1 or 2 marks questions

1. Define the term nutrition
2. What do you mean by “malnutrition”?
3. Define Health.
4. What is RDA?
5. What is the RDA for energy and protein for a coal mine worker?
6. What is “Balanced Diet”?
8. Write two units of energy.
9. Calculate the energy value of 30 gms pulses, 70 gms rice and 10 gms oil.
10. Define Reference Women.
12. What is ACU?
13. What do you mean by energy balance?
14. Define “Growth Chart”.
15. What do you mean by the term “puberty”?
16. Define the term “nutritional status”.
17. Mention any two importance of RDA.
18. What is the RDA for energy and protein for a female school teacher.
19. What do you mean by the term “TEF”?
20. Define BMR.
22. What do you mean by the term development?
23. What do you mean by optimum nutrition?
24. Write two uses of growth chart.
25. Define menarche.
26. What is physiological fuel value?
27. What is REE?
28. What is Joule?
29. What is gross fuel value?
30. How will you convert calorie to joule?
Long Questions (10 marks)

1. What do you mean by minimal nutritional requirement? How is it different from RDA?
2. Write the principles for deriving RDA. Discuss any five importance of RDA.
3. How RDA was formulated? Discuss its drawbacks.
4. Explain the steps involved in calculating total energy requirement by factorial method? Mention any five conditions in which energy requirements are increased.
5. Differentiate between (a) gross fuel value and physiological fuel value and (b) SDA & BMR.
6. What is the significance of growth chart? How growth chart is used for growth monitoring?
7. Define Bioavailability. How will you determine the energy value of food?
8. Discuss the factors affecting growth and development. List the pre-pubertal and pubertal changes during adolescence.
9. What are the causes of growth faltering? How can you prevent growth faltering of infants?
10. What is the metabolic significance of SDA? Discuss the factor which increases BMR.
11. How will you determine energy value of food? What is BMR? How do you estimate BMR by calculation?
12. Describe the role of Food & Nutrition in degenerative diseases.
13. What do you mean by growth monitoring? Discuss briefly the importance of nutrition for ensuring adequate development.
14. Write the prepubertal and pubertal changes of adolescents.
15. Write the important characteristics of infants and adolescents.

Paper 1 Unit 1 Module 2
HUMAN NUTRITION (B) FM=25

1 or 2 marks questions

1. What is ‘Weaning’?
2. Name any two low cost supplementary foods.
3. Name any one enzymes & one immunoglobulin (Ig) present in human milk.
4. Why human milk is called the ‘Sweetest milk’?
5. What is ‘Bulimia Nervosa’?
6. What is the standard birth weight for Indian babies?
7. What do you mean by PIH?
8. What do you mean by exclusive breast feeding?
9. Define the term pica?
10. What is ‘FTT’?
11. What do you mean by Spina Bifida?
12. What is toxaemia during pregnancy?
13. What is baby led weaning?
15. What is Anorexia Nervosa?
16. What is Bulimia Nervosa?
17. What is colostrum?
18. Why anaemia is common during pregnancy?
19. What is expressed milk?
20. What is lactogogue?
21. Write two circumstances when bottle feeding is given.
22. What is PEM?
23. Mention two clinical symptoms of Vitamin A deficiency
24. Mention two clinical symptoms of iodine deficiency.
25. Mention two clinical symptoms of iron deficiency.
26. Mention two clinical symptoms of Marasmus
27. Mention two clinical symptoms of kwashiorkor.
28. Suggest two low cost recipes of packed lunch for school going children.
29. Mention two problems of weaning.
30. How much weight gain is suggested for an Indian pregnant woman?
31. Suggest two recipes rich in Vitamin A suitable for a pre-school child.
32. Mention two nutritional problems of adolescent girl

**Short Notes (5 marks)**

a) Adolescent pregnancy
b) PIH
c) Anemia during pregnancy

**Long Questions (10 marks)**

1. Explain the role of hormones in milk production. “Inspite of breast feeding the infant does not thrive” - Explain.
2. Explain the physiological changes during pregnancy. Discuss the association between maternal nutrition and pregnancy outcome.
3. Describe the complications of pregnancy. What is the impact of malnutrition on pregnancy.
4. Discuss the role of energy, protein, folic acid and iron during pregnancy.
5. Define colostrum. Write the composition of colostrum and its nutritional significance.
6. ‘Breast milk is the best milk’. Justify the statement. Differentiate between breast feeding and artificial feeding.
7. How can you prevent dental problems in preschool children? Discuss the feeding problems of pre-term baby? What is the need for weaning?
8. Discuss the role of folic acid and iron during pregnancy. Write a note on “adolescent pregnancy”.
9. Give the RDA for 10 years old girl. Write the objectives of midday meal program. State the role of school authorities in maintaining the health of the child.
10. Briefly discuss the nutritional requirement of 5 year old boy. What are the special factors to be considered regarding the nutritional management of that boy?
11. What measures should be taken to prevent anemia during pregnancy? Discuss the role of government in this context.
12. Explain the reasons for increased nutrient requirement in lactation. Write the factors affecting quantity and quality of milk.
13. Define weaning. Discuss the problems of weaning.
14. Discuss the points to be considered in planning diets for school children. Explain the causes of obesity in school going children.
15. Give the complete RDA for a pregnant woman who is in last trimester of pregnancy. What modifications in diet would you suggest for a pregnant woman?
16. Discuss the care and preparation of nipples during breast feeding. Write the name of two food stuffs which are known as galactogouges. Name any two hormones related to milk production.
17. Write the RDA for pre-school children. Describe the points to be considered in planning diet for pre-school children.
18. State the immunological benefits of breast feeding. Discuss the principles of breast feeding.
19. Describe in detail about different types of supplementary foods given during meaning of a baby.
20. Discuss the beneficial aspects of exclusive breast feeding. What are your suggestions about the management of a low birth weight baby.

