

**ENTRANCE TEST (2021)**  
**NMDCAT TEST # 3**  
**BIOLOGY**

- Q.1 Following hormones are included in amino acids and derivatives category, EXCEPT:  
 A) Oxytocin  
 B) Thyroxine  
 C) Epinephrine  
 D) Nor-epinephrine
- Q.2 Hypothalamus is the centre for conversion of \_\_\_\_\_ stimuli into \_\_\_\_\_ responses:  
 A) Sensory, nervous  
 B) Sensory, hormonal  
 C) Nervous, sensory  
 D) Hormonal, sensory
- Q.3 Both vasopressin and oxytocin are produced by \_\_\_\_\_, but released from \_\_\_\_\_ for action:  
 A) Hypothalamus, anterior pituitary  
 B) Anterior pituitary, hypothalamus  
 C) Hypothalamus, posterior pituitary  
 D) Posterior pituitary, hypothalamus
- Q.4 Which one of the following parts stores and secretes, but does not produce any hormone?  
 A) Anterior pituitary  
 B) Middle pituitary  
 C) Hypothalamus  
 D) Posterior pituitary
- Q.5 ADH and oxytocin are released from their storage after receiving the nerve impulse from:  
 A) Hypothalamus  
 B) Anterior pituitary  
 C) Posterior pituitary  
 D) Thyroid gland
- Q.6 A battery of releasing and inhibiting hormones is released by:  
 A) Pituitary gland  
 B) Hypothalamus  
 C) Anterior pituitary  
 D) Posterior pituitary
- Q.7 Following are the glycoprotein hormones, EXCEPT:  
 A) FSH  
 B) TSH *Glycoprotein*  
 C) STH  
 D) LH *Glycoprotein*
- Q.8 After puberty, STH keeps on promoting the:  
 A) Protein synthesis  
 B) Cell division  
 C) Cell differentiation  
 D) Metabolism
- Q.9 Acromegaly is caused by:  
 A) Undersecretion of STH before puberty  
 B) Undersecretion of STH after puberty  
 C) Oversecretion of STH before puberty  
 D) Oversecretion of STH after puberty
- Q.10 As \_\_\_\_\_ is to female, \_\_\_\_\_ is to male:  
 A) ICSH, LH  
 B) FSH, ICSH  
 C) ICSH, FSH  
 D) LH, ICSH
- Q.11 There is/are \_\_\_\_\_ mode/s of action of hormones:  
 A) Two  
 B) Three  
 C) Four  
 D) Single
- Q.12 Following gonadotrophic hormones share, a common hypothalamic factor, EXCEPT:  
 A) LTH (Prolactin)  
 B) FSH  
 C) LH  
 D) ICSH
- Q.13 Following hormones adopt "Fixed membrane receptor mechanism", EXCEPT:  
 A) Insulin *Protein*  
 B) Oxytocin *polypeptide*  
 C) Calcitonin  
 D) Thyroxine *Amino acid*
- Q.14 Ovaries secrete/release \_\_\_\_\_ under the influence of FSH:  
 A) Progesterone  
 B) Estrogen  
 C) Ovum  
 D) Menstrual debris
- Q.15 Production of large quantity of diluted urine and great thirst are indications of:  
 A) Excess of ADH  
 B) Deficiency of ADH  
 C) Excess of aldosterone  
 D) Deficiency of aldosterone
- Q.16 Secretion of vasopressin is stimulated by following factors, EXCEPT:  
 A) Decrease in blood pressure  
 B) Increase in blood pressure  
 C) Decrease in blood volume  
 D) Decrease in osmotic pressure
- Q.17 Stimulus for secretion of vasopressin is detected by:  
 A) Osmoreceptors in hypothalamus  
 B) Osmoreceptors in pituitary  
 C) Chemoreceptors in hypothalamus  
 D) Stretch receptors in hypothalamus

