WEST BENGAL STATE UNIVERSITY
B.Sc. Honours PART-III Examinations, 2018

FOOD AND NUTRITION-HONOURS

PAPER- FNTA-V

Time Allotted: 4 Hours   Full Marks: 100

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

Use separate Answer Script for each Unit.

UNIT-I / NUTRITIONAL BIOCHEMISTRY
[Marks: 50]

1.   Answer any *five* questions from the following: 2×5 = 10

  (a) What is phosphoglucomutase?

  (b) Mention the effect of pH on enzyme activity.

  (c) Write the full forms of UTP, PFK, TPP and NADP.

  (d) Why Kreb's cycle is called TCA cycle?

  (e) What is omega oxidation of fatty acid?

  (f) In any isolated DNA sample, there are a total of 472 nucleotides. When the sample was denatured completely, the count of cytosine was found to be 112. What could have been the number of double bounds in the DNA sample?

  (g) Define isoenzymes with one example.

  (h) What is gluconeogenesis?

  (i) What is the significance of 'Intrinsic Factor of Castle'?

2.   Answer any *four* questions from the following: 4×4 = 16

  (a) Distinguish between: 4
     (i)   Trans-Ketolase and Trans-Aldolase
     (ii) DNA polymerase and RNA polymerase.

  (b) What is 'double-reciprocal plot' of an enzyme reaction? What is its application in enzyme kinetics?   1+3

  (c) State the steps of pentose phosphate pathway leading to the formation of NADPH. Can NADPH produce ATP? Justify your answer.   3+1

  (d) State the causes of hypernatraemia and hyponatremia.   2+2

  (e) Write a short note on Lineweaver-Burk plot.   4

  (f) State the role of Vitamin B1 in metabolic process.   4

  (g) Discuss the Alpha Helix structure of proteins.   4

3. Answer any *two* questions from the following: 12×2 = 24

(a) Describe the mechanisms involved in the following conversions by mentioning the enzymes, coenzymes and cofactors 4+4+4

    (i) Glycerol to Dihydroxyacetone phosphate

    (ii) α-Ketoglutarate to succinyl-CoA

    (iii) Pyruvate to acetyl-CoA.

(b) (i) Distinguish between transamination and deamination with suitable example. 4+1+3 +(2+2)

    (ii) How many molecules of ATP are produced from the complete oxidation of stearic acid?

    (iii) How lanosterol is formed from squalene?

    (iv) What are ketone bodies? How are they utilized?

(c) (i) Name the enzymes containing iron as cofactor. State the metabolic activity of any two of them. (2+4) +2 +2+2

    (ii) What role does ascorbic acid play in collagen formation?

    (iii) Distinguish between symport and antiport.

    (iv) State the role of Vitamin E as an antioxidant.

(d) (i) What do you know about the central dogma of information? Discuss the most important enzymes involved in the process. 4+2+(2+4)

    (ii) What is meant by the coding strand of DNA?

    (iii) Classify the different types of RNA. Name the enzyme responsible for synthesis of RNA in prokaryotes.

UNIT-II / FOOD MICROBIOLOGY

[Marks: 50]

Use separate Answer Script

Group-A

4. Answer any *five* questions from the following: 2×5 = 10

(a) What is the relation between numerical aperture and resolution?

(b) How does change of pH diversify bacteria in different groups?

(c) What is phenol coefficient?

(d) What is the use of acid fast staining?

(e) Why is milk pasteurized, but not sterilized?

(f) Define selective media with an example.

(g) Why E. coli is considered as an indicator of pollution?

(h) What is food intoxication?

(i) Why do Gram-positive bacteria retain the primary stain, but Gram-negative bacteria do not?

(j) Why picric acid is considered as a dye, but benzene is not?

Group-B

5. Answer any *four* questions from the following: 4×4 = 16

   (a) Describe Asiatic dysentery by mentioning its causative agent symptoms.

   (b) Write a short note on peptidoglycan.

   (c) What is presumptive test? Distinguish between effluent, drinking and potable water.

   (d) How the coliform test is performed?

   (e) Distinguish among bacteriocidal, bacteriostatic and bacteriolytic agents with examples.

   (f) How bacterial pilus is involved in genetic transfer of prokaryotes?

   (g) In the lag phase of growth, the number of bacteria remains constant. Does this mean that the cells are dormant and inert? Justify your answer. Is generation time a constant characteristic of a bacterial species?

