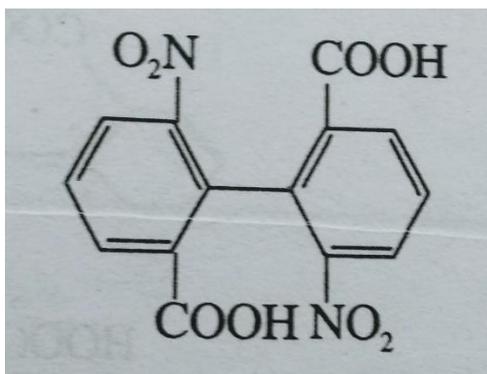


**K M AGRAWAL COLLEGE OF ARTS COMMERCE & SCIENCE,
KALYAN**

SAMPLE QUESTIONS T.Y.B.Sc PIII Sem V

Organic Chemistry

1. _____ does not have a definite molecular structure.
a. Transition State b. Intermediate c. Carbocation d) Free radical
2. _____ is a kinetic Term.
a) Basicity b) Nucleophilicity c) Acidity d) neutrality
3. Neighbouring Group Participation is a _____ effect.
a) Intermolecular b) Intramolecular c) Intraatomic d) Inter atomic
4. Conc H₂SO₄ acts as a _____ in acid catalysed esterification of carboxylic acid.
a) Hydrating agent b) Dehydrating agent c) emulsifier d) Hydrolytic
5. _____ Catalysed Hydrolysis of ester is called Saponification.
a) Acid b) Base c) both a & b
6. Pericyclic reactions can be initiated by _____
a) Heat b) light c) both heat and light d) neither heat nor light
7. The reactions involving the rearrangement of two or more pi bonds are called _____ reactions
a) Cycloaddition b) electrocyclic c) cheletropic d) substitution
8. Tertiary amines on oxidation by Fenton's reagent gives alkene and hydroxylamine.
This reaction is _____
a) Cope Rearrangement b) Cope Elimination c) Chugaev Reaction d) Claisen rearrangement
9. If a molecule has nonsuperimposable mirror image, then it is _____
a) Achiral b) Chiral c) symmetric d) not resolvable
10. Atropisomerism is due to _____
a) Restricted rotation around C=C b) Restricted rotation around C-C
c) Restricted rotation around C≡C c) Free rotation along C-C
11. Substituted biphenyls show _____
a) Geometrical Isomerism b) cis trans Isomerism c) Atropisomerism
d) structural isomerism
12. The following compound is _____



- a) Chiral b) achiral c) optically inactive d) non resolvable

13. If all the elements of symmetry are absent, then the molecule will be _____

- a) Chiral b) Achiral c) Optically Inactive

14. In bridged ring system the common carbon atoms are called _____ carbon atoms .

- A) ipso b) bridge head c) Tail Head d) spiro

15. The molecular formula of Biphenyl is _____.

- a) $(C_2H_5)_2$ b) $(C_4H_7)_2$ c) $(C_6H_5)_2$ d) $(C_3H_5)_2$

16. Quinolines and Isoquinolines belong to the class of fused _____ compounds.

- a) Acyclic b) carbocyclic c) heterocyclic d) Alicyclic

17. Spiro compounds have _____ carbon common between the two rings.

- a) One b) two c) three d) No

18. A species which can both absorb & transfer radiant energy for activation of the reactants is called.

- A) sensitizer (b) photo sensitizer (c) radioactive substance d) receptor

19. In photochemical reaction the absorption of light takes place in

- (a) Primary process only
(b) secondary process only
(c) both Primary or secondary process
(d) Tertiary process

20. In the preparation of Quinoline which of the reactants are used

- (a) Aniline & formaldehyde (b) aniline & $FeSO_4$ (c) aniline & Glycerol
d) Anniline & butanol

21. . Halogenations' of Pyridine N-oxide which major products obtained.