Paper 1 Unit II Module 3
FOOD SCIENCE (A) FM=25

Very Short Answer Type Questions: (Marks 1)

1. Define the term lipids.
2. Mention the functions of Phospholipids.
3. What is dextrin?
4. What are RDS and RS?
5. What is sugar?
6. Name one heterocyclic Amino Acid with structure.
7. Name one single cell protein.
9. Write the limiting amino acids of cereals and pulses.
10. What is amylopectin?
11. Name one aromatic amino acid and draw the structure.
12. Write one important application of Iodine value.
14. Name the rich source of n3 PUFA.
15. Write the cyclic structure of D glucose.

**Short Answer Type Questions:**  
(Marks 2)

1. What is Iso-electric pH?
2. Why sucrose is a non reducing sugar but maltose is not?
3. What happens when simple sugar is reacts with strong mineral acids?
4. Write the differences between glucose and sucrose with clear structure.
5. Name one good source of PUFA and MUFA in regular diet.
6. Give examples of a Glycolipid and a Phospholipid.
7. What is Ketosis?
8. What happens when glucose reacts with Fehing’s Solution?

**Short Notes:**  
(Marks 3 or 4)

1. Mutarotation
2. Stereoisomerisms
3. Zwitterions
4. Rancidity
5. Hardening of Oil
6. Biological Value of proteins
7. NPU and PER
8. Saponification of Fats and Oils
9. Glycemic Index
10. Functional role of sugar in foods
11. Factors affecting protein bioavailability
12. Essential Fatty Acid deficiency in human body.
13. Effects of too high and too low intake of Proteins.
14. Effects of too high and too low intake of Lipids.
Long Answer Type Question: (Marks 6 or 8)

1. Classify amino acids according to their structure and give one example of each class.
2. Discuss the digestion of Carbohydrates in our digestive system.
3. Discuss the digestion of Fats in our digestive system.
4. Discuss the digestion of Protein in our digestive system.
5. Classify Carbohydrates according to their structures. Write the effects of too high and too low intake of carbohydrates.
6. Discuss about the functional role of sugars in food.
7. How blood glucose is regulated in our body?
8. Discuss the functions of PUFA and MUFA.
9. Discuss the functions of carbohydrates in our body.
10. Discuss the functions of proteins in our body.

PAPER II UNIT I : Physiology

MODULE 5

Full Marks: 50

1 mark question

1. What is “suicidal bag”?
2. What do you mean by pulse rate?
3. Define Haemostasis.
4. Name the two bile salts.
5. What is JGA?
6. Define IRV.
7. What is the role of leydig cells?
8. State one function of lymphocytes.
9. State one function of ribosome.
10. State one function of salivary amylase.
11. Which organelle is called the “suicidal bag”?
12. Why does TCA cycle not take place in RBC?
13. State one difference between myoglobin and hemoglobin.
14. What is pulse pressure?
15. State a function of golgi bodies.
16. Define cardiac output.
17. Name a lipid splitting enzyme.
18. What do you mean by “O”-ve?
19. Name the gastrin secreting cell of GI tract.
20. What is the full form of CCK?
21. State the function of endoplasmic reticulum
22. Define cardiac cycle.
23. Name the carbohydrate splitting enzyme.
24. What is ABO blood group?
25. State on function of lysosome.
26. Name the HCL secreting cell of stomach.
27. Name one bile salt.
28. What are the anticoagulants?
29. What is the significance of Rh-factor?
30. Define buffer with example.
31. What is ketonurea?
32. What is hemoplilia?
33. What is nephron?
34. Name the hormones secreted from placenta?

5 marks question

Short notes

1. Endoplasmic reticulum
2. Mitochondria
3. Graffian follicle
4. Parturition
5. Lactation
6. Oxygen haemoglobin dissociation curve.
7. Hypoxia

10 marks question

1. What is the role of vitamin K in blood coagulation? Why the heart never been fatigue?

2. What do you mean by peristalsis and reverse peristalsis? What is their significance? Describe the two non-excretory functions of kidney.

3. With the help of suitable diagram state the location of baroreceptors and chemoreceptors in the human body. Briefly describe the role of rennin-angiotensin system in regulating blood pressure.
4. What do you mean by Hamburger phenomenon?. What is the role of LH and FSH in menstruation cycle?

5. Define vital capacity. What is residual volume? Briefly describe how oxygen reaches the tissues from the lungs with a suitable diagram.

6. State the functional difference between graffian follicle and corpus luteum. Describe with a diagram the endometrial changes during menstrual cycle.

7. Mention the functions of peritubular capillary and vasa recta? Discuss the role of kidney in maintaining blood pH.

8. What is spermatogenesis? Describe the process of spermatogenesis. Mention the role of testosterone in spermatogenesis.

9. What is Bohr’s effect? What is stroke volume?

10. Describe the intrinsic process of blood coagulation. Which vitamin is responsible for blood coagulation?

11. Describe the mechanism of formation of urine in the human body. Name the hormone responsible for parturition.

12. What is oogenesis? Describe the process of oogenesis with a labeled diagram.

13. Describe the process of digestion of fat in GI tract. Mention the names of two enzymes responsible for digestion of proteins.

