


**Question Bank for M.Sc. Entrance Examination**

**Subject: Chemistry (Organic)**

1. IUPAC name of the following compound given below is
  - (a) E-5-Ethylhept-5-en-2-one
  - (b) Z-5-Ethylhept-5-en-2-one
  - (c) E-3-Ethylhept-2-en-6-one
  - (d) Z-3-Ethylhept-2-en-6-one
2. The number of stereoisomers that you expect for the compound butan-2,3-diol
  - (a) 0
  - (b) 2
  - (c) 3
  - (d) 4
3. Which of the following will undergo fastest  $S_N2$  reaction?
  - (a) Allyl halide
  - (b) Benzyl halide
  - (c)  $\alpha$ -halo acetone
  - (d) Ethyl halide
4. Which is the best leaving group?
  - (a) Fluoride
  - (b) Chloride
  - (c) Bromide
  - (d) Iodide
5. Which react faster with N-bromosuccinimide (NBS)?
  - (a) Toluene
  - (b) Methane
  - (c) Pyridine
  - (d) Benzene

6. The monomer of Teflon is
7. DNFB is used to identify N-terminal amino acid of peptide. The reagent is known as
- (a) Stephen's reagent
  - (b) Sanger's reagent
  - (c) Brady's reagent
  - (d) Edman's reagent
8. With cis-but-2-ene, triplet carbene give
- (a) cis-1,2-dimethylcyclopropane
  - (b) trans-1,2-dimethylcyclopropane
  - (c) both cis-1,2-dimethylcyclopropane and trans-1,2-dimethylcyclopropane
  - (d) no product
9. Among the following, the Newmann projection of meso-2, 3-butanediol is
- A Newman projection of meso-2,3-butanediol. The front carbon has two methyl groups (represented by lines) and one hydroxyl group (represented by a wedge). The back carbon has two methyl groups (represented by lines) and one hydroxyl group (represented by a wedge). The two hydroxyl groups are on the same side of the molecule, indicating a meso compound.
10. The major product obtained in the Diel-Alder reaction between butadiene and ethyne is
- (a) Cyclohexane
  - (b) Cyclohex-1-ene
  - (c) Cyclohex-1,4-diene
  - (d) Cyclohex-1,3,5-triene
11. The major product formed when benzene is subjected to FC alkylation with n-propyl chloride in presence of anh.  $\text{AlCl}_3$  is

- (a) n-propyl benzene
- (b) iso-propyl benzene
- (c) acyl benzene
- (d) tert-butyl benzene

12. Identify the correct reagent required for the following transformation is

- (a)  $\text{LiAlH}_4, \text{H}_3\text{O}^+$
- (b)  $\text{NaBH}_4, \text{H}_3\text{O}^+$
- (c)  $\text{H}_2/\text{Pd-C}$
- (d) Na in EtOH

13. The number of  $\sigma$ ,  $\pi$  bonds and lone pair in enol form of acetone are

- (a) 3, 1, 2
- (b) 9, 0, 2
- (c) 9, 1, 2
- (d) 9, 2, 2

14. Addition of HCl to 3,3-dimethylbut-1-ene gives

- (a) 1-Chloro-3,3-dimethylbutane
- (b) 3-Chloro-2,2-dimethylbutane
- (c) 2-Chloro-2,3-dimethylbutane
- (d) 2-Chloro-2,3-dimethylbutan-1-ol

15. Which of the following is not correctly matched?

- (a)  $>\text{C}=\text{O}$  on Clemmenson' reduction yields  $>\text{CH}_2$
- (b)  $>\text{C}=\text{O}$  on Wolf Kishner reduction yields  $>\text{CHOH}$
- (c)  $-\text{COCl}$  on Rosenmunds reduction yields  $-\text{CHO}$
- (d)  $-\text{CN}$  on Stephen's reduction yields  $-\text{CHO}$

16. The major product formed in the following reaction is

17. The hybridization of middle carbon in prop-1,2-diene is

- (a)  $sp$
- (b)  $sp^2$
- (c)  $sp^3$
- (d)  $sp^3d$

18. The main product of the following reaction is

- (a) 4-membered lactam unit
- (b) 5-membered lactam unit
- (c) 6-membered lactam unit
- (d) 7-membered lactam unit

19. The most stable conformation of 1-isopropyl-3-methylcyclohexane is

20. Ozonolysis of styrene provides product

- (a) Only benzaldehyde
- (b) Only acetone
- (c) Mixture of benzaldehyde and acetone



- (d) Perkin condensation
26. The acidic hydrocarbon is
- (a)  $\text{CH}_3\text{-CH}_3$
  - (b)  $\text{CH}_2=\text{CH}_2$
  - (c)  $\text{CH}\equiv\text{CH}$
  - (d)  $\text{C}_6\text{H}_6$
27. The optically inactive amino acid is:
- (a) Glycine
  - (b) Alanine
  - (c) Methionine
  - (d) Tryptophan
28. Which one of the following is an unusual base pairing in nucleic acids?
- (a) A-T
  - (b) G-C
  - (c) G-T
  - (d) A-U
29. The major product formed in the following reaction is
30. The chemical name of Vitamin C is
- (a) Cobalamin
  - (b) Ascorbic acid
  - (c) Tartaric acid
  - (d) Citric acid
31. Ethanol when treated with  $\text{I}_2$  and  $\text{NaOH}$  gives
- (a)  $\text{CH}_3\text{CH}_2\text{I}$
  - (b)  $\text{CH}_2=\text{CH}_2$

