



# BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Technology in Electronics & Communication Engineering

Course Name – Chemistry

Course Code - BSC(ECE)202

( Semester II )

Time allotted : 1 Hrs.25 Min.

Full Marks : 70

[The figure in the margin indicates full marks.]

## Group-A

(Multiple Choice Type Question)

1 x 70=70

Choose the correct alternative from the following :

- (1) In gauche form of n- butane two methyl groups are at angle
 

a) 55°	b) 60°
c) 45°	d) 75°
- (2) When the molecule is called optically active?
 

a) If it has plane of symmetry	b) If it exhibits enantiomerism
c) If it exhibits diastereoisomerism	d) If it has centre of symmetry
- (3) What is the axis of symmetry present in water molecule?
 

a) C <sub>2</sub>	b) C <sub>3</sub>
c) C <sub>4</sub>	d) C <sub>6</sub>
- (4) What is formed by reaction of ammonia with formaldehyde?
 

a) Hexamethylenediamine	b) Adipic acid
c) Urotrophine	d) Aldol
- (5) SN1 reaction proceeds through the formation of
 

a) Carbon radicals	b) Carbocation
c) Carbanion	d) Carbene
- (6) The human body is an example of a
 

a) Open system	b) Closed system
c) Isolated system	d) Homogenous system
- (7) In an isothermal expansion of an ideal gas which of the following is true?
 

a) $\Delta S=0$	b) $\Delta V=0$
c) $\Delta q=0$	d) $\Delta T=0$
- (8) In an adiabatic process which of the following is true?
 

a) $\Delta q=0$	b) $\Delta T=0$
c) $\Delta V=0$	d) $\Delta H=0$
- (9) 100g of ice at 0 °C was melted to 100g of water at 0 °C. Given latent heat of fusion of ice at 0 °C is 80 Cal per g. The  $\Delta U$  of the process is







According to Crystal Field Theory in the octahedral complexes, the d orbital splits into

- a) Higher energy  $t_{2g}$  and lower energy  $e_g$  level
- b) Lower energy  $t_{2u}$  and higher energy  $e_u$  level
- c) Lower energy  $t_{2g}$  and higher energy  $e_g$  level
- d) Lower energy  $e_u$  and higher energy  $t_{2u}$  level

(47) In which of the following coordination entities the magnitude of  $\Delta_o$  (CFSE in octahedral field) will be maximum?

- a)  $[\text{Co}(\text{H}_2\text{O})_6]^{3+}$
- b)  $[\text{Co}(\text{NH}_3)_6]^{3+}$
- c)  $[\text{Co}(\text{CN})_6]^{3-}$
- d)  $[\text{Co}(\text{C}_2\text{O}_4)_3]^{3-}$

(48) For a particle inside a box, the potential is maximum at  $x =$  \_\_\_\_\_

- a) L
- b) 2L
- c) L/2
- d) 3L

(49) Molecule for which the bonding pair of electrons is equally shared between the atoms is

- a) Homoneuclear diatomic
- b) bAtomic
- c) Semi nuclear
- d) Hetroneuclear diatomic

(50) Electrons should be filled in energy sub shells in order of increasing energy values, is the principle of

- a) Aufbau
- b) Pauling's
- c) Pauli's exclusion
- d) Hund's

(51) Which of the following notations is not used to distinguish between pairs of enantiomers?

- a) R and S
- b) E and Z
- c) +and -
- d) D and L

(52) The efficiency of a heat engine is maximum when the

- a) Temperature difference of source and sink is maximum.
- b) Temperature difference of source and sink is minimum.
- c) Temperature of source is greater than that of sink.
- d) Temperature of sink is greater than that of source.

(53) Which of the following compounds can exhibit geometrical isomerism?

- a) 1-Hexene
- b) 2-Methyl-2-Pentene
- c) 3-methyl-1-pentene
- d) 2-Hexene

(54) Conformations are different arrangements of atoms that can be converted into one another by rotation about

- a) Covalent bond
- b) Double bond
- c) Single bond
- d) Triple bond

(55) What type of reaction takes place upon treatment of a ketone with HCN to form a cyanohydrin?

- a) Nucleophilic addition
- b) Electrophilic substitution
- c) Nucleophilic substitution
- d) Electrophilic addition

(56) The shift of absorption maxima towards higher wavelength is called

- a) Blue shift
- b) Red shift
- c) Auxochrome
- d) Chromophore

(57) The shift of absorption maxima towards lower wavelength is called

- a) Auxochrome
- b) Chromophore
- c) Blue shift
- d) Red shift

(58) Cis stilbene has lower wavelength than trans stilbene due to

- a) Presence of steric repulsion between two benzene rings in cis stilbene
- b) Presence of steric repulsion between two H atoms in cis stilbene
- c) Presence of steric repulsion between two benzene rings in trans stilbene
- d) Presence of steric repulsion between two H atoms in trans stilbene

(59) Ozonolysis of Ethylene produces

- a) Formaldehyde  
c) Butanal
- b) Acetaldehyde  
d) Acetone
- (60) In bromination of benzene the electrophile is
- a) Cl  
c) Br<sup>-</sup>
- b) Br<sup>+</sup>  
d) Br<sub>2</sub>
- (61) What is the effect of the optical angle of rotation ( $\alpha$ ) if length of polarimeter tube is halved and the concentration of the molecule is doubled
- a)  $\alpha$  remains same  
c)  $\alpha$  gets four times
- b)  $\alpha$  gets halved  
d)  $\alpha$  eight times
- (62) Which statement is not true for wave function,  $\psi$ ?
- a) Must be single-valued  
c) Must be infinite
- b) Must be continuous  
d) Must be normalized
- (63) The decreasing order of atomic radii of Li, B, C, F is
- a) Li < B < C < F  
c) Li > B > C < F
- b) Li > B < C < F  
d) Li > B > C > F
- (64) The entropy of mixing of two ideal gases at constant pressure and temperature
- a) Decreases  
c) Remain unchanged
- b) Increases  
d) Both a and b
- (65) One mole of an ideal gas expands from 5 liter to 50 liter at 298 K. The value of  $\Delta S/R$  is equal to
- a) 0.693  
c) 2.303
- b) 0.2303  
d) 6.93
- (66) Two moles of an ideal gas expand spontaneously into vacuum. The work done is
- a) 2 J  
c) Zero
- b) 4 J  
d) 6 J
- (67) A process which is carried out at a constant pressure is known as
- a) Isothermal process  
c) Isochoric process
- b) Isobaric process  
d) Reversible process
- (68) Which one of the following is an intensive property?
- a) Enthalpy  
c) Density
- b) Entropy  
d) Internal energy
- (69)  $\Delta E$  of a process is equal to
- a) Heat change at constant pressure  
c) Work done
- b) Heat change at constant volume  
d) Temperature change
- (70) The value of  $\Delta H - \Delta E$  for a reaction involving gaseous substances is
- a)  $\Delta nRT$   
c)  $\Delta nR/T$
- b)  $\Delta n/RT$   
d)  $RT/\Delta n$