

Time: One Hour

Max. Marks: 50

## Instruction

- Solve any 25 Questions from Q1 to Q30
- Solve any 25 Questions from Q31 to Q60

- How many peaks are expected in  $^1\text{H}$  NMR from ethane?
 

(A)One (B)Three (C)Two (D)Many
- Chemical shift of aldehydic protons is
 

(A)3.7 to 4.1 (B)2.0 to 2.6 (C)9 to 10 (D)3 to 4
- Which one of the following is correct chemical shift ' $\delta$ ' (delta) value for the absorption of aromatic protons?
 

(A) $\delta$  6-9 (B) $\delta$  3-5 (C) $\delta$  0-2 (D) $\delta$  10-12
- In  $^1\text{H}$  NMR methyl proton of toluene shows chemical shift at ' $\delta$ ' .....
 

(A) $\delta$  5.2 (B) $\delta$  2.3 (C) $\delta$  7.2 (D) $\delta$  0.7
- Chemical Shift of aliphatic hydroxyl proton is
 

(A)1 to 5.5 (B)6 to 8.5 (C)9 to 10 (D)0.9
- How many sets of protons are present in acetaldehyde?
 

(A)Two (B)Three (C)One (D)Four
- How many sets of protons are present in ethyl acetate?
 

(A)Two (B)Three (C)One (D)Four
- In  $^1\text{H}$  NMR; ethanol shows-----signals.
 

(A)One (B)Two (C)Three (D)Four
- How many  $^1\text{H}$ NMR signals would be given by the compound 1,2,2 tribromoethane?
 

(A)One (B)Two (C)Three (D)Four
- How many NMR signals would be given by the Compound Benzene?
 

(A)One (B)Two (C)Three (D)Four
- Coupling Constant is denoted by the letter \_\_\_\_\_
 

(A)H (B)K (C)I (D)J
- Which of the following is internal reference standard used in NMR Spectroscopy.
 

(A)DDT (B)TMS (C)PPM (D)EDTA
- Splitting of signal in  $^1\text{H}$  NMR spectroscopy is due to
 

(A)Hindered hydrogen's (B)spin-spin coupling (C)coupling constant (D)Electronegativity
- Which of the following shows more deshielding effect in  $^1\text{H}$  NMR?
 

(A)Acetylene (B)Ethylene (C)Benzene (D)Ethane
- The distance between the centres of the peak is called as----
 

(A)Coupling constant (B)Spin constant (C)Spin-spin coupling (D)chemical shift
- NMR is the study of absorption of \_\_\_\_\_ by nuclei in a magnetic field?
 

(A)Radioactive radiation (B)IR radiation (C)Radio frequency radiation (D)Microwaves
- Which one of the following is correct statement in case of  $^1\text{H}$  NMR?
 

(A)Chemical shift ( $\delta$ ) values are independent of the radio frequency and applied magnetic field. (B)Chemical shift ( $\delta$ ) values are dependent of the radiofrequency and applied magnetic field. (C)Chemical shift ( $\delta$ ) values are dependent of the radiofrequency but independent on applied magnetic field. (D)All of the above are correct.
- In case of shielding effect of protons in PMR....
 

(A)Applied magnetic field opposes as well as reinforces to induced magnetic field. (B)Induced magnetic field opposes to applied magnetic field. (C)Induced magnetic field reinforces to applied magnetic field. (D)Induced magnetic field neither reinforces nor opposes to applied magnetic field.
- Protons in different chemical environments show absorption peaks. The area under each peak is proportional to-----
 

(A)Number of protons (B)Number of electrons (C)Number of neutrons (D)None
- Which of the effect shown by acetylene molecule in  $^1\text{H}$  NMR
 

(A)Shielding effect (B)Deshielding effect (C)Hyperconjugation effect (D)Inductive effect
- Which of the following is not organometallic compound?
 

(A) $\text{R}_2\text{Cd}$  (B) $\text{RMgX}$  (C) $\text{RLi}$  (D) $\text{RCOOH}$
- Alkyl magnesium bromide reacts with water gives
 

(A)Alkene (B)Alkane (C)Alcohol (D)Aldehyde
- Ethyl Magnesium Bromide, react with Ethyl bromide to form-----
 

(A)Ethyl Bromide (B)n-butane (C)propane (D)Pentane

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24 Ethyl magnesium bromide is reacted with solid carbon dioxide gives.

- (A) Acetic acid (B) formic acid (C) propionic acid (D) carbonic acid

25 Which of the following compounds will react with methyl magnesium bromide to give tert-butyl alcohol?

- (A) Acetyl Chloride (B) Acetone (C) Isopropyl alcohol (D) Acetaldehyde

26 Methyl magnesium bromide is reacted with sulphur gives

- (A) Methyl thiol (B) Methanol (C) Ethyl thiol (D) All a, b, and c.

