



# SAKSHAM

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**GUJCET - 3 (PCB)**  
**(ENGLISH MEDIUM)**

DATE: 31.03.2023

Subject: Physics

Physics

- Q1:** In a photoelectric experiment the stopping potential for the incident light of wavelength  $\lambda$  is 2 volt. If the wavelength be changed to  $2\lambda$ , the stopping potential will be \_\_\_\_ ?
- 1) 2V  
2) Zero  
3) Less than 2 V  
4) More than 2 V
- Q2:** A conductor has  $9 \times 10^{18}$  positive charge. The conductor has \_\_\_\_ ?
- 1) 9 electrons in excess  
2) 27 electrons in excess  
3) 9 electrons in short  
4) 27 electrons in short
- Q3:** Ratio of intensities of two waves are given by 4: 1. Then ratio of the amplitudes of the two waves is \_\_\_\_ ?
- 1) 2: 1  
2) 1 : 2  
3) 4: 1  
4) 1 : 4.
- Q4:** In a series LCR circuit, if the applied voltage  $V = V_0 \sin \omega t$  and the current in the circuit  $I$  at any instant are given as  $I = I_0 \sin(\omega t - \phi)$  and  $I = I_0 \cos \omega t$  then which of the following holds good : \_\_\_\_ ?
- 1)  $I_0 = \frac{V_0}{Z}$   
2)  $I_0 = \frac{V_0}{R}$   
3)  $I_0 = \frac{V_0}{X_L}$   
4) none
- Q5:** A ray of light travelling inside a rectangular glass block of refractive index  $\mu$  is incident on the glass-air surface at an angle of incidence of  $\theta$ . The refractive index of air is one. Under these conditions the ray will .... ?
- 1) emerge into the air without any deviation  
2) be reflected back into the glass  
3) be absorbed  
4) emerge into the air with an angle of refraction equal to  $\theta$
- Q6:** Two parallel, long wires carry currents  $I_1$  and  $I_2$  with  $I_1 > I_2$ . When the current are in the same direction, the magnetic field at a point midway between the wire is  $B$ . If the direction of  $I_1$  is reversed, the field becomes  $3B$ . The ratio  $I_1 : I_2$  is: \_\_\_\_ ?

- 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)  $\frac{9}{500}$  V/m  
3)  $\frac{9}{1000}$  V/m

- 2)  $\frac{9}{1000}$  V/m  
4)  $\frac{9}{500}$  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)  $3 \times 10^6$  Hz  
3)  $3 \times 10^8$  Hz

- 2)  $3 \times 10^4$  Hz  
4)  $3 \times 10^7$  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)  $50 \text{ Hz}$  or  $R$   
3)  $60 \text{ Hz}$  or  $R$

- 2)  $50 \text{ Hz}$  or  $R$   
4)  $120 \text{ Hz}$  or  $R$

**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)

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

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

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



**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  $8 \times 10^5 \text{ V/m}$  between the plates. If the charge on the capacitor plate is  $1 \mu\text{C}$  the force on each capacitor plate is [Orissa JEE 2002]

- 1)  $9.7 \text{ N}$                                       2)  $9.7 \text{ mN}$   
3)  $9.799 \text{ N}$                                 4) None of these
- 

**Q25:** Three equal charges each  $4 \mu\text{C}$  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)  $\frac{V}{x^2}$   
3)  $\frac{V}{x^3}$     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)  $n^2 F$   
3)  $F$     4)  $F/n$
- 

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

- 1) N.A.B.R.                                      2) N.A.B.  
3) N.A.B.R.                                      4) N.A.B.
- 

**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
- 

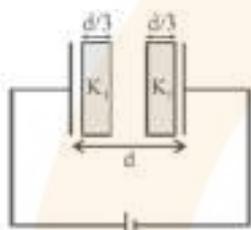
**Q32:** In a p-n junction diode acting as a half-wave rectifier, which of the following statements is not true?

- 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  $\langle \theta \rangle B_n$  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  $\phi$  will be \_\_\_\_ ?
- 1)  $B \langle \theta \rangle C_n$
- 2) data is insufficient
- 3)  $\leq \langle \theta \rangle B_n$
- 4)  $B > \langle \theta \rangle C_n$

**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

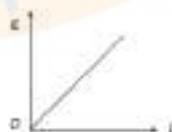
- Q37:** The de-broglie wavelength of an electron and the wavelength of a photon are the same. The ratio between the energy of the photon and the momentum of the electron is
- 1)  $h$
- 2)  $c$
- 3)  $\leq$
- 4)  $\frac{c}{\epsilon}$

**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)  $\frac{Z^2 e^2}{4\pi m r^3}$
- 3)  $\frac{Z^2 e^2}{4\pi m r^3}$

