

**Arts, Commerce & Science College, Bodwad.**

**Question Bank**

Class: S.Y.B.Sc.

Sem: IV

Subject: Organic & Inorganic Chemistry

Paper Name: Chemistry-II

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1. Which of the following compounds is an example of active methylene compound?

- A. Malonic ester**
- B. Ethyl alcohol
- C. Propane
- D. Acetone

2. Ethyl acetate on heating with sodium ethoxide gives.....

- A. Ethyl aceto acetate**
- B. Sodium acetate
- C. Ethyl alcohol
- D. Diethyl ether

3. Ethylaceto acetate undergoes acid hydrolysis with dil HCl to give \_\_\_\_\_

- A. Aceto acetic acid
- B. Succinic acid
- C. Acetic acid**
- D. Adipic acid

4. Aceto acetic acid on decarboxylation gives \_\_\_\_\_

- A. Ethanol
- B. Acetone**
- C. Butanone
- D. Methanol

5. Base catalysed condensation of two ester molecules to form an alcohol and  $\beta$ -keto ester is called

- A. Claisen Condensation**
- B. Aldol condensation
- C. Cannizzaro reaction

- D. Benzoin condensation.
6. The base catalysed reaction of ethyl aceto acetate with an aldehyde or a ketone followed by acid hydrolysis gives
- A. alkyl acetic acid
  - B. Dialkyl acetic acid
  - C.  $\alpha$ ,  $\beta$  unsaturated acid**
  - D. ketone
7. The reaction of two moles of diethyl malonate with 1, 2 di iodo ethane followed by hydrolysis and decarboxylation gives\_\_\_\_\_
- A. Succinic acid
  - B. Glutaric acid
  - C. Adipic acid**
  - D. None of these
8. Which of the following is necessary for the synthesis of diethyl malonate
- A. Acetic acid
  - B. Potassium cyano acetate**
  - C. Ethyl acetate
  - D. Methyl acetate
9. The acidity of hydrogen atoms of active methylene group is due to
- A. The resonance stabilization of the resultant carbanion
  - B. The electron attracting power of the electronegative oxygen of the carbonyl group.
  - C. Both a and b**
  - D. None of the above
10. keto enol tautomerism is observed in\_\_\_\_\_
- A. Ethyl aceto acetate**
  - B. Benzophenone
  - C. Benzaldehyde
  - D. Benzoic acid

11. By using two molar equivalents of malonate anion and a dihalide the \_\_\_\_\_ acid is obtained.
- A. monocarboxylic
  - B. Dicarboxylic**
  - C. Tricarboxylic
  - D. Tetracarboxylic
12.  $R-CH=CH-R$  this system is called as
- A.  $\beta$ -keto acid
  - B.  $\beta$ -keto ester
  - C. Malonic ester
  - D. None of these**
13. The aceto acetic ester and malonic ester synthesis usually concluded with \_\_\_\_\_ of a  $\beta$ -keto acid.
- A. Decarboxylation**
  - B. Dehydration
  - C. Dehydrogenation
  - D. Dehalogenation.
14. The reactivity of AAE is due to presence of a \_\_\_\_\_
- A. Methyl group
  - B. reactive methylene group**
  - C. ethoxide group
  - D. None of these.
15. Synthetic reagents are powerful tools used for
- A. C-C bond formation
  - B. To build up carbon skeleton
  - C. Both a and b**
  - D. None of these
16.  $CH_3-CH_2-CH_2-COOH$  is the example of
- A. Acetic acid
  - B. alkyl acetic acid**
  - C. Dialkyl acetic acid
  - D. Alkane