*blood pressure*  
*Vasopressin*  
*Hydrophobic in nature*

- Q.18  A) ADH, glucagon is to diabetes insipidus, as  C) Glucagon, insulin is to diabetes mellitus:  
 B) ADH, insulin  D) Insulin, glucagon
- Q.19  Oxytocin production during labor and suckling by baby is an example of:  
 A) Beneficial positive feedback mechanism  
 B) Harmful positive feedback mechanism  
 C) Beneficial negative feedback mechanism  
 D) Harmful negative feedback mechanism
- Q.20 Primary action of \_\_\_\_\_ is on smooth muscles:  
 A) ADH  
 B) Progesterone  
 C) Estrogen  
 D) Oxytocin
- Q.21 As milk production is induced by \_\_\_\_\_, milk ejection is induced by \_\_\_\_\_:  
 A) LTH, prolactin  
 B) Prolactin, LTH  
 C) Prolactin, Oxytocin  
 D) Oxytocin, LTH
- Q.22 Which one of the following is not true about thyroid gland?  
 A) A bilobed gland  
 B) Produces calcitonin  
 C) Situated below the larynx  
 D) Produces cortisol (cortex part)
- Q.23 Following hormones are produced by the thyroid gland, EXCEPT:  
 A) TSH → Anterior lobe  
 B) T<sub>4</sub>  
 C) T<sub>3</sub>  
 D) Calcitonin
- Q.24 As \_\_\_\_\_ is to calcitonin, similarly \_\_\_\_\_ is to insulin:  
 A) Tetraiodothyroxine, cortisol  
 B) Triiodothyroxine, cortisol  
 C) T<sub>4</sub>, glucagon  
 D) T<sub>3</sub>, cortisol
- Q.25 Both \_\_\_\_\_ and \_\_\_\_\_ are same analogous to some extent:  
 A) Insulin, glucagon  
 B) Calcitonin, cortisol  
 C) Cortisol, aldosterone  
 D) Cortisol, glucagon
- Q.26 \_\_\_\_\_ and \_\_\_\_\_ are the two hormones which act essentially in the same way:  
 A) Thyroxine and calcitonin  
 B) Thyroxine and tetraiodothyronine  
 C) Thyroxine and tri-iodothyronine  
 D) Tri-iodothyronine and calcitonin
- Q.27 Higher levels of secretions by thyroid are carried out in following situations, EXCEPT:  
 A) Period of reproduction  
 B) Period of rapid growth  
 C) Sexual maturation  
 D) Stress situation
- Q.28 A large sized tadpole is obtained by the deficiency of:  
 A) Calcitonin  
 B) Thyroxine  
 C) Cortisol  
 D) Oxytocin
- Q.29 Grave's disease is a consequence of:  
 A) Hypothyroidism  
 B) Hyperthyroidism  
 C) Deficiency of STH  
 D) Deficiency of FSH
- 30 If congenitally deficient, the lack of thyroxine may cause following symptoms, EXCEPT:  
 A) Cretinism  
 B) Abnormal development  
 C) Coarse scanty hair  
 D) Swelling on neck (in myxoedema)
- 31 Hypothyroidism may lead to deposition of excess fat as a result of which weight is increased. The condition is known as:  
 A) Goiter  
 B) Exophthalmic goiter  
 C) Myxoedema  
 D) Grave's disease
- 32 Puffiness of hands and skin is the symptom of:  
 A) Grave's disease  
 B) Exophthalmic goiter  
 C) Cretinism  
 D) Myxoedema
- 33 High Ca<sup>2+</sup> ion concentration in the blood causes stimulation of the synthesis and release of:  
 A) Calcitonin → 10 mg / 100 ml decrease  
 B) Cortisol  
 C) Parathormone  
 D) Tetraiodothyroxine
- 34 Progressive demineralization of the bones similar to rickets occurs due to the overactivity of:  
 A) Thyroid gland  
 B) Parathyroid gland  
 C) Anterior pituitary  
 D) Posterior pituitary
- 35 A hormone which ensures both glucoregulation and mineral regulation in human body is:  
 A) Aldosterone  
 B) Cortisol  
 C) Corticosteroid  
 D) Androgens

- Q.36 Principal mineralocorticoid hormone that conserves the level of Na<sup>+</sup> ions in the body is:  
 A) Aldosterone  
 B) Calcitonin  
 C) Parathyroid hormone  
 D) Vasopressin
- Q.37 Oversecretion of insulin may result in:  
 A) Hyperglycemia  
 B) Hypoglycemia  
 C) Hypercalcemia  
 D) Hypocalcemia
- Q.38 Which one of the following is not included in corticosteroid hormones?  
 A) Epinephrine  
 B) Cortisol  
 C) Cortisterone  
 D) Aldosterone
- Q.39 Adrenal cortex secretes:  
 A) Epinephrine  
 B) Noe-epinephrine  
 C) Testosterone (Androgen)  
 D) Progesterone
- Q.40 \_\_\_\_\_ is to sodium as \_\_\_\_\_ is to glucose:  
 A) Cortisol, aldosterone  
 B) Aldosterone, insulin  
 C) Insulin, aldosterone  
 D) Aldosterone, cortisol → Glucocorticoid
- Q.41 Which one of the following is associated with development of secondary male characteristics?  
 A) Androgens  
 B) Estrogens  
 C) Progesterone  
 D) Corticosterone
- Q.42 Secretin promotes the secretion of:  
 A) Gastric juice  
 B) Intestinal juice  
 C) Pancreatic juice  
 D) Saliva
- Q.43 Gastrin is produced under the influence of \_\_\_\_\_ food in stomach:  
 A) Organic  
 B) Carbohydrates  
 C) Fatty  
 D) Protein
- Q.44 Ripening follicle secretes:  
 A) FSH  
 B) LH  
 C) Oestrogen (from wall)  
 D) LTH
- Q.45 Oestrogen exerts \_\_\_\_\_ which results in a sharp rise in LH output by the pituitary:  
 A) Positive feedback  
 B) Negative feedback on FSH  
 C) Feedback inhibition  
 D) Pressure
- Q.46 Deficiency of sex hormones, in adults results in:  
 A) Failure to mature sexually  
 B) Sterility  
 C) Dwarfness  
 D) Gigantism
- Q.47 Progesterone is produced by \_\_\_\_\_ in response to LH from pituitary:  
 A) Developing follicle  
 B) Degenerating follicle  
 C) Ruptured follicle  
 D) Graafian follicle
- Q.48 ← Castrated male fails to develop:  
 A) Primary sexual characteristics  
 B) Secondary sexual characteristic  
 C) Gonads  
 D) Gonadotrophins
- Q.49 \_\_\_\_\_ abnormalities seem rare as endocrine disorders:  
 A) Insulin  
 B) Thyroxine  
 C) Glucagon  
 D) Androgen
- Q.50 Which one of the following is used in birth control pills?  
 A) Estrogen  
 B) Progesterone  
 C) FSH  
 D) LH