- (a) 2- position (b) 3 – position (c) 4 – position d) 8- position

22. Isoquinoline in the presence of n-butyl lithium in which products formed
 (a) 1-butyl isoquinoline (b) 2-butyl isoquinoline
 (c) 3-butyl isoquinoline (d) 4-Butyl isoquinoline
23. Quinoline in the action of $\text{Br}_2/\text{H}_2\text{SO}_4$
 (a) 1-bromoquinoline (b) 2-bromoquinoline (c) 3-bromoquinoline
 (d) 5-bromoquinoline
24. _____ is an indicator of the pollution effect caused on the environment on account of the waste generated in a reaction
 (a) E-factor (b) selectivity
 (c) Atom Economy (d) f factor
25. Alkyl lithium react with alkyl halide to form _____ alkane
 (a) Higher (b) lower
 (c) Aryl (d) allyl
26. Partial reduction of meta dinitrobenzene gives.....
 (a) Meta-nitroaniline (b) meta nitrophenol
 (c) meta-nitro toluene (d) Diaminobenzene
27. Biginelli reaction is catalysed by.....
 (a) NaOH (b) KOH
 (c) bronsted acid (d) Na_2CO_3
28. According to green chemistry, the chemical involve in the product must be _____.
 (a) toxic (b) produces toxic by product
 (c) highly toxic (d) non toxic.
29. _____ has become very useful in green chemistry.
 (a) Bio-catalysis (b) Catalysis
 (c) Homogeneous catalysis (d) Heterogenous catalysis
30. _____ is the ratio of mass of the waste generated to the mass of desired product .
 (a) Atom economy (b) E-factor
 (c) selectivity (d) F factor
31. _____ is an excellent green solvent as well as Greenhouse gas.
 (a) CFCs (b) carbon monoxide
 (c) Carbon dioxide (d) Methanol.
32. Butatriene is an example of _____ compound.
 (a) Biphenyl (b) Heterocyclic
 (c) Bicyclic (d) Cumulenes

33. When ethyl lithium react with n-propyl bromide to form _____
- (a) Butane (b) Hexane
(c) n-Pentane (d) Propene
34. In mass spectrum isotopic peaks are shown by _____
- a) Cl b) N c) H d) S
35. Due to chromophore-auxochrome interaction the absorption band shifts to _____.
- a) Shorter wavelength b) longer wavelength
c) sometimes longer, sometimes shorter wavelength d) No effect
36. Nitrobenzene shows absorption at _____
- a) 400nm b) 270nm c) 1000nm d) 170nm
37. The UV visible range is _____
- a) 200 -800 nm b) 200 – 400nm c) 600 – 1500nm d) 1500-3000nm
38. All terpenoids on distillation give _____ as one of the products.
- a) Isoprene b) butatriene c) butene d) Pentadiene
39. Nicotine belongs to the _____ class of terpenoids.
- a) Pyrrolidene b) pyridine-pyrolidine c) Tropane d) Quinoline
40. . Energy required for pi ----pi* transition is reduced due to _____
- a) Chromophore-chromophore conjugation b) Chromophore
c) isolated chromophores d) only auxochrome
41. . In stronger acidic solution, the colour of crystal violet changes to _____
- a) colourless b) blue c) yellow d) red
- 42 If you wanted to carry out an electrophilic substitution in pyridine, an initial step could be to react pyridine with H₂O₂ in acetic acid. What happens in this step?
- a) Pyridine-N-oxide is formed.
b) 2-Pyridone is formed.
c) 2-Hydroxypyridine is formed.
d) 1,4-Dihydropyridine is formed.
43. The reaction of 4-chloropyridine with sodium ethoxide is an example of:
- a) addition and elimination.
b) nucleophilic substitution.
c) electrophilic substitution.
d) addition.
44. Which statement below is incorrect?
- a) In imidazole, each N atom contributes one electron to the π -system.

- b) 4-Methylimidazole and 5-methylimidazole are tautomers.
c) Pyrazine is a diazine.
d) Pyrimidine and pyrazine are isomers.
45. Which of the following compound has more charge separation?
a) Pyridine N-oxide.
b) Pyridine.
c) Quinoline.
d) Isoquinoline.
46. Benoxyl is example of _____
a) Insecticide.
b) Herbicide.
c) Fungicide.
d) Rodenticide.
47. The main function of _____ is to increase blood pressure.
a) Thyroxine b) Insulin c) Testosterone d) Adrenaline
48. The naturally occurring form of adrenalin is _____.
a) Dextrorotatory b) laevorotatory c) both dl d) optically active
49. Carotenoids has _____ isoprene units.
a) 6 b) 8 c) n d) 10
50. The starting material for synthesis of nicotine is _____.
a) Succinaldehyde b) succinimide c) succinic acid d) salicylic acid.

