(2 ½ hours) [Total Marks: 60]

N.B. (i) All questions are compulsory
    (ii) Use of log-tables / non programmable calculator permitted.

8

Qu.1. a   Attempt any two of the following :
(i) What are the abnormal constituents present in urine? How does abnormal creatinine level in urine help in diagnosis of diseases?
(ii) Discuss the nutritional significance of Potassium & Sulphur as minerals.
(iii) Describe the constituents of blood. How is urea nitrogen estimated in blood sample?
(iv) State the physiological significance of
    (1) Riboflavin (vit $B_2$)   (2) Vitamin D

b   Give any analytical method for the estimation of vitamin C (ascorbic acid) .    4

**OR**

b   Blood serum was analysed colorimetrically for cholesterol content.    4
$1.0 cm^3$ of the sample was processed along with the standard solutions. Following results were obtained at 640 nm

| Conc in $mg/cm^3$ | 1.0 | 2.0 | 3.0 | 4.0 | Sample |
|---|---|---|---|---|---|
| Absorbance | 0.22 | 0.45 | 0.63 | 0.90 | 0.55 |

Find the percentage of cholesterol in the sample.

8

Qu.2. a   Attempt any two of the following :
(i) Explain in detail 'Enzyme Linked Immuno Sorbent Assay' (ELISA).
(ii) What are carbohydrates? How are they classified?
(iii) Discuss the principles involved in assay of enzymes. How do these methods help in biochemical analysis?
(iv) Describe a colorimetric method for the determination of amino acids. Discuss the biological importance of amino acids.

[TURN OVER

b    What is meant by immunoprecipitation reactions? Describe    4
the analytical technique involving immunoprecipitation
reactions in solutions.

**OR**

b    Discuss the biological importance of lipids in human body    4

Qu.3. a    Attempt any **two** of the following:    8
(i) Explain the need of food packaging.
(ii) What is meant by fermentation? Discuss different types
·of fermentation techniques used in food industry.
(iii) Give a brief account of biodegradable packaging
materials.
(iv) Discuss the main regulatory authorities in India which
are responsible for maintaining the quality of food.

b    What is meant by fuel value of food? Give its significance.    4

**OR**

b    How do food articles get adulterated?    4

Qu.4. a    Attempt any **two** of the following:    8
(i)    How are the following preservatives analysed from a
food sample (1) Propionic acid   (2) HCHO
(ii) Describe the sources of trace metals in canned food.
(iii)    Give the composition of coffee. How is chicory
determined from coffee?
(iv)    Explain analytical technique for the identification of
extracted colouring matter from food.

b    How is Calcium determined from milk?    4

**OR**

b    What are the common adulterants present in honey? Give    4
methods for the analysis of any two of adulterants.

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**12**

Qu.5.     Attempt any **four** of the following:

a     How are enzymes classified?

b     Define and discuss significance of
      (1) Iodine value     (2) Peroxide value of oil

c     What are the materials used for packaging of liquids?

d     Name different types of body fluids. Explain the biological function of any one of them.

e     How do serum and plasma samples differ from one another?

f     Why is food legislation needed?

g     What are main constituents of milk?  What is difference between  pasteurized milk , sterilized milk and condensed milk?

h     What is the importance of platelets in blood?

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