## CHEMISTRY

- Q.51 Which of the following is a strong electrophile?  
 A) Cl  
 B) Cl<sup>-</sup>  
 C) Cl<sub>2</sub>  
 D) Cl
- Q.52 Consider the following statements about nature of carbon and their primary suffix:

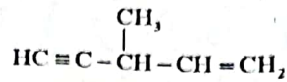
	Nature of carbon	Primary suffix
I	Saturated carbon chain	-ane
II	Unsaturated carbon chain (one C=C bond)	-ene
III	Unsaturated carbon chain (two C=C bonds)	-adiene
IV	Unsaturated carbon chain (two C≡C bonds)	-adiyne

Mark the correct statements:

- A) I only  
 B) II only

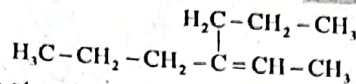
- C) II and IV  
 D) I, II, III and IV

Q.53 Consider the following structure of hydrocarbon which have double and triple bonds:



Which of the following is the correct IUPAC name of above hydrocarbon?

- A) 3-Methyl-1-penten-4-yne  
 B) 3-Methyl-4-penten-1-yne  
 C) 2-Methyl-1-penten-3-yne  
 D) 3-Methyl-3-penten-1-yne
- Q.54 Which one of the following physical properties is not shown by benzene?  
 A) It is an aromatic hydrocarbon  
 B) It is colourless liquid at room temperature and one atmospheric pressure  
 C) It is non-flammable  
 D) It has a peculiar smell and burning taste
- Q.55 Consider the following structure of alkene:



The correct name of the given structure of alkene according to IUPAC is:

- A) 4-n-Propyl-4-hexene  
 B) 3-n-Propyl-3-hexene  
 C) 3-n-Propyl-2-hexene  
 D) 3-n-Propyl-3-hexane

Q.56 Consider the following conversions:



Which of the above compounds represent X, Y, Z respectively in the conversions?

- A) 2-Propanol, Propene, 2-Bromopropane  
 B) Propene, 2-Propanol, 2-Bromopropane  
 C) 2-Bromopropane, Propene, 2-Propanol  
 D) 2-Propanol, 2-Bromopropane, Propene
- Q.57 Alkanes have \_\_\_\_\_ boiling points because they are \_\_\_\_\_ and have \_\_\_\_\_ intermolecular forces:
- A) Low, non-polar, weak  
 B) High, non-polar, strong  
 C) High, non-polar, weak  
 D) High, polar, strong

Q.58 If excess of methane is used in the reaction of chlorine with methane, the major product obtained is:

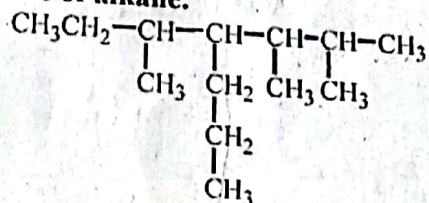
- A) Chloromethane  
 B) Dichloromethane  
 C) Trichloromethane  
 D) Tetrachloromethane

Q.59 Consider the following statements about benzene:

- I. It is highly unsaturated hydrocarbon  
 II. It is highly stable due to extensive delocalization of  $\pi$ -electrons  
 III. The word benzene comes from "gum benzoin" (a natural product)  
 IV. The word phene is derived from Greek word phena means "I bear light"

Which of the above statements is/are correct?  
 A) I only  
 B) II only  
 C) III and IV  
 D) I, II, III and IV

Q.60 Consider the following structure of alkane:



The correct name of the given structure of alkane according to IUPAC is:

- A) 4-Ethyl-2,3,5-trimethyl heptane  
 B) 2,3,5-Trimethyl-4-n-propylheptane  
 C) 4-n-propyl-2,3,5-Trimethyl hepta  
 D) 2,3,5-Triethyl-4-n-propylheptane

- Q.61** Consider the following statements about hydrocarbons.
- I. In saturated hydrocarbons (alkanes) .... Carbon atoms are bonded by single covalent bond
  - II. In unsaturated open chain hydrocarbons (alkenes and alkynes) .... The carbon chain which contains carbon-carbon multiple bonds
  - III. In saturated cyclic hydrocarbons .... Carbon atoms are bonded in the form of ring
  - IV. In aromatic hydrocarbons .... Contains benzene as the parent member
- Which of the above statement is/are correct?
- A) I only  
B) II only  
C) III and IV  
D) I, II, III and IV

