

This Question Paper contains 20 printed pages.
(Part - A & Part - B)

Sl.No. 300616

052 (E)

(MARCH/APRIL, 2015)

Part - A : Time : 1 Hour / Marks : 50

Part - B : Time : 2 Hours / Marks : 50

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Set No. of
Question Paper:

03

(Part - A)

Time : 1 Hour]

[Maximum Marks : 50

Instructions :

- 1) There are 50 Multiple Choice Questions (M.C.Q.) in part - A and all questions are compulsory.
- 2) The questions are serially numbered from 1 to 50 and each carries 1 mark.
- 3) Read each question carefully, select proper alternative and answer in the O.M.R. sheet.
- 4) The OMR sheet is given for answering the questions. The answer of each question is represented by (A) O, (B) O, (C) O, (D) O. Darken the circle ● of the correct answer with ball-pen.
- 5) Rough work is to be done in the space provided for this purpose in the Test Booklet only.
- 6) Set No. of Question Paper printed on the upper-most right side of the Question Paper is to be written in the column provided in the OMR sheet.
- 7) Use of Simple Calculator and log table is allowed, if required.

1). By mixing aqueous solutions of silver nitrate and ammonium chloride in a test tube, white precipitates are formed. In this process, test tube is _____

(A) Universe

(B) Surrounding

(C) Borderline of the system

(D) System

Rough Work

- 2) What will be the value of K and ΔG° for the process of transformation of ice into water at room temperature?
- (A) $K = 1$, ΔG° zero
 - (B) $K < 1$, ΔG° positive
 - (C) $K > 1$, ΔG° positive
 - (D) $K > 1$, ΔG° negative
- 3) Which Law of Thermodynamics gives information about exact entropy of a substance?
- (A) Zeroth Law
 - (B) Second Law
 - (C) Third Law
 - (D) First Law
- 4) The level of thermal energy in a substance is known as _____
- (A) Entropy
 - (B) Temperature
 - (C) Heat energy
 - (D) Quantity of Heat
- 5) Which of the following statements is correct for absolute entropy of a substance?
- (A) It is shown as S°
 - (B) It is the entropy of 1 mole of substance at constant temperature and standard state
 - (C) Its unit is Joule Kelvin Mole⁻¹
 - (D) It is the entropy of 1 mole of substance

Doubtfull

6) Water always flows from higher level to lower level on its own. Which of the following statement is correct for this phenomena?

- (A) Free energy increases
- (B) Entropy decreases
- (C) Free energy decreases
- (D) Entropy increases

7) Equilibrium existing in the hydrolysis of an ester is _____.

- (A) Gaseous homogeneous
- (B) Heterogeneous
- (C) Ionic homogeneous
- (D) Homogeneous

8) The reaction $2\text{NO}_2(\text{g}) \rightleftharpoons \text{N}_2\text{O}_4(\text{g})$ $\Delta H = \text{negative}$ occurring in a closed vessel attains equilibrium. If this vessel is kept in ice then which of the following change will be observed?

- (A) Equilibrium state will remain constant
- (B) Increase in brown colour intensity in vessel
- (C) The decrease in the concentration of product
- (D) Decrease in brown colour intensity in vessel.

doubtfull

9) According to Arrhenius Acid-Base Theory, the strength of acid and base depends on

- (A) Magnitude of accepting electron
- (B) Magnitude of accepting proton
- (C) Magnitude of donating proton

(D) Ionization in aqueous solution

10) AgCl is a sparingly soluble salt and _____.

- (A) It is completely insoluble in water
- (B) Its solubility in water is 1M

(C) Its solubility in water is less than 0.01M

(D) Its solubility in water is greater than 0.1 M

11) For precipitation of sparingly soluble salt if, $I_p < K_{sp}$, then _____.

(A) Nothing can be predicted

(B) Sparingly soluble salt will not get precipitated

(C) Solution will remain in saturated state

(D) Sparingly soluble salt gets precipitated

12) Equation for K_{sp} and its unit for the sparingly soluble salt Al(OH)₃ are _____.

(A) $4S^4, M^3$

(B) $4S^3, M^3$

(C) $27S^4, M^4$

(D) S^2, M^2

13) Which is the correct ascending order for the acidic strength of methane, ammonia, water and hydrogen fluoride ?