27 Ethyl magnesium bromide reacts with ethanol gives

- (A) Methane (B) Ethane (C) Propane (D) Butane

28 Diethyl zinc reacts with acetyl chloride and forms \_\_\_\_\_

- (A) Dimethyl ketone (B) Diethyl ketone (C) Methyl propyl ketone (D) Methyl ethyl ketone

29 Reaction between Diethyl zinc and mercuric chloride produce-----

- (A) Dimethyl Mercury (B) Diethyl Mercury (C) Triethyl Mercury (D) None

30 Final product of Reformatsky reaction is

- (A)  $\alpha, \alpha$  unsaturated ester (B)  $\alpha, \beta$  unsaturated ester (C)  $\beta, \beta$  unsaturated ester (D) both a and c

31 Diphenyl zinc is an example of

- (A) Grignard reagent (B) Organo zinc compound (C) Organo cadmium compound (D) Both a and c

32 Organo lithium reacts with H<sub>2</sub>O gives

- (A) Alcohol (B) Alkane (C) Acid (D) Aldehyde

33 n-Butyl Lithium is prepared from \_\_\_\_\_

- (A) n-Butyl Chloride (B) n-Butyl Zinc (C) n-Butyl Magnesium (D) None

34 n-butyl lithium on reaction with formaldehyde followed by acid hydrolysis gives

- (A) 1-pentanol (B) 2-pentanol (C) 3-pentanol (D) 4-pentanol

35 By using Organo lithium which of the following can be prepared.

- (A) Primary alcohol (B) Secondary alcohol (C) Tertiary alcohol (D) All of these

36 Which hydrogen atom of ethyl acetoacetate is more acidic?

- (A) Methylene (B) Methyl (C) Ethyl (D) None of these

37 A carbon atom adjacent to carbonyl group is known as

- (A)  $\alpha'$  carbon (B)  $\beta'$  carbon (C)  $\gamma'$  carbon (D)  $\pi'$  carbon

38 Acidic nature of  $\alpha$  - hydrogen containing carbonyl compound, increases due to presence of

- (A) Electron withdrawing group (B) Electron donating group (C) Both a and b (D) None of these

39 How many  $\pi$  bonds are present in enol form of ethyl acetoacetate?

- (A) Two (B) One (C) Three (D) Four

40 Ethyl acetoacetate can be prepared by

- (A) Rosenmund's reaction (B) Claisen condensation (C) Kolbe's electrolytic reaction (D) Grignard reagent

41 Acetoacetic ester in enol form condensed with Urea gives

- (A) 4-methyl uracil (B) Crotonic acid (C) Uric acid (D) Succinic acid

42 Ethyl acetoacetate undergoes acid-hydrolysis with dilute HCl to form

- (A) Acetoacetic acid (B) Succinic acid (C) Acetic acid (D) Adipic acid

43 Ketonic hydrolysis of ethyl acetoacetate gives

- (A) Acetone (B) Cyclohexanone (C) Alcohol (D) Acetic acid

44 Keto-enol tautomerism is shown by

- (A) Acetic acid (B) Benzene (C) Benzophenone (D) Aceto acetic ester

45 Succinic acid will be prepared from

- (A) Aceto acetic ester and ethyl chloro acetate (B) Aceto acetic ester and formaldehyde (C) Acetone and ethyl chloro acetate (D) Acetophenone and ethyl chloro acetate

46 Barbituric acid is obtained by the condensation reaction between Diethyl malonate and

- (A) Succinic acid (B) Urea (C) Acetic acid (D) Acetylene

47 Glycine (amino acid) is prepared from-----

- (A) Malonic ester (B) Succinic ester (C) Acetoacetic ester (D) None

48 Diethyl malonate on heating with sodium ethoxide in presence of ethanol gives

- (A) Aceto acetic ester (B) Malonic Ester (C) Diethyl malonate (D) Mono sodium salt of diethyl malonate

49 Mono sodium salt of diethyl malonate on heating with 1,2 di bromo ethane in ethanol followed by alkaline hydrolysis and acidification with hydrochloric acid gives

- (A) Glycine (B) Butyric acid (C) Barbituric acid (D) Adipic acid

50 Crotonic acid will be synthesised from \_\_\_\_\_

- (A) Benzaldehyde and diethyl malonate (B) Acetaldehyde and diethyl malonate (C) Glutaric acid and diethyl malonate (D) Mandelic acid and diethyl malonate

51 Generally fats and oils are called as

- (A) Esters of glycerol (B) Esters (C) Fatty acids (D) Both a and b

52 Lipids on hydrolysis reaction in basic medium, gives

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- (A)Glycol and soap (B)Glycerol and Soap (C)Fatty acid and Soap (D)Fatty acids and alcohols
- 53 Essential oils are
- (A)Volatile Liquids or solids (B)Non-volatile liquids or solids (C)Viscous Liquids (D)None of these
- 54 Number of milligrams of Iodine required saturating one gram of oils or fats, known as
- (A)Acid value (B)Iodine value (C)Soap value (D)Detergents value
- 55 Tallow oil and Whale oil are the examples of \_\_\_\_\_ oils.
- (A)Mineral oils (B)Vegetable oils (C)Animal oils (D)Palm oil
- 56 Soya bean oil manufactured by
- (A)Distillation process (B)Mechanical process (C)Solvent extraction process (D)Evaporation process
- 57 Number of milligram of potassium hydroxide required to neutralized free fatty acid in one grams of oil or fat, known as
- (A)Acid value (B)Iodine value (C)Soap value (D)Detergent value
- 58 Soap contains
- (A)Water soluble head (B)Oil soluble tail (C)Water soluble tail (D)Both 'a' and 'b'
- 59 Sodium alkyl sulphonate having general molecular formula
- (A)R-O-SO<sub>3</sub>-Na (B)R-O-SO<sub>3</sub>-NH<sub>2</sub> (C)R-O-SO<sub>3</sub>-NH<sub>4</sub>Cl (D)Both 'b' and 'c'
- 60 Camphor is an example of
- (A)Vegetable oil (B)Animal fat (C)Essential oil (D)Both a and b