**Q.62** Which of the following statements about alkene and arenes is incorrect?

Opt.	Alkenes (e.g. ethene)	Arenes (e.g. benzene)
A)	They are less stable	They are more stable
B)	They have localized pi electrons	They have delocalized pi electrons
C)	They involve electrophilic addition reactions	They involve electrophilic substitution reactions
D)	Pi electrons are less exposed in it	Pi electrons are more exposed in it

- Q.63** During the nitration of benzene, a nitro group (-NO<sub>2</sub>) substitutes at a carbon atom. Which one of the following statements gives the arrangement of the bonds at this carbon atom during the reaction?

Opt.	At the start of reaction	In the intermediate complex	At the end of reaction
A)	Planar	Planar	Planar
B)	Planar	Tetrahedral	Tetrahedral
C)	Planar	Tetrahedral	Planar
D)	Tetrahedral	Planar	Tetrahedral

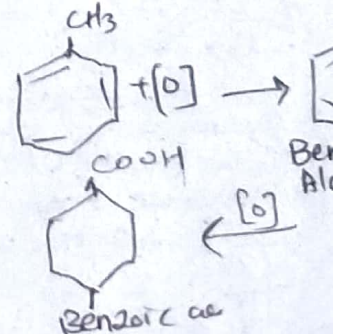
- Q.64** When ethene is treated with cold dilute KMnO<sub>4</sub> in basic medium, the product formed will be?
- A) 1,2-Ethanediol (ethylene glycol)  
B) 1,3-Propanediol  
C) 1,1-Ethanediol  
D) Ethanol
- reagent Distinguish Alkanes*

- Q.65** Toluene on oxidation by acidified KMnO<sub>4</sub> or K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> gives which of the following major product?

- A) Benzaldehyde  
B) Benzyl alcohol  
C) Benzoic acid  
D) Phenol

- Q.66** Which of the following statements is incorrect about atomic orbital treatment of benzene?

- A) Each carbon atom in benzene is sp<sup>2</sup> hybridized  
B) Each angle in benzene is 120°  
C) Overlapping of 2p<sub>z</sub> orbitals gives diffused or delocalized electron cloud  
D) It confirms regular tetrahedral structure of benzene



- Q.67** The alkyl halides which give alkenes on dehydrohalogenation with alcoholic potash must have:

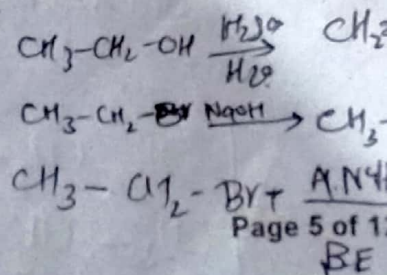
- A) α-H  
B) γ-H  
C) β-H  
D) δ-H

- Q.68** What happens when one mole of ethane is mixed with six moles of chlorine in the dark at room temperature?

- A) There is no reaction  
B) CH<sub>3</sub>CCl<sub>3</sub> and HCl are formed  
C) CH<sub>3</sub>CH<sub>2</sub>Cl and HCl are formed  
D) CCl<sub>3</sub>CCl<sub>3</sub> and HCl are formed

- Q.69** Which one of the following reactions would not give ethene?

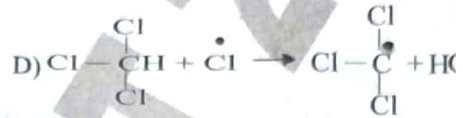
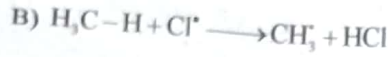
- A) Adding excess hot concentrated sulphuric acid to ethanol  
B) Adding warm aqueous sodium hydroxide to bromoethane  
C) Adding warm ethanolic sodium hydroxide to bromoethane  
D) Passing ethanol vapour over heated aluminium oxide



Q.70 Which of the following is incorrect statement about differences between elimination and substitution?

Opt.	Elimination	Substitution
A)	Less polar solvent favours it	More polar solvent favours it
B)	A stronger base favours it	A stronger nucleophile favours it
C)	Steric hindrance favours it	Steric hindrance does not favours it
D)	Low temperature favours it	High temperature favours it

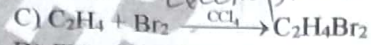
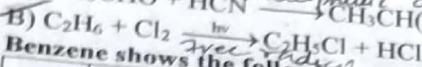
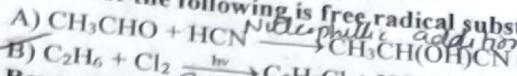
Q.71 On the chlorination of methane in the presence of diffused sunlight, a mixture of products are obtained. Which of the following is termination step:



Q.72 The introduction of (X) group in the presence of  $\text{FeBr}_3$  in benzene is called:

- A) Halogenation
- B) Carbonyl reduction
- C) Alkylation
- D) Formylation

Q.73 Which of the following is free radical substitution reaction?