17. Succinic acid is the example of
- A. Mono carboxylic acid
  - B. phenol
  - C. Dicarboxylic acid**
  - D. Aromatic carboxylic acid.
18. Which of the following is the example of  $\alpha, \beta$ -unsaturated acid?
- A. Crotonic acid
  - B. Cinnamic acid
  - C. Both a and b**
  - D. Benzoic acid.
19. Which of the following is 1, 3 diketone?
- A. 2, 4-pentane dione**
  - B. Benzophenone
  - C. 2-propanone
  - D. acetophenone.
20. Malonic ester is diethyl ester of \_\_\_\_\_
- A. Maleic acid
  - B. Fumaric acid
  - C. Malonic acid**
  - D. Succinic acid
21. Which of the following is the reactive species in EAA and Malonic ester ?
- A. Ester functional group
  - B. methylene group**
  - C. Ketone group
  - D. Acetyl group
22. Hydrogen atoms of active methylene group are \_\_\_\_\_ in nature.
- A. Acidic**
  - B. Basic
  - C. Neutral

D. Radical

23. The removal of Carbon Dioxide by heating is called as \_\_\_\_\_

A. Dehydration

B. Dehydrogenation

C. Dealkylation

**D. Decarboxylation**

24. The carbon adjacent to the carbonyl/carboxyl group numbered as \_\_\_\_\_

**A. alpha**

B. beta

C. gamma

D. delta

25. Two moles of EAA reacts with \_\_\_\_\_ to form adipic acid.

A. Dichloromethane

B. Diiodomethane

**C. 1,2-dichloroethane**

D. Acetone

26. An organometallic compound contains \_\_\_\_\_ bond.

A. C – O

B. C – N

C. C – H

**D. C – M**

27. The metal is \_\_\_\_\_ in organo-metallic compound

A. Electronegative

**B. Electropositive**

C. Neutral

D. None of these

28. Carbon in organometallic compound acts as a \_\_\_\_\_

A. Carbene

B. Carbonium ion

**C. Carbanion**

D. Carbon free radical

29. In the preparation of organolithium compound \_\_\_\_\_ solvent is used.

A. Water

B. Alcohol

**C. Diethyl ether**

D. acetic acid

30. When acetaldehyde is treated with methyl lithium and then hydrolyzed to give \_\_\_\_\_

A. Ethyl alcohol

B. t butyl alcohol

**C. Isopropyl alcohol**

D. Methyl alcohol

31. .... is called simmon Smith reagent

A.  $(C_2H_5)_2Zn$

**B. I-CH<sub>2</sub>-Zn-I**

C.  $R_2CuLi$

D. Br-Zn-CH<sub>2</sub>-COOC<sub>2</sub>H<sub>5</sub>

32. Lithium dialkyl cuprate is used to prepare

A. alcohols

B. Esters

C. Alkenes

**D. Alkanes**

33. Organolithium compounds reacts with formaldehyde to produce \_\_\_\_\_

**A. Primary alcohol**

B. Secondary alcohol

C. Tertiary alcohol

D. Ketone

34. Organolithium compounds reacts with ketones to produce \_\_\_\_\_

A. Primary alcohol

B. Secondary alcohol

**C. Tertiary alcohol**

D. Ketone

35. Grignard reagent is \_\_\_\_\_

A. Organolithium compound

**B. Organomagnesium compound**

C. Organozinc compound

D. Organocopper compound

36. Methyl magnesium iodide reacts with Ethyl formate to produce\_\_\_\_\_

**A. isopropyl alcohol**

B. n-propyl alcohol

C. t-butyl alcohol

D. ethyl alcohol

37. Methyl magnesium iodide on reaction with Acetyl chloride produce\_\_\_\_\_

**A. Acetone**

B. Acetic acid

C. Acetic anhydride

D. None of above

38. Iodo methyl zinc iodide is called as \_\_\_\_\_

A. Gilman reagent

B. Grignard reagent

C. Lindlar,s catalyst

**D. Simmon-Smith reagent**

39. Which of the following on reaction with Grignard reagent produce alkane.

A. Ethanol

B. Water

C. Amine

**D. All of these**

40. The reaction in which organo zinc derivative of  $\alpha$ -halo ester react with carbonyl

compound to produce  $\beta$ -hydroxy ester is known as,

- A. Clemmensen's reaction.
- B. Simmon-Smith reaction
- C. Reformatsky reaction**
- D. Grignard reaction

41. Name the following compound,



- A. Ethyl actate
- B. Ethyl bromo zinc acetate**
- C. Ethyl bromo acetate
- D. Bromo aceto acetate

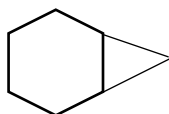
42. Cyclic ethers are called as,

- A. Epoxides**
- B. Lactones
- C. Lactums
- D. Cyclopropanes.