14. Discuss the factors that regulate blood pressure. What is integral membrane protein? Give examples.

15. What is Haldane effect? Mention the role of chemo-receptors in regulating respiration.

16. Describe the role of kidney in maintaining Acid-base balance.

17. Describe the functions of progesterone.

**MODULE-6**

**1 mark question**

1. What is tropomyosin?

2. Define “Accommodation”?

3. What is blind spot?

4. What is the function of “internal ear”?

5. What is orthograde transport?
6. What is ADH??
7. Name two bone cells.
8. Why is pancreas called a mixed gland?
9. What is tympanic membrane?
10. Which hormone is responsible for Ca metabolism?
11. What is myelin sheath?
12. What is aqueous humor?
13. What is synapse?
14. What is resting membrane potential?
15. What is neuromuscular junction?
16. What are rods and cones?
17. What is sarcomere?
18. Name the hormones secreted by thyroid gland.
19. What is the cause of diabetes insipidus?
20. What is the function of anti-diuretic hormone?
21. What is reflex action?
22. What is insensible perspiration?
23. What is Myopia?
24. What are the hormones secreted from adrenal cortex?
25. Write two functions of bone.
26. What is Tetany?

5 mark question

Short notes

1. Oxytocin
2. Presbyopia and myopia.
3. Taste bud
4. Cushing’s syndrome
5. Functions of retina
6. Functions of different taste buds
7. The histology of organ of corti

10 marks questions

1. Describe the mechanism of synaptic transmission. What is IPSP and EPSP? What is accommodation of eye?
2. Discuss “row boat theory” behind muscle contraction? Describe isotonic and isometric muscle contraction with suitable example.

3. How is the taste sensation perceived by the brain? Describe. What is the role of thyroid and parathyroid in maintaining calcium balance?

4. State the differences between sympathetic and parasympathetic nervous system. Briefly describe the excitation – contraction coupling.

5. State the differences between Type I and Type II diabetes. Describe the role of insulin in maintaining normal metabolism.

6. What is cochlea and organ of corti? Describe the mechanism of hearing.

7. Classify synapses. Describe the chemical mechanism of synaptic transmission with a suitable diagram.

8. State the functions of thyroid hormones. Name the diseases caused by hypo and hyper secretions of thyroid hormones.

9. What do you mean by visual acuity? Describe the changes that occur when light falls on retina.

10. State the functions of placental hormones. Discuss the structure of neuromuscular function.

11. State the mechanism of contraction of skeletal muscles. Draw a well labeled diagram of electron microscopic structure of skeletal muscle cell.

12. Mention the function of insulin. How blood glucose is regulated by different hormones.

13. What is a “reflex arc”? What is “Myasthenia gravis”? Draw a histological diagram of Neuron.

14. Describe how nerve impulse is transmitted through neuromuscular junction.

15. Describe the functions of skin. Describe the role of nervous system in regulation of body temperature,

16. What are the hormones secreted from posterior pituitary gland? What is goiter? Describe the functions of TSH.
2 marks questions

1. Define ACU.
2. Define the term “community”.
3. Write the full form of CSSM & NNMB.
4. Define Broka’s Index.
5. What do you mean by “nutritional status”? 
6. Write any two characteristics of a community 
7. Define Nutritional Assessment. 
8. Define Growth Chart. 
9. What do you mean by Nutritional Surveillance? 
10. What is Nutritional Anthropometry? 
11. Give the RDA of energy and protein for a Rickshawpuller. 
12. Write the full form of UNICEF & CFTRI. 
14. Define the term “Ponderal Index” 
15. Write the range of BMI for Asian Indians. 

5 marks questions

Short Notes

1. Factors affecting Health of the Community 
2. WHO 
3. NIN 
4. Mid-day meal Programme
5. Food Security
6. Clinical features of PEM
7. Use of Growth Chart
8. Food Balance Sheet Method
9. Vicious cycle of poverty and malnutrition
10. Fortification & iodine deficiency
11. Components of ICDS

10 marks questions

1. Define the term ‘Community’. What are the basic characteristics of a community? Differentiate between Urban & Rural community.
2. What are the factors affecting Health of the Community.
3. What are ‘Nutrition Surveillance’ & ‘Nutrition Monitoring’? Write in short about the need, objectives & importance of nutritional surveillance.
5. What are the main aims of ‘National Nutrition Policy’? According to prophylaxis programme what is the supplemental dose of vitamin A for children aged 1-5 year? Give the full form of UNICEF & CFTRI.
6. Explain questionnaire method and weighment method. “Diet Survey may not give the accurate value in knowing the nutritional status”. Give reasons.
7. What is the significance of Nutritional assessment? Explain various methods for assessing the nutritional status of preschool children.
8. What do you mean by “AAA” cycle? Discuss the steps involved in doing Nutritional Surveillance.
9. Discuss the role of WHO and UNICEF as international agencies for combating malnutrition.
10. Define the term “Nutritional Anthropometry”. Discuss any four anthropometric methods which are helpful in assessing the nutritional status of a school going girl.
12. Discuss the role of NIN and ICMR as national agencies for combating malnutrition.
3 marks questions

Short notes

1. *Sulabh Sauchalaya*
2. Chlorination of water
3. Disinfectants
4. Census
5. Death and Birth Records
6. Positive Health
7. Ratio
8. Proportion
9. Data & Information
10. Pandemic diseases
11. Modes of transmission of airborne diseases
12. Disinfection
13. Infectious diseases
14. Diarrhoea
15. Iceberg phenomena
16. Aims of epidemiological studies
17. Incubation Period
18. Importance of community trials
19. Shigellosis
20. Incidence and prevalence
21. Spectrum of Diseases
22. Primary Prevention
23. Descriptive Study
24. Modes of transmission of airborne diseases
8marks questions