Q.74 Benzene shows the following reactions:

Type of reactions	Reagents/conditions	Chemical reaction
I Nitration	Conc. $\text{HNO}_3$ , Conc. $\text{H}_2\text{SO}_4$ $50^\circ - 55^\circ \text{C}$	
II Sulphonation	Conc. $\text{H}_2\text{SO}_4$ $80^\circ \text{C}$	
III Alkylation	$\text{CH}_3\text{Cl}$ , $\text{AlCl}_3$	
IV Acylation	$\text{CH}_3\text{COCl}$ , $\text{AlCl}_3$	

The mechanism shown by the above reactions is:

- A) Electrophilic substitution reaction
- B) Nucleophilic substitution reaction
- C) Acid base reaction
- D)  $\beta$ -elimination reaction

Q.75 All of the following are correctly matched EXCEPT:

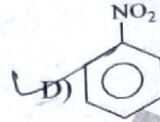
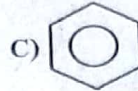
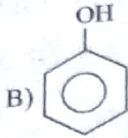
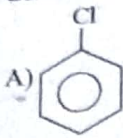
Opt.	Test/Reaction	Identification/Product
A)	Reaction of ammonical $\text{AgNO}_3$ with alkene	Test to detect unsaturation (White ppt are obtained)
B)	$\text{Br}_2/\text{CCl}_4$ with alkene	Test to detect unsaturation reddish brown colour of $\text{Br}_2$ is discharged
C)	Ozonolysis of alkene	To locate double bond in alkene
D)	Catalytic hydrogenation of vegetable oil	Vegetable ghee

Q.76 When different alkenes are treated with hot concentrated  $\text{KMnO}_4$  solution, different products are obtained. Which of the following alkenes produces two moles of carboxylic acids?

- A)  $\text{H}_2\text{C}=\text{CH}_2$  To ~~residue~~ changes into  $\text{CO}_2$  and  $\text{H}_2\text{O}$ .
- B)  $\text{R}-\text{CH}=\text{CH}-\text{R}$
- C)  $\text{R}^1\text{R}^2\text{C}=\text{CR}^3\text{R}^4$
- D)  $\text{R}^1\text{R}^2\text{C}=\text{CH}^3\text{R}^4$

$\text{CH}_3-\text{CH}_3 \rightarrow \text{SP}^3$  25% 75%  
 $\text{CH}_2=\text{CH}_2 \rightarrow \text{SP}^2$  33% 66%  
 $\text{CH}\equiv\text{CH} \rightarrow \text{SP}$  50% 50% E.N & S.I. chem.  
 $\text{SP} > \text{SP}^2 > \text{SP}^3$

Q.77 A substance which deactivates the aromatic ring to further substitution is called a deactivating substituent. Which of the following is strongly deactivating group attached with benzene ring:



Ortho-para directing  
Gro  
NH<sub>2</sub>, NHR, NR<sub>2</sub>  
OH, OR, O-C-R  
R, Phenyl  
F, Cl, Br, I

Q.78 Which property of benzene may be directly attributed to the stability associated with its delocalized electrons?

- A) It has a low boiling point  
B) It does not conduct electricity  
C) Its  $\Delta H_f$  is positive  
D) It tends to undergo electrophilic substitution rather than addition reaction

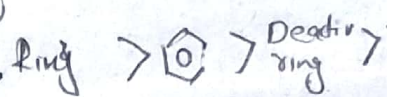
Meta directing  
NR<sub>2</sub>, N, NO<sub>2</sub>, S<sub>2</sub>  
C=O, C=O, C=O  
C-R, C-NH<sub>2</sub>  
C-X

Q.79 The IUPAC name of  $\text{CH}_3\text{-CH}(\text{C}_2\text{H}_5)\text{-CH}_2\text{-C}(\text{CH}_3)_2\text{-CH}_3$  is:

- A) 2,2-Dimethyl-4-ethylpentane  
B) 2,3-Dimethyl-4-ethylpentane  
C) 2,2,4-Trimethylhexane  
D) 2,4-Dimethyl-2-ethylpentane

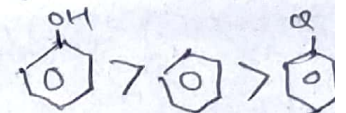
Q.80 Among the following compounds that can be most readily nitrated is:

- A) Benzoic acid  
B) Bromobenzene  
C) Benzene  
D) Aniline



Q.81 Which of the following methods is not used to prepare alkene?

- A) Dehydration of alcohol  
B) Dehydrohalogenation of alkyl halide  
C) Dehalogenation of vicinal dihalides  
D) Dehalogenation of tetrahalides



Q.82 When excess methane is treated with chlorine, the mixture of halogenoalkanes are obtained. Condition for the reaction is/are?

- A) Reaction of methane with chlorine in the presence of dil  $\text{H}_2\text{SO}_4$   
B) Reaction of methane with chlorine in the presence of catalyst  
C) Reaction of methane with chlorine in the presence of diffused sunlight  
D) Reaction of methane with chlorine in the presence of conc.  $\text{H}_2\text{SO}_4$

Q.83 In benzene electrons are delocalized making it a very stable molecule. Greater is the resonance energy, greater is the stability.