43. Simmon-Smith reaction is useful for synthesis of\_\_\_\_\_

- A. Epoxides
- B. Lactones
- C. Lactums
- D. Cyclopropanes.**

44. Name the compound,



- A. Cyclohexane propane
- B. Bicyclo [4,1] heptane**
- C. Cyclohexene
- D. Cycloheptane

45. What is the name of alkane having 11 carbon atoms in a straight chain ?

- A. Decane



**B. Undecane**

C. Dodecane

D. Nonane

46. According to MOT, the molecule is formed by –

A. Sharing of electrons between atoms

**B. Linear combination of atomic orbitals**

C. Hybridization of atomic orbitals

D. Transfer of electrons between combining atoms

47. According to MOT, the number of molecular orbitals formed is ---

**A. Equal to the number of atomic orbitals combined.**

B. Less than the number of atomic orbitals combined.

C. Greater than the number of atomic orbitals combined.

D. Equal to the difference between the atomic orbitals combined.

48. According to MOT, the bonding MO is formed when

A. The overlapping lobes of combining atomic orbitals have different signs.

B. The overlapping lobes of combining AOs have zero sign

**C. The overlapping lobes of combining AOs have similar signs.**

D. Cannot be predicted.

49. The wave function ( $\Psi$ ) describing the formation of antibonding MO is ----

A.  ${}_{(g)} \Psi_{AB} = \Psi + \Psi$

B.  ${}_{AB} \Psi = \Psi \pm \Psi$

C.  ${}_{AB} \Psi = -\Psi - \Psi$

**D.  ${}_{(u)} \Psi_{AB} = \Psi - \Psi$**

50. According to MOT, the MOs are ----

**A. Polycentric**

B. Monocentric

C. Accentric

D. cannot be predicted

51. Bond order of molecule is given by -----

A.  $(N_a - N_b)/2$

**B.  $(N_b - N_a)/2$**

C.  $(N_a + N_b)/2$

D.  $N_b + N_a$

52. The molecule or ion is stable if ---

A.  $N_b = N_a$

B.  $N_b < N_a$

**C.  $N_a < N_b$**

D.  $N_a - N_b = \text{positive}$

53. The paramagnetic nature of  $O_2$  molecule is explained by -----

A. Lewis theory

B. VBT

C. VSEPR theory

**D. MOT**

54. The molecule with highest bond order among  $He_2$ ,  $B_2$ ,  $O_2$  and  $N_2$  is --

A.  $B_2$

B.  $O_2$

C.  $He_2$

**D.  $N_2$**

55. According to MOT, the  $He_2$  molecule is not formed. This is because -----

A.  $N_a > N_b$

B.  $N_b > N_a$

**C.  $N_b = N_a$**

D.  $N_b - N_a = \text{Positive}$

56.  $N_2$  molecule contains ----

A. Two sigma and one Pi bond

**B. one sigma and two Pi bonds**

C. One sigma and one Pi bond

D. Three sigma bonds

57. The molecule containing one or more unpaired electrons is -----
- A. Diamagnetic
  - B. Paramagnetic**
  - C. Nonmagnetic
  - D. cannot be predicted.
58. The energy of atomic orbitals taking part in molecular orbital formation.....
- A. Is greater than the MOs formed**
  - B. Is equal to the MOs formed
  - C. Is less than the MOs Formed
  - D. Is equal or less than the MOs formed
59. The order of stability for the molecules is ----
- A.  $H_2 < B_2 < O_2 < N_2$
  - B.  $B_2 < H_2 < O_2 < N_2$**
  - C.  $H_2 < B_2 < N_2 < O_2$
  - D.  $B_2 < H_2 < N_2 < O_2$
60. The isoelectronic molecules among CO, O<sub>2</sub>, N<sub>2</sub> and NO are
- A. O<sub>2</sub> and N<sub>2</sub>
  - B. N<sub>2</sub> and NO
  - C. CO and N<sub>2</sub>**
  - D. CO and NO
61. Isoelectronic species have -----
- A. Similar number of atoms
  - B. Similar number of electrons
  - C. Similar electronic distribution
  - D. All the above**
62. According to MOT, the linear combination of atomic orbitals takes place only when the Atomic orbital have -----
- A. Matching symmetry
  - B. Matching geometry
  - C. Matching energy