1. Define Health. Discuss any four dimensions of health.
2. What do you mean by “Positive Health”? Discuss the concept of absence of disease.
3. Define “vital statistics”. Explain the significance of IMR, CDR and MMR.
5. Define the term epidemiology. Discuss its aim. What do you mean by “epidemiological triad”?
6. Explain any three sources of vital statistics
7. Discuss any four methods of solid waste disposal.
8. Define Potable water. Differentiate between shallow well and deep well. Discuss the various sources of water.
9. Write the full form and formula for calculating
   i) CBR    ii) MMR   iii) IMR   iv) TFR
10. Define endemic, pandemic and epidemic, and give one example in each case. What is the interrelationship between (i) incidence and prevalence and (ii) RR and AR
11. Mention the differences between epidemic and endemic diseases with examples. Name two food borne diseases. Describe any one food-borne disease.
13. Differentiate between (a) Case Control and cohort study, and (b) Nutritional Surveillance and nutritional monitoring.
14. Explain iceberg phenomenon along with the diagram. Define the term rate, ratio and proportion.
15. What are the different levels of prevention? Discuss.
16. Discuss descriptive epidemiology in detail.
17. Discuss food borne ‘Infection’ & ‘Intoxication’ with examples. Explain the causative agent, pathogenesis and clinical features of Botulism.
18. What do you mean by RCT? Draw a flow chart for RCT. Explain the various types of RCT.
19. What is the causative agent for dengue fever? Mention the signs and symptoms of dengue fever with its mode of transmission
20. Discuss the advantages and disadvantages of (i) Case Control Study and (ii) Cohort Study
21. Explain the pathogenesis & clinical features of Botulism. Name some foods that are susceptible for Staphylococcal attack. Discuss some general preventive measures for food borne disease.
22. Define the term ‘Communicable Disease’ & ‘Incubation period’. What do you mean by ‘Acute Diarrhoeal Disease’? Name the components of Diarrhoeal Disease Control programme.
23. Explain the pathogenesis of the disease Cholera. Give the composition of ORS. Name the causative agents of Amoebiasis, Chicken pox & Tuberculosis.
Very Short Answer type Questions: (Marks 1)

1. What is triticale?
2. What is premix?
3. Name the major aromatic component present in the Aromatic Rice?
4. Maize protein is deficient in amino acids like ____ and ____.
5. What is ARF?
6. What do you mean by Retrogradation?
7. Why Propionate is added in making bread?
8. What is Swelling Number of rice?
9. What do you mean by Dextrinization?
10. Name the Oxidizing agents used in gluten formation.
11. What is PCMP number?
12. Name the stabilizers used in preparation of ice cream.
13. What is soufflés?
14. Two major factors used to evaluate the quality of meat are _____ and _____.
15. Name two enzymes present in fruits and vegetables.

Short Answer Type Question: (Marks 2)

1. What are the advantages of fermented cereals products?
2. Why Tempering is done during milling of wheat?
3. How you can increase the tenderness of Omelets?
4. What is scrambled egg?
5. What is Marbling? Why it is desirable?
6. What do you mean by curing of meat?
7. Name the organic acids present in foods.
8. What is blanching?
9. Classify vegetables depending on rate of respiration.
10. Name the anti-nutritional factors present in pulses.

Short Note: (Marks 3 or 4)

1. Parboiling of rice
2. Breakfast cereals
3. Role of cereals in cookery
4. Prevention of lumps formation during cooking of cereals
5. Structure of Cereals
6. Macaroni Products
7. Spoilage of milk
8. Fast Foods
9. Smoked fish
10. Fish meal
11. Fish Protein Concentrate
12. Maillard Reaction
13. Pasteurisation
14. Role of Egg in cookery
15. Post-mortem changes
16. Classification of poultry
17. Spoilage of fish
18. Novel foods
19. Enzymatic Browning reactions of fruits
20. Ripening of fruits

**Long Answer Type Question:**

(Marks 6 or 8)

1. Discuss briefly about the methods of bread making and the role of ingredients in making bread.
2. Name the ingredients used in cake preparations and mention their role in processing of cake.
3. What is Shrikhand? Briefly discuss about the steps of Cheese preparation.
4. Discuss about the steps of Butter preparation. Which type of starter culture is used in preparation of curd?
5. How you can evaluate the quality of Egg?
6. Discuss the factors affecting the egg white foam.
7. Briefly discuss about the effects of cooking on pigments of vegetables.
8. Briefly discuss about the toxic constituents present in pulses.
9. What is Lathyrism? Discuss the different stages of Lathyrism.
10. What do you mean by Tenderising meat? Discuss the different methods of Tenderization of meat.
Model Questions Bank for Food & Nutrition (Hons)
B.Sc Part III

PAPER V UNIT I
MODULE 16 – Nutritional Biochemistry (A)
MODULE 17 – Nutritional Biochemistry (B)
FM=50