The resonance energy of benzene is:

- A)  $-150.5 \text{ kJ mol}^{-1}$   
B)  $+150.5 \text{ kJ mol}^{-1}$   
C)  $-358 \text{ kJ mol}^{-1}$   
D)  $+358 \text{ kJ mol}^{-1}$

Q.84 Which of the following are optimum conditions in order to get good quality of polyethene as a result of polymerization of ethene?

- I. Temperature  $400^\circ\text{C}$   
II. Pressure  $100 \text{ atm}$   
III. Amount of oxygen  $0.1\%$   
IV. Catalyst  $\text{Al}(\text{C}_2\text{H}_5)_3 + \text{TiCl}_4$  (Ziegler's catalyst)

- A) I and II only  
B) I, II and III  
C) I, III and IV  
D) I, II, III and IV

Q.85 Alkenes are more reactive than alkanes. This is because:

- A) The  $\pi$  electrons of a double bond are located much farther from the carbon nuclei and are thus less firmly bound to them  
B) The overlap of atomic orbitals in forming a  $\pi$  bond is not as effective as that in  $\sigma$  bonds.  
C) Both A and B  
D) Neither A nor B

PHYSICS

- Q.86 A capacitor has a capacitance of  $2.5 \times 10^{-8}$  F. In the charging process, electrons are removed from one plate and transferred to other one. When the potential difference between the plates is 450 V, how many electrons have been transferred?  
 A)  $7 \times 10^{13}$  electrons  
 B)  $7 \times 10^{16}$  electrons  
 C)  $7 \times 10^{11}$  electrons  
 D)  $7 \times 10^9$  electrons
- Q.87 One of the plates of a capacitor is given a charge of +5 C. The charge on the other plate is:  
 A) 10 C  
 B) -10 C  
 C) -5 C  
 D) +5 C
- Q.88 When a parallel plate capacitor is connected to a source of constant potential difference,  
 A) The whole of the charge drawn from the source is stored in the capacitor  
 B) The whole of the energy drawn from the source is stored in the capacitor  
 C) The capacity of the capacitor is decreased  
 D) The potential difference across the capacitor becomes infinite

- Q.89 A parallel plate capacitor has capacitance C. The separation between plates is halved and a dielectric is inserted between plates. The new capacitance becomes 7C. The dielectric constant of medium is:  
 A) 3.5  
 B) 4.5  
 C) 5.5  
 D) 6.5

- Q.90 A parallel plate capacitor has a capacitance of 25 pF in air and 112.5 pF when immersed in oil. The dielectric constant of the oil is:  
 A) 4.5  
 B) 2.9  
 C) 3.7  
 D) 5.3

- Q.91 A battery is permanently connected to a parallel plate capacitor and the energy stored is 10 joules. When one plate is moved so that separation of the plates is halved, the energy now stored in joule is:  
 A) 40 J  
 B) 5 J  
 C) 20 J  
 D) 2.5 J

- Q.92 Which of the following is not the expression for electric P.E stored in capacitor?  
 A)  $\frac{1}{2} QV$   
 B)  $\frac{1}{2} \frac{Q^2}{C}$   
 C)  $\frac{1}{2} E^2 \epsilon_0 \epsilon_r (Ad)$   
 D)  $\frac{1}{2} \frac{C^2 V^2}{Q}$

- Q.93 The capacity of a parallel plate capacitor is 5  $\mu$ F and it is given a charge of 20  $\mu$ C. The electrical energy stored in erg is:  
 A)  $400 \times 10^9$   
 B)  $8000 \times 10^{-5}$   
 C)  $800 \times 10^9$   
 D)  $4000 \times 10^{-5}$

- Q.94 Capacitance of a Capacitor in Vacuum is given by:  
 A)  $\frac{A\epsilon_0}{d}$   
 B)  $\frac{Ad}{\epsilon_0}$   
 C)  $\frac{A\epsilon_r}{d}$   
 D)  $\frac{A}{\epsilon_0 d}$

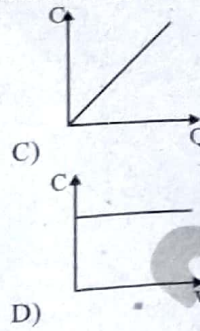
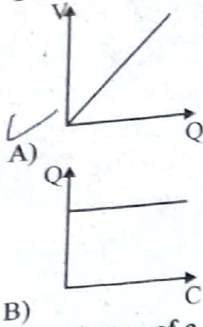
- Q.95 If a negatively charged capacitor plate is brought near the disc of a positively charged gold-leaf electroscope, then the divergence of gold leaves:  
 A) Increases  
 B) Decreases  
 C) Remains same  
 D) None of these

- Q.96 One of the plates X of a capacitor is connected to a source of +10 V. The other plate Y is earthed. What is the potential of the plate Y?  
 A) -10 V  
 B) 10 V  
 C) Zero  
 D) 20 V

- Q.97 A 2.5  $\mu$ F capacitor is to have an energy content of 5 joule, it must be placed across a potential difference of:  
 A) 500 V  
 B) 1000 V  
 C) 2000 V  
 D) 4000 V



Q.98 For which of the following graph the area represents energy stored in capacitor?