(A) $HF \gg H_2O \gg NH_3 \gg CH_4$

(B) $CH_4 \ll NH_3 \ll H_2O \ll HF$

(C) $HF \ll H_2O \ll NH_3 \ll CH_4$

(D) $CH_4 \ll HF \ll H_2O \ll NH_3$

14) The aqueous solution of AlCl₃ shows _____ property.

(A) Amphoteric

(B) Basic

(C) Neutral

(D) Acidic

15) In the reaction $BF_3 + NH_3 \rightarrow BF_3 \leftarrow NH_3$,

~~BF₃ and NH₃~~ are _____.

(A) Conjugate Acid, Base

(B) Lewis Base, Lewis Acid

(C) Acid, Conjugate Base

(D) Lewis Acid, Lewis Base

16) Which gas is responsible for acid-rain ?

(A) CO_2

(B) NH_3

(C) CH_4

(D) NO_2

17) Which of the following diseases is caused by ozone layer depletion ?

(A) Breast Cancer

(B) Lung Cancer

(C) Skin Cancer

(D) Blood Cancer

18) Effect of fluorosis disease is _____ .

(A) Irritation in stomach

(B) Causes heart diseases

(C) Weakness of teeth and bones

(D) Weakness of vision

19) In which of the following industries Flyash is produced as waste ?

(A) Fertilizer Industry

(B) Detergent Industry

(C) Thermal Power Industry

(D) Dairy Industry

20) Give full form of DDT.

(A) Dichloro dimethyl trifluoro ethene

~~(B) Difluoro diphenyl trichloro ethene~~

(C) Dichloro diphenyl trichloro ethane

(D) Difluoro dimethyl trichloro ethane

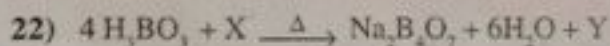
21) Compounds of which of the following elements can act as the catalyst in aromatic substitution reaction?

(A) Ga, Tl

(B) In, Tl

(C) B, Al

(D) Ga, In



In this reaction, X and Y are _____ respectively.

(A) NaBO_2 , CO_2

(B) Na_2CO_3 , CO_2

(C) NaHCO_3 , NaBO_2

(D) NaOH , CO_2

23) Which of the following statement is correct for Fullerene?

(A) There are twenty rings having Five carbon atoms in Fullerene

(B) Fullerene possesses molecular structure

(C) In Fullerene, carbon atom has sp^3 hybridization

(D) Fullerene is the synthetic amorphous form of carbon

24) Which of the following compounds can combine as ligand in complex compound formation?

(A) SnO_2

(B) GeO_2

(C) SiO_2

(D) CO

25) Which of the following elements has $[\text{Ar}] 3d^{10} 4s^2 4p^1$ electronic configuration?

(A) B

(B) Al

(C) Ga

(D) In

26) Which of the following compounds possesses H-bond?

(A) Borazine

(B) Boric acid

(C) Diborane

(D) Borax

27) Which of the following carbides is used for welding?

(A) Be_3C

(B) WC

(C) CaC_2

(D) SiC

28) Charcoal possesses adsorption property, because

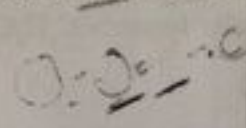
- (A) It is a non conductor of electricity
- (B) It is a conductor of electricity
- (C) It is porous**
- (D) It is amorphous

29) Which of the following compounds possesses 3° carbon atom?

- (A) 1-chloro butane
- (B) n-butane,
- (C) Cyclo butane
- (D) Iso butane**

~~30~~ How many carbon atoms are sp^1 hybridized in but-2-ene?

- (A) 4
- (B) 2**
- ~~(C) 3~~
- (D) 1



31) With which reactant ethyne will react to form vinyl cyanide?

- (A) HCN**
- (B) KCN
- ~~(C) HgCl₂~~
- (D) NaCN

32) Write IUPAC name of Parachloro Toluene.

- (A) 1-chloro-2-methyl benzene
- (B) 2-chloro-4-methyl benzene
- (C) 4-chloro-2-methyl benzene
- (D) 1-chloro-4-methyl benzene



33) Which of the following functional groups passes on electron towards the phenyl ring?