2 Marks questions

1. What are lipoproteins?
2. What is the full form of NADP and C-ATP?
3. Define α-oxidation of fatty acids.
4. Write the Michaelis-Menten equation.
5. What are rRNAs? Mention the different types of rRNAs both in prokaryotes and eukaryotes.
6. Define urea cycle.
7. Why urea cycle is needed?
8. What are ketone bodies?
10. What is meant by glycogenolysis?
11. What is glycolysis?
12. Give full forms of GTP, t-RNA, FAD, VLDL?
13. Define glycogenesis?
14. Mention two differences between glycolysis and gluconeogenesis.
15. What is β-oxidation of fatty acids and where does it occur?
16. How many ATPs are generated by substrate level phosphorylation in both glycolysis and TCA cycle?
17. How many ATPs are generated by oxidative phosphorylation in TCA cycle?
18. What is central dogma?
19. Mention briefly the steps for formation of Fructose 1,6 Bisphosphate in glycolysis?
20. What are the differences between aerobic and anaerobic respirations?
21. Name the sugar and bases present in DNA.
22. Name any two basic amino acids.
23. Name any two acidic amino acids.
24. What do you mean by transamination?
25. Write the definition of coenzyme and cofactor.
27. What do you mean by passive transport? Give an example.
28. Define enzyme with example.
29. What is prosthetic group? Give an example.
30. Define deamination.
31. What is the function of synthetase?
32. Give the function of phosphorylase.
33. Define briefly HMP shunt pathway.
34. What is the full form of UDPG, TTP, PALPO and FH₄.
35. Define ketosis.
36. What is meant by TCA cycle? Where does it occur?
37. Write briefly the function of dehydrogenase enzyme.
38. Name two water soluble and two fat soluble vitamins.
39. Define substrate level phosphorylation?
40. Define oxidative phosphorylation?
41. What is α-oxidation? Where does it takes place?
42. Mention the enzymes needed to synthesize RNA.
43. What is klenow fragment?
44. What are the differences between DNA Polymerase I and III?
45. What is proofreading activity of DNA Polymerase?
46. What is facilitated diffusion?
47. What are the different types of lipoproteins?
48. Name one saturated and two unsaturated fatty acids?
49. What is allosteric enzyme?
50. Define kₘ for an enzyme.

**5 marks questions**

**Short Notes**

1. Voltage gated and ligand gated ion channel.
2. Carrier mediated facilitated diffusion.
3. Oxidative and substrate level phosphorylation.
4. Chemiosmotic theory and proton motive force.
5. Lyase and ligase enzyme.
7. Anaplerotic nature of TCA cycle.
8. Abyzyme and ribozyme.
9. Ketone bodies
10. Fatty actyl synthase complex
11. Deamination and decarboxylation of amino acids
12. Outcome of TCA cycle
13. Difference between active and passive transport
14. Biochemical role of TPP
15. Electron Transport chain

10 marks Questions

1. Derive the Michales-Menten equation. Describe in detail protein synthesis in prokaryotic cell.
2. Describe in detail the urea cycle. State its importance in biological systems. Name three irreversible steps of glycolysis.
3. Describe in detail the TCA cycle. Write down the differences between α-oxidation and β-oxidation of fatty acids.
4. Describe in detail how various factors affect the rate of enzyme reaction.
5. Explain glycolysis in details. Write the classification of lipoprotein and their biological functions.
6. Write down the complete breakdown of an unsaturated fatty acid (C20) highlighting the number of ATP produced?
7. Describe in details the steps of gluconeogenesis. How many ATP will be generated on complete breakdown of a saturated fatty acid (C22)?
8. Write down the differences between DNA and RNA. Describe in details the various types of mRNA and its respective functions.
9. What is the fate of glucose under anaerobic condition? Describe in detail the steps of glycogenesis.
10. What is the intermediate step of glycolysis? Describe in detail the structure of VLDL and HDL.
11. Write down in details the HMP shunt pathway and its importance in biological systems.
12. Explain in details transamination, oxidative deamination and transmethylation of fatty acids. Write notes on glycolysisin.
13. Describe the Na⁺-K⁺ ATPase transport system.
14. What are the different kinds of inhibitions that an enzyme can undergo?
15. Classify enzymes with examples. Describe the synthesis and biochemical role of any two water soluble vitamins.
16. List all essential amino acids? Write condensation steps of urea cycle with reaction. What do you mean by ammnotelic, uricotelic and ureotelic animal? Why krebs-Henesleit cycle is known as compartmentalized metabolic pathway? What do you mean by ketogenic amino acid?
17. When V=1/2 Vmax, Km=substrate concentration. Justify the statement. Describe the effect of pH on enzyme activity? Explain competitive inhibition on enzyme activity? Define zero order and first order kinetics of enzyme in respect to MME equation?
18. What is glycolysis? Describe the energy generating and energy utilizing steps of glycolysis? Calculate the total ATP generation in glycolysis and TCA cycle? What do you mean by deamination?
19. Differentiate between active and passive transport? Write a short note on Cori cycle? What do you mean by pasture and crabtree effect? What is ABC transporter?
20. Write down the CO₂ evolving steps of TCA cycle with enzymes, coenzymes and cofactors needed. Describe biosynthesis of stearic acid with enzymes and coenzymes involved. Write down full forms of ATP, NADPH.

21. Describe the formation of phosphoenol pyruvate from pyruvate? How many ATPs will be generated after β-oxidation of a saturated fatty acid (C₂₀). Where does fatty acid synthesis take place? What is the activated form of glucose? Name one Δ⁹ fatty acid and one lipid soluble electron carrier. Define the terms: Glycogenolysis, Glycogenesis and Glycolysis.