Q.99 Capacitance of a capacitor does not depend upon:

- A) Area of plate  
B) Distance between plates  
C) Medium between plates  
D) Material of the plates

Q.100 When the potential difference across the capacitor is decreased by dielectric then the capacitance of the capacitor will be:

- A) Zero  
B) Remain same  
C) Decreased  
D) Increased

Q.101 Ideally speaking a capacitor is fully charged after:

- A) Two times constant  
B) Three times constant  
C) Four times constant  
D) Infinite time

Q.102 Electric field lines between plates of a charged parallel plate capacitor are:

- A) Unequally Spaced  
B) Curved  
C) Equally spaced  
D) Any of these

Q.103 The net charge on capacitor plates is \_\_\_\_\_ if Q is magnitude of charge on either plate of parallel plate capacitor:

- A) 2Q  
B) Q  
C) Zero  
D) 4Q

Q.104 One farad is equal to:

- A) One coulomb per metre  
B) One coulomb per volt  
C) One volt per coulomb  
D) One volt per metre

Q.105 In the relation  $C = \frac{A\epsilon_0}{d}$  to find capacitance of parallel plate capacitor, A is:

- A) Area of either plate  
B) Total area of both plates  
C) Area of connected battery  
D) Area of dielectric

Q.106 The capacitance of capacitor increases by placing dielectric between its plates due to:

- A) Electric polarization of dielectric  
B) Magnetic polarization of dielectric  
C) Increase in electric field by dielectric  
D) Increase in potential difference by dielectric

Q.107 If the time constant of an RC-circuit is large, capacitor discharges:

- A) Linearly with time  
B) Rapidly  
C) Slowly  
D) None of these

Q.108 The electronic flashguns in cameras is an application of:

- A) Gauss's law  
B) Capacitor  
C) Ohm's law  
D) Inductor

Q.109 The ratio of instantaneous charge and maximum charge on plates of capacitor at RC is (during discharging):

- A) 36.8%  
B) 63.2%  
C) 92.5%  
D) 87.3%

Q.110 A capacitor which has a capacitance of 1 F will:

- A) Be fully charged in 1 second by a current of 1 A  
B) Store 5 C of charge at a potential difference of 5 volt  
C) Gain 1 joule of energy when 1 coulomb of charge is stored on it  
D) Discharge in 1 second when connected across a resistor of resistance 3 ohm

$\frac{+}{-} \frac{+}{-} =$   
net charge

- Q.111 The area of plates of 1 farad capacitor separated by 8.85 mm placed in air is:  
 A)  $10^5 \text{ m}^2$   C)  $10^9 \text{ m}^2$   $C = \frac{A \epsilon_0}{d} = \frac{cd}{\epsilon_0} = P$   
 B)  $10^{-8} \text{ m}^2$   D)  $10^{-15} \text{ m}^2$
- Q.112 Ohm  $\times$  farad = ?  
 A) Charge  C) Current  
 B) Potential  D) Time
- Q.113 A capacitor is charged with a battery and then it is disconnected. A slab of the dielectric is now inserted between the plates then:  
 A) The charge in the plates reduces and potential difference increases  
 B) Potential difference between the plates increases, stored energy decreases and charge remains the same  
 C) Potential difference between the plates decreases, stored energy decreases and charge remains unchanged  
 D) None of these
- Q.114 A  $1 \mu\text{F}$  capacitor of a TV is subjected to 4000 V potential difference. The energy stored in capacitor is:  
 A) 8 J  C)  $4 \times 10^{-3} \text{ J}$   
 B) 16 J  D)  $2 \times 10^{-3} \text{ J}$
- Q.115 The capacitance of parallel plate capacitor depends on:  
 A) The type of metal used  C) The potential applied across the plates  
 B) The thickness of plate  D) The separation between the plates

**ENGLISH**

Directions: Fill in the blank with appropriate option.

- Q.116 To be \_\_\_\_\_ the dwindling number of people who understood such things was to him a kind of secret and valued freemasonry (more than 2)  
 A) Between (for two person)  
 B) Among (more than two persons)  
 C) In  
 D) From particular place
- Q.117 These were blessed breaks in routine, but not, of course, comparable to the holidays we got \_\_\_\_\_ Christmas.  
 A) On  
 B) By  
 C) At (event) At the u on the u  
 D) To
- Q.118 A row of neat hurdles was arranged on the polished floor; like the ones \_\_\_\_\_ which Gorgios had won his race when at school.  
 A) On (physical contact)  
 B) Upon  
 C) At specific place  
 D) Over  $\text{فوق}$   $\text{على}$
- Q.119 Few people were about, and here and there rang out the steps of solitary travelers \_\_\_\_\_ home across the bridge to Battersea (destination)  
 A) In the way  
 B) By the way  $\text{بجانب}$   
 C) On the way  
 D) At the way  $\text{مقابل}$  (particular)
- Q.120 I explained the danger but said that I would not insist \_\_\_\_\_ a throat examination so long as they would take the responsibility.  
 A) In  
 B) At  $\text{على}$   $\text{ON}$   
 C) On  
 D) For

Directions: Identify the underlined word or phrase that contains a mistake and needs to be changed to make the sentence correct.