- (A) $-\text{SO}_3\text{H}$
- (B) $-\text{CHO}$
- (C) $-\text{Cl}$
- (D) $-\text{NO}_2$

34) Possible number of cyclic isomers for the compound having molecular formula $\text{C}_6\text{H}_4\text{Cl}_2$ is _____

- (A) 6
- (B) 4
- (C) 5
- (D) 3

35) How many σ (sigma) and π (pi) bonds are present in benzoic acid?

- (A) 14 σ , 4 π
- (B) 14 σ , 3 π
- (C) 15 σ , 3 π
- (D) 15 σ , 4 π

36) Which of the following metals is not used as a catalyst in addition reaction of alkyne?

(A) Ni

(B) Pd

(C) Mn

(D) Pt

37) How many benzene rings are there in the structural formula of Naphthacene?

(A) 5

(B) 3

(C) 4

(D) 2

38) Which of the following reagents is used for decarboxylation of carboxylic acid?

(A) $\text{NaHCO}_3 + \text{KCl}$

(B) $\text{NaHCO}_3 + \text{NaCl}$

(C) $\text{NaOH} + \text{CaO}$

(D) $\text{NaOH} + \text{MgCl}_2$

39) A covalent molecule AB_3 has trigonal pyramidal structure. The number of lone pair and bonding pair of electrons in the molecule are _____.

(A) 2 and 2

(B) 3 and 1

(C) 1 and 3

(D) 0 and 4

40) Which of the following molecules is polar and possesses zero dipole moment?

- (A) Cl_2 (B) BF_3
 (C) NH_3 (D) HCl

BF_3

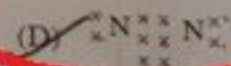
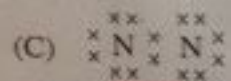
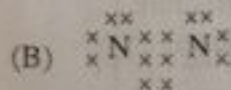
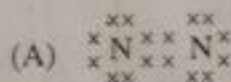
41) Intramolecular Hydrogen bond is present in

- (A) p-chloro phenol (B) Ethane -1, 2 - diol
 (C) HF (D) All

Q2) Identify the wrong statement from the statements given below.

- (A) Geometrical structure of BrF_5 is square pyramidal
 (B) Bond order and Bond energy of a molecule are directly related
 (C) H - O - H bond angle in water molecule is $104^\circ 30'$ because oxygen atom is sp^3 hybridized
 (D) Strength of σ bond is related to the magnitude of overlap of atomic orbitals

43) Which of the following represents Lewis structure of N_2 molecule?



- 44) When N_2 molecule accepts an electron and forms N_2^- , the added electron enters into _____ orbital.
- (A) σ^* Anti Bonding molecular orbital
(B) Bonding π -molecular orbital
(C) σ Bonding molecular orbital
(D) Anti-Bonding π^* -molecular orbital
- 45) Density of a given quantity of gas will be maximum at _____ conditions.
- (A) $273^\circ C$, 2 bar
(B) $0^\circ C$, 2 bar
(C) $273^\circ C$, 1 bar
(D) STP
- 46) Which type of Vander Waals attractive Forces exists in a vessel filled with N_2 molecules?
- (A) Dispersion Forces and Dipole – Dipole Forces
(B) Dipole – Dipole Forces
(C) Dipole – induced Dipole Forces
(D) Dispersion Forces
- 47) If pressure is P, temperature is T and gas constant is R. For an ideal gas, then the moles per litre of gas will be
- (A) $\frac{RT}{P}$ (B) PRT
(C) $\frac{P}{RT}$ (D) $\frac{PT}{R}$

48) Lower the critical temperature of a gas _____ is its rate of liquefaction.

(A) There is no relation between critical temperature and rate of liquefaction

(B) Faster

(C) Moderate

(D) Slower

49) What will be the pressure of 10 gram of a gas kept under atmospheric pressure, if its temperature is changed from 546 K to 273 K?

(A) $\frac{1}{2}$ bar

(B) 273 bar

(C) 2 bar

(D) $\frac{1}{273}$ bar

50) A bottle of NH_3 gas and a bottle of dry HCl gas are connected through a long tube. The tube is opened simultaneously at both the ends. White Fume of NH_4Cl is formed _____.

(A) Throughout the length of the tube

(B) Near HCl bottle

(C) Near NH_3 bottle

(D) At the centre of tube