22. Write the significance of Km? In competitive inhibition, if substrate concentration increase gradually from I₁<I₂<I₃<I₄, what will happen to enzyme kinetics- show graphically with suitable explanation. Write a short note on Rate limiting enzyme.

23. What do you mean by Chargaff’s rule? What is the utility of t-RNA in translation? Write a short note on Z-DNA? Discuss various types of bonds involved in DNA structure?

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**PAPER V UNIT 2**

**MODULE 18 – Food Microbiology &**

**MODULE 19- Sanitation & Hygiene**

**FM=50**

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**2 Marks questions**

1. Give an example of water borne disease and its causative agent.
2. What is a bacteriocidal agent? Give an example.
3. What is gaseous sterilization?
4. What is meant by MIC of anti-bacterial agent.
5. Define bacteriostatic agent. Give an example.
6. What is synthetic culture media? Give example.
9. How ampicillin can be sterilized?
10. What is complex culture media? Give example.
11. Define semisynthetic culture media? Give example.
12. Define pasteurization.
13. Describe briefly about coliform organisms.
14. Mention the essential components of a culture medium.
15. Expand IMViC and DDT.
17. Name some micronutrients which are essential for growth of bacteria.
18. Define generation time of bacteria.
22. Name some bacteria involved with food spoilage.
23. Give example of food borne intoxicants.
24. What is meant by food spoilage?
25. Name four causative agents of food spoilage.
26. What is dry heat sterilization?
27. Define moist heat sterilization.
28. Name some preservatives used in food industry.
29. What is salmonellosis?
30. Briefly describe methylene blue reduction test.
31. Mention some steps taken for preventing viral infection in food.
32. What is the role of antiseptic agents? Give some example.
33. Name four microorganisms which are beneficial for human.
34. Define pure culture.
35. What is meant by autotrophs? Give example.
36. Define kitchen hygiene.
37. Name one food borne disease with causative organism.
38. Mention two advantages of radiation in food industry.
39. What are botulism and salmonellosis?
40. Name some spoilage microorganisms of milk.
41. Write any two international food laws.
42. What are heterotrophs?
43. Define generation time of bacteria.
44. What is selective media?
45. How will you sterilize a solution of penicillin?
46. Is DDT a pesticide? Explain.
47. What are advantages of sterilization using moist heat?
48. Name one important yeast and one fungi of food industry.
49. Name a microaerophilic bacteria. Name one virus causing diarrhea.
50. Name one non-coliform and one heat resistant bacteria.
5 marks questions

1. Spoilage of canned foods
2. IMViC test
3. Food preservation using dehydration
4. Log phase of a bacterial growth curve
5. Salmonellosis
6. Water-borne diseases
7. Importance of sanitation and hygiene in food science
8. Common method used for gradation of milk
9. Food preservation using radiation
10. Spoilage of milk
11. Dehydration as a method of food preservation
12. Germicidal effect of alcohol and halogens
13. Effect of temperature on growth of microbes
14. Canning
15. Different Types of Culture Media
16. Presumptive Test of Water
17. PFA Act
18. HACCP

10 marks Questions

1. Describe in details the need for maintenance of hygiene of food. Describe the various techniques used for microbiological testing of food.
4. How will you determine the number of live cells in a bacterial culture? Why E. coli is considered as an indicator organism of water pollution? Define synthetic, complex and selective medium.
5. Name the extrinsic and intrinsic factors that affect bacterial growth in a culture.
   Name one food borne disease with respective causative organism. Describe preservation of food using refrigeration and dehydration.
6. What are the common food laws practiced in India. Differentiate between sterilization and disinfection.
7. Describe presumptive test. How will you isolate a pure culture of bacteria?

9. Explain bacterial growth curve. Classify bacteria according to their temperature requirements.

10. What are the advantages of sterilizing using pasteurization. Explain the principle of pasteurization with application.

11. Describe any one food borne disease with symptoms, causative organism, foods involved in transmission, methods of prevention. What are the advantages and disadvantages of using pesticides?

12. Describe methods of preservation using canning. Classify microbes on the basis of their nutritional requirements.


14. What are the purposes of preserving food? What is alkaline phosphatise test of milk? What is HACCP? Describe the principle.

15. Describe one method for moist heat sterilization. Give an example of a mesophilic bacteria. What are halotolerant bacteria? Define facultative aerobes and aerotolerant anaerobes with examples. How will you sterilize a solution of glucose?

16. What are the disadvantages of UV as a sterilizing agent? Name two chemical preservatives used for preserving food. Define antiseptics and disinfectants. Differentiate between microbiocidal and microbiostatic agents. Name any four bacteria that contaminate food from different sources.

17. Name in sequence, the different growth phases in a bacterial culture & explain each phase. What is Pure Culture? Name the methods of isolation of Pure Culture & Explain any one method. Why Agar is used for solidifying culture media? List any four beneficial microorganisms.

18. What is the full form of IMViC? What is the purpose of doing this test? Describe the test in detail. Give the composition of EMB Agar. Why EMB agar is called ‘Selective & differential media’. Explain the Methylene Blue Reduction test of milk.

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**Paper VI Unit I Module 20**

**Diet Therapy A1**

**2 Marks questions**

1. What is therapeutic diet?

2. What do you mean by Parenteral Feeding?

3. Define the term ‘Bulimia Nervosa’.

4. What is Melana?

5. Write the full form of GERD.

6. What is duodenal ulcer?
7. What is Bland Diet?
8. Define routine hospital diet.
9. What do you mean by full fluid diet?
10. What is clear fluid diet?
11. Define BMI.
12. What do you mean by low energy diet?
13. What do you mean by “Anorexia Nervosa”?