- 2)  $\frac{Z^2 e^2}{4\pi m r^3}$
- 4)  $\frac{Z^2 e^2}{4\pi m r^3}$

### Subject: Chemistry

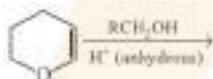
#### Chemistry

**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)  $1.77 \times 10^{21}$
- 3)  $1.77 \times 10^{22}$

- 2)  $1.77 \times 10^{21}$
- 4)  $1.77 \times 10^{22}$

**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 etheral 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)  $s \ 8V \ xr \ A$
- 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)  $V_A N \pi 1 He \ 2C$
- 4)  $V \ \gt N \pi 1 He \ 2C$

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

- 1)  $Zd \ \gt Z$
- 2)  $Z \ \underline{d} \ BZ$
- 3)  $Zd \ \gt r$
- 4)  $Z \ \underline{d} \ BV$

**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

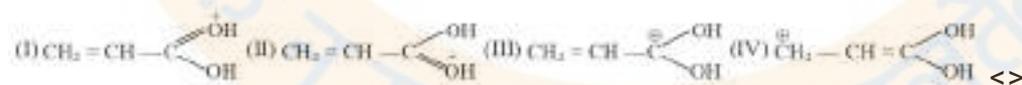
**Q53:** Which one of the following will undergo meta-substitution on monochlorination?

- 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 [Vx] s m z <HHH>

- 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 |

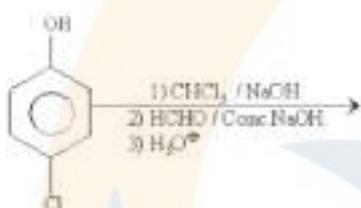
**Q60:** Dimethyl glyoxime reagent is used as co-ordinating reagent in the quantitative estimation of \_\_\_\_ ?

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

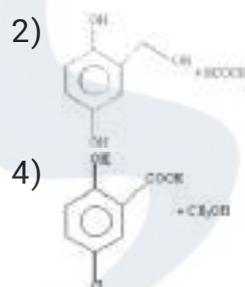
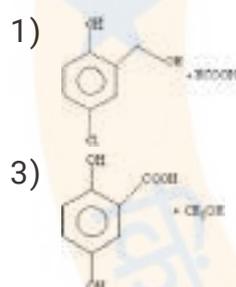
**Q61:** In the body centred tetragonal crystal system formed by square sheets, the co-ordination number is equal to - \_\_\_\_ ?

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

**Q62:**



. The correct product is .... ?



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

- |              |              |
|--------------|--------------|
| 1) $e = g B$ | 2) $e = g A$ |
| 3) $e g =$   | 4) n r       |

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

- |           |           |
|-----------|-----------|
| 1) $HH =$ | 2) $HR =$ |
| 3) $HF =$ | 4) 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  $\oplus 1Zn 2C \rightarrow$  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  $\text{KMnO}_4$  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  $\text{CH}_3\text{-CH=CH-CH}_2\text{-OH}$
- 2)  $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-OH}$  to  $(\text{CH}_3)_2\text{CH-CH=CH}_2$
- 3)  $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-OH}$  to  $(\text{CH}_3)_3\text{C-OH}$
- 4)  $(\text{CH}_3)_3\text{C-OH}$  to  $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-CH}_2\text{-OH}$

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

Column I	Column II
(A) Impurity defect	(p) n Z with anionic sites F-centres
(B) Metal excess defect	(q) a r with a $\times 4$
(C) Metal deficiency defect	(r) n Z with $x = 4$ 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) -nitrophenol
- 2) -nitrophenol
- 3) -nitrophenol
- 4) phenol

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

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

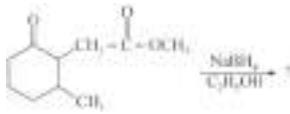
**Q76:** When phenyl magnesium bromide reacts with t-butanol, the product would be .... ?

- 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  $\frac{1}{2}(\text{A} + \text{B})$ , then what is the value of  $\text{Zr}$  bond length in a  $\text{1Zr 2B}$ ?

- 1)  $\frac{1}{2}(\text{A} + \text{B})$
- 2)  $\frac{1}{2}(\text{A} - \text{B})$
- 3)  $\frac{1}{2}(\text{A} - \text{B})$
- 4)  $\frac{1}{2}(\text{A} + \text{B})$

### 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) $-196^{\circ}\text{C}$ | 2) $-19^{\circ}\text{C}$  |
| 3) $-19^{\circ}\text{C}$  | 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 - Homo habilis - Homo erectus - Homo sapiens sapiens
- 2) Ramapithecus - Homo habilis - Homo erectus - Homo sapiens sapiens
- 3) Ramapithecus - Australopithecus - Homo habilis - Homo erectus
- 4) Homo habilis - Australopithecus - Homo erectus - 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)

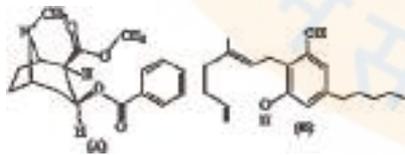
**Q116:** Which of the following secretes the hormone, relaxin, during the later phase of pregnancy?

- 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