K M AGRAWAL COLLEGE OF ARTS COMMERCE AND SCIENCE, KALYAN

SAMPLE QUESTIONS T.Y.B.Sc Chemistry

Subject : Physical chemistry

UNIT I

1. Rotational constant B for HCL molecule is ___cm⁻¹
a] 60.8 b] 2.01 c] 10.6 d]11.1
2. Rotational spectra is observed only for those molecules which possess ___ dipole movement.
a] Zero b] Permanent c] Negative d] Positive
3. For homo polar molecules dipole moment is ___
a] 1 b] 2 c] 0 d] 3
4. Hetero nuclear molecules show ___ spectra
a] Microwave b] IR c] Rotational d]ESR spectra
5. The effect of isotopes on rotational spectra was studied by ___
a] Bjerrum b] Planck c] Einstein d] Mullikan
6. _____ molecule satisfy selection rule
a] An harmonic oscillator b] harmonic oscillator c] both d] polar
7. A simple harmonic oscillator obey ___ law
a] Hooke's law b] Newton's law c] Charles law d] Daltons law
8. Wavelength is denoted by
a] λ b] V c] V⁻¹ d] W
9. _____ has highest energy radiations in spectrum.
a] Radio waves b] Ultraviolet c] Gamma rays d] Visible
10. Water possess a dipole moment of ____
a] 1.85 D b] 1.63 D c] 1.47 D d]1.22 D
11. _____ set of molecules are microwave inactive
a] CO₂,CH₃Cl,Cl₂ b] HCl,H₂,CO₂ c] O₂,CO₂,CCl₄ d] CO₂, HCl,Cl₂
12. For Anti stokes lines Raman shift is
a] Zero b]Negative c] Positive d]Positive or Negative

UNIT II

13. The first RO membrane obtained from
- (a) Cellulose Acetate (b) Glucose Acetate (c) Cellulose ketone (d) Cellulose Acetone
14. Rast Method to determine molecular weight is based onpoint.
(a) Depression of boiling (b) Elevation of boiling (c) Depression of freezing
(d) Elevation of freezing
15. Binary solution contains _____ components.
a] 1 b] 2 c] 3 d] 4
16. Solution which obeys Raoult's Law under all conditions is called _____.
a] Ideal solution b] Non ideal solution c] Saturated solution d] True solution

17. The properties which depend on the number of solute and solvent molecules are _____
 a) Additive b) Colligative c) Conjugative d) Substitutive
18. A salt such as KCL, NaCL dissociates in to _____ ions
 a) 1 b) 2 c) 3 d) 0
19. Differential manometer is used for measurement of _____
 a) Freezing point b) Melting point c) Lowering of vapour pressure
 d) Temperature
20. Cryoscopic method is used for determination of _____
 a) Freezing point b) Melting point c) Lowering of vapour pressure
 d) Elevation in boiling point
21. Dynamic method is used for determination of _____
 a) Freezing point b) Melting point c) Lowering of vapour pressure
 d) Elevation in boiling point
22. Elevation of boiling point of a solvent is directly proportional to _____ of the solute.
 a) Molality b) Molarity c) Mole fraction d) Normality
23. Elevation of boiling point of a solvent is _____ to the mole fraction of the solute.
 a) Directly proportional b) Inversely proportiona c) Equal d) Near
24. During collisions the total energy _____
 a) Remain constant b) Increases c) Decreases d) Changes
25. For effective collisions molecules must be _____
 a) Suitably oriented b) Happazerdly move c) Parallel d) Perpendicular
26. _____ suggested collision theory for uni molecular reactions
 a) Porter b) Lindemann c) Maxwell Boltzmann d) Huckel
27. Simple collision theory is applied only to simple reactions in _____ state
 a) Liquid state b) Gaseous state c) Solid state d) Aqueous state
28. Reaction between hydrogen and oxygen to give water in absence of catalyst is a _____ reaction.
 a) Fast b) Slow c) Moderate d) Very fast

UNIT III

29. The sum of number of protons and neutrons in a nucleus of an atom is called _____
 a) Atomic number b) Mass number c) Nucleid d) Proton number
30. radioactive disintegration is _____ order reaction
 a) First b) Second c) Zero d) Third
31. The fraction of total number of atoms disintegrating in unit time is called
 a) Half life b) Decay constant c) Average life d) Mean life
32. _____ acts as quenching agent in GM counter
 a) H₂ b) cl₂ c) Br₂ vapour d) Cl₂ gas
33. The heavy positive ions move towards the cathode at a _____ rate
 a) Fast b) Slow c) Moderate d) Very fast
34. _____ rays cannot be measures effectively in GM counter
 a) Alpha rays b) Beta rays c) Gamma rays d) All the three rays
35. _____ is used to estimate the age of biological specimens
 a) Nitrogen 14 b) Carbon 14 c) Carbon 13 d) Oxygen 16