**D. All the above**

63. According to MOT ----

- A. Only half filled atomic orbitals from the valence shell take part in bonding.
- B. Only completely filled atomic orbitals from the valence shell take part in bonding
- C. Only vacant orbitals from the valence shell take part in bonding.
- D. Half filled, completely filled and vacant orbitals from the valence shell take part in bonding.

64. According to VBT ---

- A. Only half filled atomic orbitals from the valence shell take part in bonding**
- B. Only vacant AOS from the valence shell take part in bonding.
- C. Only completely filled AOS from the valence shell take part in bonding.
- D. All the above can take in bonding.

65. According to MOT, the O<sub>2</sub> molecule is

- A. Diamagnetic
- B. Paramagnetic**
- C. Cannot be predicted
- D. Paramagnetic as well as diamagnetic

66. According to VBT, O<sub>2</sub> molecule is -----

- A. Paramagnetic
- B. Diamagnetic**
- C. Cannot be predicted
- D. Paramagnetic as well as diamagnetic.

67. Filling of MOS by electrons follow ----

- A. Auf bau principle
- B. Pauli's exclusion principle
- C. Hund's rule of maximum multiplicity
- D. All the above**

68. Molecular orbital can have maximum of –

- A. Two electrons with similar spins

- B. Two electrons with opposite spins**
- C. Two electrons with resultant spin ( $-\frac{1}{2}$ )
- D. Two electrons with resultant spin ( $+\frac{1}{2}$ )
69. Heteronuclear diatomic molecule contains --
- A. Two atoms of same elements
- B. Two atoms of different elements**
- C. Three atoms of same element
- D. Three atoms of different elements.
70. According to MOT, the  $B_2$  molecule contains.
- A. Two sigma bonds
- B. Two Pi bonds
- C. 2 one electron Pi bonds**
- D. One sigma and one Pi bond
71. According to MOT ---
- A. All sigma bonding and antibonding MOS are gerade.
- B. All Pi bonding and antibonding MOS are gerade
- C. All sigma bonding and pi bonding MOs are ungerade
- D. All sigma bonding and all Pi antibonding MOs are gerade**
72. Which of the following is not a dicarboxylic acid.
- A. Oxalic acid
- B. Acetic acid
- C. Glutaric acid
- D. Succinic acid
73. Acetic acid is converted into chloroacetic acid in presence of  $Cl_2/P$  is known as,
- A. Knoevenagel condensation
- B. HVZ reaction**

