

- N.B. :** (1) All the questions are **compulsory**. Choice is **internal**.
 (2) **Figures** to the **right** indicate **Full Marks**.
 (3) Draw **structures** and **diagrams** wherever **necessary**.

1. (A) Define and explain : 10
- (i) Nucleotide
 - (ii) EFA
 - (iii) rRNA
 - (iv) Nutrition
 - (v) Phosphatidylinositol
- (B) State true or false giving reason : 10
- (i) The base composition of DNA is same in different species.
 - (ii) The smaller subunit of prokaryotic ribosome consists of 18S rRNA.
 - (iii) Calorie is a unit of heat.
 - (iv) Construction workers lead a sedentary lifestyle.
 - (v) Ceramide is made up of sphingosine and fatty acids.
2. Answer the following (**any four**) : 20
- (i) Define fatty acids and discuss the classification of unsaturated fatty acids.
 - (ii) Write a note on functions of lipids.
 - (iii) Explain following reactions of fats :
 - (a) Ozonolysis
 - (b) Action of heat on glycerol
 - (iv) Elaborate on Bloor's classification of lipids.
 - (v) Draw the structure of :
 - (a) Arachidic acid
 - (b) Palmitoleic acid
 - (vi) Explain and give the significance of :
 - (a) Saponification value
 - (b) Iodine Number
 - (vii) Write a note on occurrence and biochemical significance of cholesterol.
 - (viii) With suitable examples discuss derived lipids.

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3. Elaborate on **any four** : 20
- (i) Structure of DNA
 - (ii) T_m of DNA
 - (iii) Purines and pyrimidines
 - (iv) Structure of tRNA
 - (v) Differentiate between prokaryotic mRNA and eukaryotic mRNA
 - (vi) Chargaff's rule
 - (vii) T_m and Hyperchromism
 - (viii) Different forms of DNA
4. Discuss the following (**any four**) : 20
- (i) Biochemical significance of lipids.
 - (ii) Significance of BMR in clinical diagnosis.
 - (iii) Write a note on : (a) BV (b) PER.
 - (iv) "Proteins are nutritionally significant to human subjects". Discuss.
 - (v) Define BMI. How is it calculated?
A subject has a BMI between 16.0-18.5 kg/L². Is he overweight?
 - (vi) What is balanced diet?
 - (vii) Explain the role of carbohydrates in daily diet.
 - (viii) Explain SDA.
5. Attempt the following (**any four**) : 20
- (i) Give the structures of :
 - (a) Palmitic acid
 - (b) Linoleic acid
 - (ii) Define TAG and discuss their properties.
 - (iii) Give the structures of :
 - (a) Guanine
 - (b) Thymine
 - (iv) Write a note on base pairing in DNA
 - (v) Explain the use of the following in nutrition :
 - (a) Bomb calorimeter
 - (b) RDA
 - (vi) Mr. Gaikwad consumes a diet made up of 15 g of protein, 20 g of carbohydrate and 15 g of lipid. He is a 45 year old post master. Calculate the calorific value of his diet and suggest two methods of improving it if required.
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