36. The substance which undergo fission directly with slow neutrons is called _____ material.

a) Fertile b) Fissile c) Stable d) Recoil

37. In nuclear reactor _____ absorbs kinetic energy of the neutrons

a) Control rods b) Moderator c) Coolant d) Fuel

38. In Friedel craft reaction ----- act as a tracer.

a) AlCl_3 b) BaCl_2 c) CdCl_2 d) Al_2SO_4

39. Which isotope below has the highest nuclear binding energy per gram?

a) ^4He b) ^{16}O c) ^{32}S d) ^{55}Mn

UNIT IV

40. The formation of micelles takes place only above _____

(a) Inversion temperature (b) Boyle's temperature (c) Critical temperature

(d) Kraft temperature

41. An emulsifier is a substance which _____

(a) Stabilises the emulsion. (b) Homogenises the emulsion.

(c) Coagulates the emulsion. (d) Accelerates the dispersion of liquid in liquid.

42. In textile industry ----- are used as fabric softener

a) Anionic surfactant b) Non ionic surfactant

c) Cationic surfactant d) Zwitter ionic surfactant

43. The relationship between equilibrium pressure of a gas and its amount adsorbed on the solid adsorbent at constant temperature is called

a) Chemisorption b) Adsorption isobars c) Adsorption isotherms d) Sorption

44. Which of the following postulates is incorrect in deriving B.E.T equation

a) The adsorbed layer is uni molecular in thickness

b) Langmuir's assumptions apply to each layer

c) The characteristic of adsorption is applicable to only 1 st layer.

d) After 1 st layer, the heat of adsorption is equal to the heat of condensation of vapour .

45. Which of the following characteristic is not correct for physical adsorption

a) Adsorption on solids is reversible

b) Adsorption increases with increase in temperature

c) Adsorption is spontaneous

d) Both enthalpy and entropy of adsorption are negative

46. Which of the following is less than zero during adsorption

a) Free energy b) Entropy c) Heat content d) all the above

47. Which of the following can't be explained by adsorption

a) Heterogeneous catalysis b) Catalytic action of bio enzymatic molecule

c) Decolourization of sugar d) Chromatography

48. The colloidal solution of arsenic sulphide prefers to adsorb
 a) NO^{-3} b) K^{+} c) S^{2-} d) H^{+}
49. The migration of charged dispersion medium particles under the influence of electric field against stationary dispersed phase particles towards the respective electrode is called
 a) Electrophoresis b) Electro osmosis c) Sedimentation
 d) Streaming
50. Which of the following is not a colloidal electrolyte
 a) Soap b) Congo red c) Sodium stearate d) Sodium chloride
51. The heat of adsorption in physical adsorption lie in the range _____ (kJmol^{-1})
 a) 40 – 400 kJmol^{-1} b) 20-50 kJmol^{-1} c) 10-20 kJmol^{-1} d) 1-10 kJmol^{-1}
52. Sols of Platinum, solid prepared by electro dispersion are ____ charged.
 a) Positive b) Negative c) Zero d) May be positive or negative

Key for SAMPLE QUESTIONS PHYSICAL CHEMISTRY SEM V

Question No	Correct option	Answer
1	c	10.6
2	b	Permanent
3	c	0
4	a	Microwave
5	d	Mulliken
6	b	Harmonic oscillator
7	a	Hooke's law
8	a	λ .
9	c	Gamma rays
10	a	1.85D
11	c	$\text{O}_2, \text{CO}_2, \text{CCl}_4$
12	b	Negative
13	a	Cellulose acetate
14	c	Depression of freezing
15	b	2
16	a	Ideal solution
17	b	Colligative
18	b	2
19	c	Lowering of vapour pressure
20	a	Freezing point
21	c	Lowering of vapour pressure
22	a	Molality
23	a	Directly
24	a	Remain constant

25	a	Suitably oriented
26	b	Lindemann
27	b	Gaseous state
28	b	Slow
29	b	Mass number
30	a	First
31	b	Decay constant
32	c	Br ₂ vapour
33	b	Slow
34	c	Gamma rays
35	b	Carbon 14
36	b	Fissile
37	b	Moderator
38	a	AlCl ₃
39	d	⁵⁵ Mn
40	d	Craft temperature
41	a	Stabilizes the emulsion
42	c	Cationic surfactant
43	c	Adsorption isotherm
44	a	The adsorbed layer is unimolecular in thickness
45	b	Adsorption increases with increase in temperature
46	d	All of the above
47	c	De colorization of sugar
48	c	S ⁻²
49	b	Electro osmosis
50	d	Sodium chloride
51	c	10-20 kJmol ⁻¹
52	a	Positive

