

ORGANIC CHEMISTRY

Total: 70 marks

Instructions:

1. All questions are compulsory.
2. Figures to right indicate full marks.

Q-1 Answer the following.

- (A) (i) What are anthocyanins, anthocyanidins and flavones? Give one general method for the synthesis of anthocyanidin and flavone. (4)
- (ii) Discuss acidic and basic hydrolysis of chlorophyll. (3)

OR

- (A) (i) How sugar residue in anthocyanin is being determined? Explain presence and position of sugar residue in anthocyanin giving suitable example. (4)
- (ii) Discuss spectral properties of porphyrins. (3)
- (B) (i) Give synthesis of (4)
- (a) ω , 3,4 – Trimethoxy acetophenone from veratric acid.
- (b) Dipyrromethene.
- (ii) Discuss catalytic reduction reaction of bilirubin and derive conclusion. (3)

OR

- (B) (i) Discuss the reductive degradation of haemin with HI & acetic acid and SnCl₂ & HCl. (4)
- (ii) Give synthesis of quercetin. (3)

Q-2 Answer the following.

- (A) (i) Discuss the nature of hydroxyl group in morphine. What happens when morphenol is (4)
- (a) Fused with KOH. (b) Reduced with sodium and ethanol. (3)
- (ii) Give evidence for the nature and position of side chain in α -tocopherol (3)

OR

- (A) (i) Give evidence for the size of ring C in colchicine. How will you show the presence of acetamido group in colchicine? (4)
- (ii) Give evidence for nature of nucleus and side chain in biotin. (3)

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- (B) (i) Discuss the nature of nucleus and position of carboxyl group in reserpic acid (4)
(ii) Sodium sulphite cleavage of vitamin-B1 gives an acid [A] and base [B]. Discuss structure of any one of them. (3)

OR

- (B) (i) Give evidence for the oxidation reaction of quinine. Prove the structure of quinic acid. (4)
(ii) Giving evidence prove the presence of lactone cycle in vitamin-C (3)

Q-3 Answer the following.

- (A) (i) What is Blanc's rule? How it is useful to establish the ring system in cholesterol? (4)
(ii) Explain the transformation of $R-CH_2COOH \rightarrow R-COOH$. Name it and show how it is important to establish the nature of side chain in cholesterol. (3)

OR

- (A) (i) Prove that ergosterol has two conjugated double bond in the same ring and one double bond in the side chain. (4)
(ii) Explain the pathway by which squalene is converted to cholesterol. (3)
- (B) (i) Discuss the position of hydroxyl group and double bond in cholesterol. (4)
(ii) What are sex hormones? Classify them giving one example of each. Give synthesis of testosterone. (3)

OR

- (B) (i) Prove that bile acids are hydroxyl derivatives of 5- β -cholic acid or 5- α cholic acid. Explain biological importance of bile acid. (4)
(ii) What are adrenocortical hormones? Give partial synthesis of cortisone (3)

Q-4 Answer the following.

- (A) (i) Prove the structure of allogibberic acid. (4)
(ii) Discuss the ozonolysis of squalene. (3)

OR

- (A) (i) Give degradation product of gibberic acid and derive conclusion. (4)
(ii) Give the synthesis of zingiberine. (3)
- (B) (i) Give evidence for the position of carboxyl group in abeitic acid? (4)
(ii) Give synthesis of retene. (3)

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OR

(B) (i) Discuss the position of angular methyl group in abeitic acid. (4)

(ii) Discuss structure of farnesol. (3)

Q-5 Answer the following. (14)

(i) Give name and structure of product when peonidine chloride is fused with barium hydroxide in hydrogen atmosphere.

(ii) What is meant by soret band?

(iii) Name the product when flavone is boiled with alcoholic potassium hydroxide.

(iv) Giving necessary reaction discuss the conversion of ascorbic acid to dehydro ascorbic acid.

(v) Give classification of vitamins according to their solubility.

(vi) Giving reason show colchicine is an alkaloid.

(vii) Discuss relationship between morphine and thebaine.

(viii) Give structural formula of any two corticoids.

(ix) Write the structure of product when steroids are dehydrogenated with selenium at 360°C & 420°C.

(x) How tetracyclic nature of cholesterol is being determined?

(xi) How will you prove double bond in abeitic acid?

(xii) Write isoprene rule & special isoprene rule.

(xiii) Give evidence for the presence of lactone ring in gibberic acid.

(xiv) Name the product obtained on ozonolysis of zingeberine.