   (h) Describe the chemistry of negative staining in the light of auxochrome and chromophore principle. How a live and a dead cell be differentiated by staining?

Group-C

6. Answer any *two* questions from the following: 12×2 = 24

   (a) (i) Describe the structure of different type of bacterial flagella and state their function in bacterial survival. 5+3+4

   (ii) Distinguish among monotrichous, lophotrichous and amphitrichous.

   (iii) Describe different composition of 70s and 80s ribosome.

   (b) (i) Describe the method of enumeration of microbe from food productivity plate count. 3+3+3+3

   (ii) What is the basic principle of capsule staining?

   (iii) Define facultative anaerobes? Give examples.

   (iv) What is MBR test for milk?

   (c) (i)What is the property of a good germicidal agent? 3+3+3+3

   (ii) Describe the different processes to sterilize plastic wire, drinking water and vitamin solutions.

   (iii) What type of safety precautions are needed in a Microbiology laboratory?

   (iv) Distinguish between synthetic media and natural media.

   (d) (i) Can milk be considered as natural media? Justify your answer. 2+2+ (2+4)+2

   (ii) What is 'D' value?

   (iii) How Shigellosis is caused from food? State its symptoms and pathogenicity.

   (iv) Name two different toxin producing water borne bacteria.

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UNIT- I

(Marks : 50)

1.   Answer any *seven* questions from the following: 2×7 = 14

   (a) What do you mean by bland diet?

   (b) Write the difference between overweight and obesity.

   (c) What is intermittent fever?

   (d) Write the justification of high protein diet in a patient after surgery.

   (e) What is hepatocellular jaundice?

   (f) What is cholelithiasis?

   (g) Mention two important symptoms of duodenal ulcer.

   (h) What is spastic constipation?

   (i) What do you mean by adjuncts of diet therapy?

   (j) What is aerophagia?

2.   Write short notes on any *three* from the following: 4×3 = 12

   (a) Metabolic changes during fever.

   (b) Life style modification for the prevention of obesity.

   (c) Diet in ulcerative colitis.

   (d) Infantile billiary cirrhosis and its dietary management.

   (e) Pre-operative diet.

3.   Answer any *two* questions from the following: 12×2 = 24

   (a) What is viral hepatitis? Mention its clinical features. What kind of dietary   2+4+6
       modification is needed for a patient with viral hepatitis?

   (b) What is diarrhoea? Write the physiological changes noted during diarrhoea.   2+5+2+3
       Mention the signs of dehydration. Write the composition of ORS.

3058   1

(c) What are the objectives of diet therapy? State the features of clear-fluid diet. Mention the indications, advantages and disadvantages of parenteral feeding.   3+3+(2+2+2)

(d) How can you assess underweight? Mention different etiological factors of underweight. Write on the dietary management of underweight.   3+3+6

UNIT-II

(Marks: 50)

Use separate Answer Script

4.   Answer any *seven* questions from the following: 2×7 = 14

(a) What is 'white coat' hypertension?

(b) What is diabetic retinopathy?

(c) What do you mean by uraemia?

(d) Mention two symptoms of food allergy.

(e) What is polydipsia?

(f) Why protein is restricted in renal failure?

(g) What is allergen?

(h) What is peritoneal dialysis?

(i) What is myocardial infarction?

(j) What is alkali ash diet?

5.   Write short notes on any *three* from the following: 4×3 = 12

(a) Causes of the formation of renal calculi.

(b) Symptoms of congestive cardiac failure.

(c) Classification of allergy.

(d) Causes secondary hypertension.

(e) Dietary guidelines of hypercholesterolemia.

6.   Answer any *two* questions from the following: 12×2 = 24

(a) What is CHD? Write the risk factors (modifiable) of CHD. Suggest diet for a patient with CHD.   2+4+6

(b) What is glomerulonephritis? Describe the clinical manifestation of this disease. Describe the dietary management of chronic renal failure.   2+4+6

(c) Mention the differences between type I and type II diabetes mellitus. What are the factors responsible for the causation of type I diabetes mellitus? Mention the complications of diabetes mellitus. Write the nutritional modification in diabetic patients.   3+3+3+3

(d) What is food allergy? Mention the predisposing factors of food allergy. Describe the dietary management of food allergy.   2+4+6