- Q.121 Jamal, as an avid lover of all animals, decided to protest over the depiction of violence towards dogs, which is becoming increasingly common in feature films.  
 A  B  C  D
- Q.122 It was a frequent picture in his mind that summer day with the sunlight filtering across the dust in Wetherby's study.  
 A  B  C  D  
 Women for their right  
 Women are fighting against the  
 Women are fighting for the men  
 An inhibitory factor

Q.123 At the <sup>event</sup> math competition, it was quite obvious that Mead Middle School's skills were far superior <sup>to</sup> over their opponent.

Q.124 She blurted out and immediately took out the key which hung in a thread round her neck.

Q.125 For eight years, he sought to find a means to aid the leucocytes in their fight for invading bacteria.

Directions Pick the correct option.

Q.126 A) Chips saw them off at the railway station at the evening.  
B) Chips saw them to on the railway station in the evening.  
C) Chips saw them of at the railway station in the evening.  
D) Chips saw them off at the railway station in the evening.

Q.127 A) I remember going in the British Museum one day to read for the cure for some slight ailment.  
B) I remember going to the British Museum one day to read up the cure for some slight ailment.  
C) I remember going towards the British Museum one day read up the cure of some slight ailment.  
D) I remember going toward the British Museum one day to read into the cure for some slight ailment.

Q.128 A) The package was lying on the front door  
B) The package was lying of the front door  
C) The package was lying besides the front door  
D) The package was lying by the front door.

Q.129 A) At September, when term began, Chips returned back and took up residence at Mrs. Wickett's.  
B) In September, when term began, Chips returned and took up residence at Mrs. Wickett's.  
C) On September, when term began, Chips returned and took up residence in Mrs. Wickett's.  
D) In September, when term began, Chips returned and took up residence on Mrs. Wickett's.

Q.130 A) Jess didn't agree about his father's idea of going across the deep valley below them because Jess had just finished to walk a half mile uphill as two slips on the road restricted him from driving his car.  
B) Jess didn't agree to his father's idea of going through the deep valley below them because Jess had just finished walking a half mile uphill as two slips in the road restricted him from driving his car.  
C) Jess didn't agree with his father's idea of going across the deep valley under them because Jess had just finished walking a half mile uphill as two slips in the road restricted him from driving his car.  
D) Jess didn't agree with his father's idea of going across the deep valley below them because Jess had just finished walking a half mile uphill as two slips in the road restricted him from driving his car.

Q.131 A) After the latest failure, she was sure that she lacked for the tenacity to go on.  
B) After the latest failure, she was sure that she lacked in the tenacity to go on.  
C) After the latest failure, she was sure that she lacked the tenacity to go on.  
D) After the latest failure, she was sure that she lacked with the tenacity to go on.

shape  
round her neck  
against  
a means → source  
means → wealth  
verb plural

besides = rolls  
Beside = 6/26/26

Research  
vub  
Noun

Q.132

- A) What often gets overlooked is the fact that conventional plastic is made from fossil fuels and is a product of the oil and gas industry.
- B) What often gets overlooked is the fact that conventional plastic is made of fossil fuels and is a product of the oil and gas industry.
- C) What often gets overlooked is the fact that conventional plastic is made by fossil fuels and are a product of the oil and gas industry.
- D) What often gets overlooked is the fact that conventional plastic is made from fossil fuels and is a product of the oil and gas industry?

Q.133

- A) He stroked it and it leapt up onto the bench.
- B) He stroked it and it leapt up to the bench.
- C) He stroked it and it leapt upto onto the bench.
- D) He stroked it and it leapt upon onto the bench.

Q.134

- A) The mother was endlessly comparing her friends' children for her own, something that drove her whole family crazy.
- B) The mother was endlessly comparing her friends' children to her own, something that drove hers whole family crazy. *different classification*
- C) The mother was endlessly comparing her friends' children with her own, something that drove her whole family crazy. *same classification*
- D) The mother was endlessly comparing her friends' children against her own, something that drove her whole family crazy.

Q.135

- A) With three older siblings already having excelled as tennis stars at the school, Hania strived to be different from her siblings and chose soccer instead.
- B) With three older siblings already having excelled as tennis stars at the school, Hania strived to be different to her siblings and chose soccer instead.
- C) With three older siblings already having excelled as tennis stars at the school, Hania strived to be different than her siblings, and chose soccer instead.
- D) With three older siblings already having excelled as tennis stars at the school, Hania strived to be different after her siblings, and chose soccer instead.

**NOTE: Please discuss any query about logical reasoning with the relevant teacher in Microsoft Team class.**