4 marks questions

1. Types of tube feeding
2. Jejunostomy
3. Soft Diet
4. Modification of Normal Diet
5. High Calorie Diet
6. Bland Diet
7. BMI for Asian Indians
8. Complications of obesity
9. Factors in patients care
10. Therapeutic adaptation of normal diet.
11. Types of therapeutic diet
12. Achalasia
13. Dysphagia
14. Sliding Hernia
15. Sippy’s Diet

Long Questions (6 or 8 marks)

1. Classify the Therapeutic Diet. Discuss the principles of diet therapy.

2. Discuss briefly about the method, implication & significance of Tube feeding.

3. How will you assess the needs of the patients? Discuss the factors which are important in patient care.

4. What is Fluid Diet? Discuss its importance. Explain the conditions in which it is given and prepare a list for full fluid diet and clear fluid diet.

5. Define obesity. Discuss its causes, symptoms and dietary management.
6. Rita, an adolescent girl whose body weight is 70 kg & height is 5'2". Calculate the gradation of BMI & prepare a weight reducing diet for her with a daily menu.

7. What do you mean by enteral nutrition and parenteral nutrition? Discuss the conditions in which they are preferred. Differentiate between TPN and PPN.

8. Define obesity. Write two important methods implemented for assessment of obesity. Discuss the dietary management of an obese adult person. What are the advantages of losing weight?

9. What is the importance of tube feeding? Discuss the conditions in which it is given? What are the complications associated with it?

10. Define routine Hospital Diet? Discuss the significance of soft diet.

11. What do you mean by apple shaped and pear shaped obesity? Discuss the role of dietary fibres in obesity.

12. Write the causes & symptoms of PUD. Mention the dietary management for a patient suffering from bleeding ulcer.

13. Discuss the etiology and clinical manifestation of underweight.

14. Differentiate between (a) Bulimia Nervosa and Anorexia Nervosa, (b) Clear fluid and full fluid diet and (c) Duodenal Ulcer and Gastric Ulcer

15. What is PUD? What dietary modification would you recommend for a women suffering from PUD (Stage II)?

16. How will you assess an underweight person? What diet will you recommend to an underweight person for weight gain?

17. What do you mean by GERD? Discuss its causes, symptoms and dietary management.

18. What is dyspepsia? Discuss its aetiology, clinical manifestation and dietary management.

19. Differentiate between sliding and paraoesophageal hernia. Discuss its aetiology, clinical manifestation and dietary management.

20. Discuss various types of enteral nutrition. Discuss the drawbacks of long term use of enteral feeding.
Paper VI Unit I Module 21

Diet Therapy A2

Short Answer type Questions: (Marks 1 or 2)

16. What is Thalassemia?
17. What is Anaemia?
18. What do you mean Hepatitis?
19. What is Nutritional Anaemia?
20. What should be the normal bilirubin level in our blood?
22. Name any two types of intermittent fever.
23. What is the normal hemoglobin level of male and female?

Short Note: (Marks 3 or 4)

21. Liver function tests
22. Cholelithiasis
23. Chron’s Disease
24. Wilson’s Disease
25. Pancreatitis
26. Haemorrhoid
27. Cirrhosis of liver
28. Infection and Malnutrition
29. Non Residue Diet
30. Metabolic changes in fever
31. ORS
32. Liver function test
33. Foods to be avoided in steatorrhoea
34. Steatorrhoea
35. Food items to be avoided during flatulence
36. Hepatic Encephalopathy
37. Oral hypoglycaemic drugs
38. Iron rich food
39. Insulin
11. Define fever. Discuss its types. How BMR is affected during fever?
12. Discuss the pathophysiology of fever. Explain its causes, symptoms and nutritional requirement during long term fever.
13. What are the various types of surgery? How the nutritional requirement changes during after surgery?
14. What is the significance of pre-operative diet? Discuss the reasons for increased protein requirements after surgery.
15. What are the common causes of diarrhea? Discuss its symptoms and nutritional management.
16. Classify Diarrhoea. What is the importance of electrolyte balance and how can it be maintained?
17. Write the composition of ORS? Can you prepare home based ORS? Discuss the significance of ORS in maintaining electrolyte balance.
18. Define Steatorrhoea. Discuss its aetiology, clinical manifestation and dietary management.
19. Define Diverticular Diseases. What is the difference between diverticula, diverticulosis and diverticulitis.
20. Discuss the aetiology, clinical manifestation and dietary management of Diverticular Diseases.
21. What is IBD? Discuss its aetiology, clinical manifestation and dietary management.
22. Define Constipation. Classify it. Explain the causes responsible for it. Discuss the role of dietary fiber in the treatment of constipation.
23. Differentiate between (a) Ulcerative Colitis and Crohn’s Disease (b) Acute and chronic diarrhoea c) Acute and chronic constipation.
24. Discuss the aetiology, clinical manifestation and dietary management UC.
25. Discuss the aetiology, clinical manifestation and dietary management of Crohn’s Disease.
26. Define flatulence. Discuss the aetiology, clinical manifestation and its dietary management.
27. What is hemorrhoids? Discuss its various types. Discuss the aetiology, clinical manifestation and dietary management.
28. What do you mean by acute pancreatitis and chronic pancreatitis? Discuss the nutritional management of both the cases.
29. What is cholelithiasis, cholecystitis and cholecystectomy?
30. Discuss the nutritional therapy during cholelithiasis and cholecystitis.
31. What are the causes and symptoms of cholelithiasis and cholecystitis.
32. What is IBS? Discuss its aetiology, clinical manifestation and dietary management.
33. What is Hepatitis? Discuss the basic dietary management of commonly happened hepatitis.
34. What is cirrhosis of liver? What are the major underlying cases of the disease? Discuss the nutritional therapy of an adult patient suffering from cirrhosis of liver.
35. Write any four functions of liver. What is hepatitis? What are the major causes of hepatitis?
36. Discuss the nutrition therapy of an adult patients suffering from cirrhosis of liver. What should be the normal bilirubin level in our blood?
37. “Anaemia is multifactorial”- Explain. How pernicious anaemia is related to Vitamin B<sub>12</sub> deficiency? Discuss any four factors leading towards iron deficiency anaemia.

