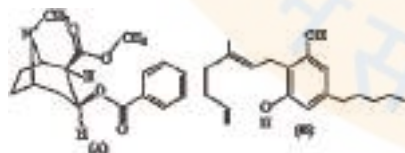
**Q116:** Which of the following secretes the hormone, relaxin, during the later phase of pregnancy?

- 1) Graafian follicle
- 3) Foetus
- 2) Corpus luteum
- 4) Uterus

**Q117:** The embryonic membrane involved in the formation of placenta in human is \_\_\_\_ ?

- 1) Yolk sac
- 2) Allantois
- 3) Amnion
- 4) Chorion

**Q118:** Select the correct statement for A and B figure:



- 1) A is cannabinoid molecule and B is morphine.
- 3) Both A and B are potent painkillers.
- 2) Ganja is produced by A and heroin is produced by B.
- 4) A is a potent painkiller and B is cannabinoid molecule.

**Q119:** DNA or RNA segment tagged with a radioactive molecule is called \_\_\_\_\_ .

- 1) vector
- 2) probe
- 3) clone
- 4) plasmid

**Q120:** IVF in which the early zygote with up to ...A... blastomere is transferred to the Fallopian tube is called ...B... .

- 1) A-8; B-ZIFT
- 3) A-32; B-ZIFT
- 2) A-16; B-ZIFT
- 4) A-64; B-ZIF