

AA(H-1) — Ch (1C) Org.

2015

Time : 3 hours

Full Marks : 50

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer five questions, including Q. No. 1 which is compulsory.

1. Select the correct choice of the following : 1 × 10 = 10

(a) The hybridisation of the carbon atom in C-C single bond of $HC \equiv C - CH = CH_2$ is :

- (i) $sp^3 - sp^3$
- (ii) $sp^3 - sp$
- (iii) $sp^2 - sp^3$
- (iv) $sp - sp^2$

(b) Which among the given compounds is most stable ?

- (i) 1-butene
- (ii) trans-2-butene

TZ - 135/5

(Turn over)

(iii) cis-2-butene

(iv) 2, 3-dimethyl-2-butene

(c) Which among the following carbocations is most stable ?

(i) $(C_6H_5)_3C^+$

(ii) $(CH_3)_3C^+$

(iii) CH_3^+

(iv) $CH_2 = CH - \overset{+}{C}H_2$

(d) Which among the following is least basic ?

(i) Cyclohexyl amine

(ii) Trimethyl amine

(iii) Dimethyl amine

(iv) Triphenylamine

(e) Which among the following is an electrophile ?

(i) CO_2

(ii) SO_3

(iii) NO_2^+

(iv) All of these

(f) Grignard reagents add to the carbonyl group of Ketones to form :

(i) Primary alcohol

TZ - 135/5

(2)

Contd.

(ii) Secondary alcohol

(iii) Tertiary

(iv) None of these

(g) Which of the following is a nucleophile ?

(i) Carbene

(ii) Nitrene

(iii) Nitronium ion

(iv) Carbanion

(h) Cannizzaro reaction will not take place in :

(i) Formaldehyde

(ii) Benzaldehyde

(iii) Acetaldehyde

(iv) 2, 2-dimethyl propanaldehyde

(i) The reaction Glycerol with conc. H_2SO_4 produces :

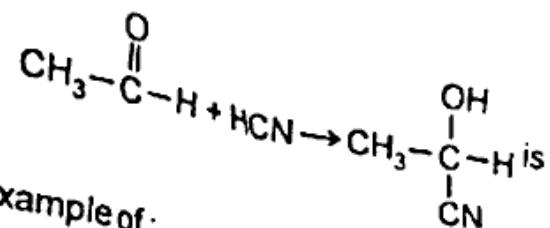
(i) Formic acid

(ii) Allyl alcohol

(iii) Acrolein

(iv) None of these

(i) The reaction



an example of :

(i) Electrophilic addition reaction

(ii) Nucleophilic addition reaction

(iii) Both (i) and (ii)

(iv) None of these

2. Write short notes on any two of the following :

5x2 = 10

(a) Hydrogen bond

(b) Hyper conjugations

(c) Inductive effect

(d) Resonance

3. What are organometallic compound ? Give two examples. What is the function of ether in the preparation of a Grignard reagent ? How does

following synthesise from methyl magnesium bromide ?

- (a) Isopropyl alcohol
- (b) Acetone
- (c) Acetic acid.

2+2+2×3 = 10

4. How will you bring about the following changes ?

2×5 = 10

- (a) Propylene to Allyl Alcohol
- (b) Propan-1-ol to Propan-2-ol
- (c) Formic acid to Oxalic acid
- (d) Ethyl amine to Acetone
- (e) Acetylene to Acetic acid

5. Explain any five of the following : 2×5 = 10

- (a) The boiling point of ethyl alcohol is higher than dimethyl ether while both have same molecular formula.
- (b) Trichloro acetic acid is stronger than acetic acid.

- (c) Acetaldehydes are more reactive than ketones.
- (d) Aniline is less basic than ammonia.
- (e) 2-Butene is more stable than ammonia.
- (f) Addition of HBr to Propene yields 2-bromo propane.
- (g) Thioalcohol oxidises more readily than alcohol.

6. Write notes on any two of the following :

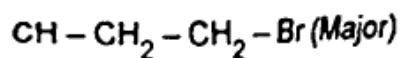
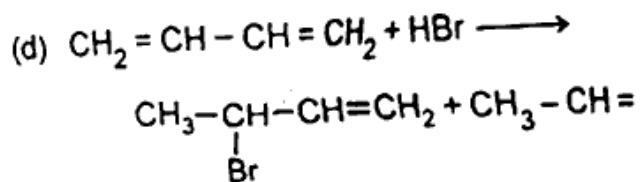
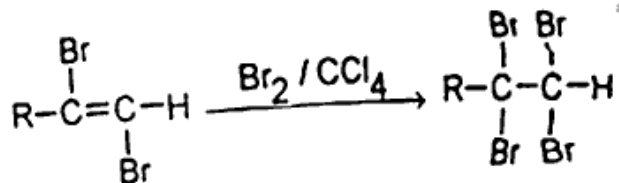
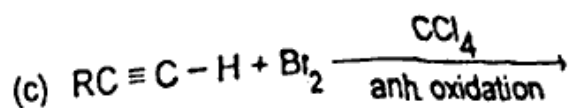
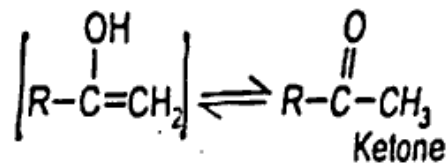
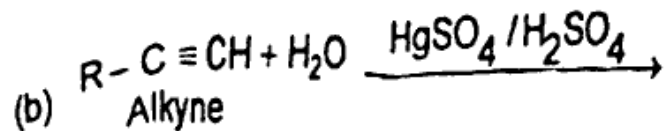
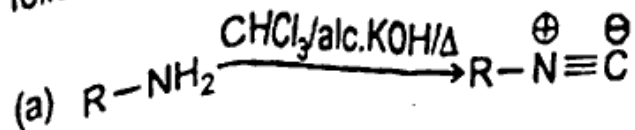
5×2 = 10

- (a) Pinacol and Pinacolone Rearrangement
- (b) Cannizzaro Reaction
- (c) Hydroxylation
- (d) Birch reduction

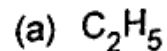
7. How is Urea prepared in the laboratory? Deduce the structure of Urea. How does Urea react with the following ?

- (a) Nitrous acid
- (b) Diethyl Malonate 2+5+2×1½ = 10

8. Write down the mechanism of any two of the following reactions: 2×5 = 10



9. What are thio ethers? Give two methods for the preparations of thio ethers. How does diethyl sulphide react with the following?



$2+2 \times 2 + 2 \times 2 = 10$

10. (a) Describe the Platini Chloride method for the determination of molecular weight of an organic base.

(b) 4.4 mg of the chloro platinate of mono acid organic base gave on ignition, 1.375 mg. of Platinum. Calculate the molecular weight of the base. (Pt = 195)

$5+5 = 10$