38. How nutritional anaemia can be controlled? Discuss its management.

39. Prepare a food list of food items allowed and avoided in all the diseases you have studied.

40. Plan a day’s menu for all the disease you have studied.

41. Discuss the role of dietary fibre in the prevention of constipation? Differentiate between atonic and spastic constipation. Plan a day’s diet for a 60 year old man suffering from acute constipation and suggest the dietary modifications.

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**Paper VI Unit II Module 22**

**Diet Therapy B1**

**Short Answer type Questions:** (Marks 1 or 2)

24. Name two food items having low glycemic index.
25. What is Atherosclerosis?
26. What is DASH diet?
27. What is Hypoglycaemia?
28. Name two artificial sweeteners.
29. What do you mean by Angina Pectoris?
30. Why fish oil is helpful for health?

**Short Note:** (Marks 3 or 4)

40. Hypertension
41. Insulin Resistance
42. Ketoacidosis
43. Saccharin
44. Congestive Cardiac Failure
45. Myocardial Infarction
46. Aspartame
47. Glycemic Index
48. Ketoacidosis
49. Acid Ash Diet
50. DASH Diet
51. Role of Fat in development of atherosclerosis
Long Answer Type Question: (Marks 6 or 8)

42. Define Diabetes Mellitus. Write the pathophysiology of the disease.
43. Discuss the nutritional recommendations for management of Diabetes Mellitus.
44. Discuss about the nutritional therapy of the moderately hypertension.
45. Discuss about the factors which influence the Glycemic index. Write in brief about the Oral Hypoglycemic Agents.
46. Discuss the risk factors and dietary guidelines for the prevention and treatment of Ischemic Heart Disease.
47. Define Hypertension. State the types of hypertension. What are the underlying causes of Atherosclerosis? Discuss the dietary guideline for the prevention and treatment of Atherosclerosis.
48. Differentiate between type I and type II diabetes mellitus. What type of dietary care should be taken for the patients suffering from type II diabetes? What is the range of normal blood sugar level in an adult (P.P. & fasting)? Discuss the significance of Glycemia Index. List any 4 food items with high GI.

49. Write the common symptoms of diabetes? Discuss the dietary management of type 2 diabetes mellitus with special emphasis on carbohydrate and dietary fibre intake. Give a whole day menu for an adult obese diabetic woman suffering from type 2 diabetes mellitus.

50. What is hyperlipidemia? Discuss the association between lipoprotein and heart diseases.

51. Discuss the role of diet in prevention of heart diseases. Plan a day menu foe a patient suffering from hypertension.

Paper VI Unit II Module 23

Diet Therapy B2

Short Answer type Questions: (Marks 1 or 2)

1. What is the normal GFR of Adult male?
2. What is Nephrosis?
3. What do you mean by food sensitivity?
4. Name some plant sources associated with food allergy.
5. Name the foods rich in oxalates.
6. What are the upper limits of serum creatinine in male and female?
7. What is GFR?
8. What is Urolithiasis?
9. What is Ureamia?
10. What is Acid and Alkaline diets?
11. What is Provocative test for food allergy?

Short Note: (Marks 3 or 4)

1. Dialysis.
2. Urolithiasis.
3. Acid and Alkaline Diet
4. Responses of Food Allergy
5. Elimination Diet
6. Functions of Kidney
7. Cases and Symptoms of Acute renal failure.
8. Cases and Symptoms of Chronic renal failure.
9. Diagnosis of food allergy.

Long Answer Type Question: (Marks 6 or 8)

1. Write the symptoms of glomerulo nephritis. Discuss the dietary managements of a patients suffering from the disease.
2. Discuss in brief the different types of kidney stones. What should be your suggestion for the treatments and prevention of kidney diseases?
3. What are the metabolic imbalances found gradually due to chronic renal failure? Write the nutritional managements for chronic renal failure.
4. Discuss the nutrition therapy for a patient suffering from acute renal failure.
5. What are the symptoms of food allergy? Discuss briefly about the treatments of food allergy.
6. Define dialysis? Differentiate between hemodialysis and peritoneal dialysis. Discuss the nutritional requirement during hemodialysis and peritoneal dialysis.
8. Discuss the symptoms and nutritional requirements for the patients suffering from chronic renal failure.
9. Write the risk factors for the development of kidney stones. Discuss in brief the different type of kidney stones. What should be the dietary modifications for the treatment of kidney stone disease?
10. Differentiate between acute and chronic nephritis. Discuss their dietary management.
11. Write a short note on the use of sodium and potassium exchange list.
12. Define food allergy. Discuss its mechanism.
13. Explain the common symptoms, diagnosis and dietary management of food allergy.
14. What is the importance of elimination diet in food allergy? Why food selection is important in food allergy.