(c)  $\text{CH}_3\text{OCH}_3$

(d)  $\text{CHI}_3$

32. Pent-2-yne on reduction with  $\text{Na/liq.NH}_3$  provides



33. The correct option for the major products of the following reaction is

34. Both glucose and mannose can be prepared by Killini-Fischer synthesis from

(a) D-ribose

(b) D-arabinose

(c) D-lyxose

(d) D-xylose

35. Which nitrogenous base is not found in RNA?

(a) Thymine

(b) Cytosine

(c) Adenine

(d) Guanine

36. One of the molecules present in tobacco is:

(a) Nicotine

(b) Quinine

(c) Curcumin

(d) Piperine

37. The carbohydrate which serves as reserve glucose in body is
- (a) Sucrose
  - (b) Starch
  - (c) Glycogen
  - (d) Fructose
38. Cannizzaro reaction is not given by
- (a) Formaldehyde
  - (b) Acetaldehyde
  - (c) Benzaldehyde
  - (d) Trimethylacetaldehyde
39. Identify the order of acid strength of  $\text{CH}_3\text{COOH}$ ,  $\text{CF}_3\text{COOH}$ ,  $\text{NO}_2\text{CH}_2\text{COOH}$  and  $\text{CCl}_3\text{COOH}$ .
- (a)  $\text{CH}_3\text{COOH} < \text{NO}_2\text{CH}_2\text{COOH} < \text{CCl}_3\text{COOH} < \text{CF}_3\text{COOH}$
  - (b)  $\text{CH}_3\text{COOH} < \text{CCl}_3\text{COOH} < \text{NO}_2\text{CH}_2\text{COOH} < \text{CF}_3\text{COOH}$
  - (c)  $\text{CH}_3\text{COOH} < \text{NO}_2\text{CH}_2\text{COOH} < \text{CF}_3\text{COOH} < \text{CCl}_3\text{COOH}$
  - (d)  $\text{CF}_3\text{COOH} < \text{CCl}_3\text{COOH} \ll \text{NO}_2\text{CH}_2\text{COOH} < \text{CH}_3\text{COOH}$
40. Which of the following is an auxochrome?
- (a)  $>\text{C}=\text{C}<$
  - (b)  $-\text{CO}-$
  - (c)  $-\text{C}_6\text{H}_5$
  - (d)  $-\text{NH}_2$
41. The major product formed in the reaction of acetone with methyl magnesium bromide followed by acidification is
- (a) n-butyl alcohol
  - (b) iso-butyl alcohol
  - (c) sec-butyl alcohol
  - (d) tert-butyl alcohol
42. Optically active conformer of cyclohexane is
- (a) Chair form
  - (b) Half chair form



(c) Twist form

(d) Boat form

43. The compound that shows positive haloform test is

44. Ziegler-Natta catalyst is associated with

(a) Alkene hydrogenation

(b) Alkene polymerization

(c) Hydroformylation of alkenes

(d) Alkyne metathesis

45. The C-2 epimer of D-glucose is

(a) D-Mannose

(b) D-Fructose

(c) D-Galactose

(d) D-Gulose

46. Bakelite is a polymer of

(a) Aniline and Formaldehyde

(b) Aniline and Benzaldehyde

(c) Phenol and Formaldehyde

(d) Phenol and Benzaldehyde

47. The correct order of rate of solvolysis for the following compounds is

(a) II > III > I

(b) II > I > III

(c) III > I > II

(d) II > III > I

48. The major product formed in the following reaction is

49. The major product of the following reaction is

50. Hofmann's exhaustive methylation of piperidine gives

- (a) 1, 4-pentadiene
- (b) 1, 3-pentadiene
- (c) 1, 3-butadiene
- (d) 1, 3-cyclopentadiene

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## Answer Key

1 (b)	2(c)	3 (d)	4 (d)	5 (a)	6 (c)	7 (b)	8 (a)	9 (a)	10 (c)
11 (b)	12 (b)	13(c)	14 (c)	15 (b)	16 (d)	17 (a)	18 (d)	19 (d)	20 (d)
21 (b)	22 (d)	23 (b)	24 (c)	25 (b)	26 (c)	27 (a)	28 (c)	29 (a)	30 (b)
31 (d)	32 (a)	33 (a)	34 (b)	35 (a)	36 (a)	37 (c)	38 (b)	39 (a)	40 (d)
41 (d)	42 (c)	43 (b)	44 (b)	45 (a)	46 (c)	47 (b)	48 (b)	49(b)	50 (a)

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