C. Aldol condensation

D. Wurtz reaction

74. Decarboxylation is usually carried out by,

A. Heating

B. Cooling

C. Pressurizing

D. Compression

75. When EAA or alkyl derivative of EAA is hydrolysed with dil.HCL to form ketone is called,

A. Acid hydrolysis

B. Alkaline hydrolysis

**C. Ketonic hydrolysis**

D. None of the above

76. Sodium salt of EAA reacts with \_\_\_\_\_ to form alkyl acetic acid.

A. Alkane

B. Alkene

C. Alkyne

**D. Alkyl halide**

77. Sodium salt of EAA reacts with \_\_\_\_\_ to form dicarboxylic acid.

**A. Ethyl chloro acetate**

B. Dichloroethane

C. Diethyl amine

D. Alkyl halide

78. EAA and acetaldehyde undergo Knoevenagel condensation to form\_\_\_\_\_

A. Dicarboxylic acids

B.  $\beta$ -keto acid

**C.  $\alpha$ - $\beta$  unsaturated acid**

D. n-valeric acid

79. Alkyl halide and magnesium metal forms Grignard reagent on \_\_\_\_\_ in ether.

A. Condensation

**B. Reflux**

C. Distillation

D. Boiling openly

80. In Grignard reagent C-Mg bond is \_\_\_\_\_

**A. Covalent and polar**

B. Covalent and non-polar

C. 100% Ionic

D. Metallic

81. Lithium dialkyl cuprate reacts with \_\_\_\_\_ to form undecane

A. bromo propane

B. Chloro propane

**C. iodo decane**

D. bromo hexane

82. In the Reformatsky reaction \_\_\_\_\_ is formed as product.

A.  $\alpha$ -haloester

B.  $\beta$ -keto acid

C.  $\alpha$ - $\beta$  unsaturated acid

**D.  $\beta$ -hydroxy ester**

83. The symbol of wavefunction is,

A.  $\alpha$

B.  $\beta$

C.  $\psi$

D.  $\pi$

84. Bond order of  $H_2$  molecule is,

**A. One**

B. Two

C. Three

D. Four

85. According to MOT, the linear combination of atomic orbitals takes place only when the Atomic orbital have -----

A. Matching symmetry

B. Matching geometry

C. Matching energy

**D. All the above**



86. According to MOT, the MOs are ----

- A. **Polycentric**
- B. Monocentric
- C. Accentric
- D. cannot be predicted

87. Organolithium compounds reacts with acetaldehyde to produce \_\_\_\_\_

- A. Primary alcohol
- B. **Secondary alcohol**
- C. Tertiary alcohol
- D. Ketone

88. Organolithium compounds reacts with formaldehyde to produce \_\_\_\_\_

- A. **Ethyl alcohol**
- B. Propyl alcohol
- C. iso-propyl alcohol
- D. Ketone

89. The aceto acetic ester and malonic ester synthesis usually ends with \_\_\_\_\_ of a  $\beta$ -keto acid.

- A. **Decarboxylation**
- B. Dehydration
- C. Dehydrogenation
- D. Dehalogenation.

90.  $\text{CH}_3-\text{CH}_2-\underset{\text{CH}_3}{\text{CH}_2}-\text{COOH}$  is the example of

- A. Acetic acid
- B. alkyl acetic acid
- C. **Dialkyl acetic acid**
- D. Alkane

91. Grignard reagent reacts with formate ester to produce \_\_\_\_\_

- A. Primary alcohol

**B. Secondary alcohol**

C. Tertiary alcohol

D. Ketone

92. Grignard reagent reacts with ester other than formate ester to produce \_\_\_\_\_

A. Primary alcohol

B. Secondary alcohol

**C. Tertiary alcohol**

D. Ketone

93. In the HVZ reaction, acetic acid is converted into chloroacetic acid in presence of,

A.  $\text{Cl}_2/\text{P}$

B.  $\text{Br}/\text{P}$

C.  $\text{I}_2/\text{P}$

D. only  $\text{Cl}_2$

94. Malonic ester is diethyl ester of \_\_\_\_\_

A. Maleic acid

B. Fumaric acid

**C. Malonic acid**

D. Succinic acid

95. Glutaric acid contains \_\_\_\_\_ methylene groups.

A. 1

B. 2

**C. 3**

D. 4

96. C-C bond formation can be brought about by the use of,

A. Organometallic compounds

B. Synthetic reagents

**C. Both A and B**

D. None of the above

97. The atomic number of an element is nothing but the,

**A. Number of protons**

B. Number of neutrons

C. Number of electrons

D. Number of shells

98. The principal quantum number denotes the

**A. Shell number**

B. Orbital

C. Sub-orbital

D. Electron spin

99. The first shell is named as,

**A. K-shell**

B. L-shell

C. M-shell

D. N-shell

100. The proton has \_\_\_\_\_ charge

**A. Positive**

B. Negative

C. Neutral

D. Both