2021

FOOD AND NUTRITION — HONOURS

Paper : CC-13

(Food Microbiology)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

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

   (a) What is fimbriae? Draw a suitable diagram.

   (b) Write any four important characteristics of fungi.

   (c) Define a basal media with example.

   (d) What is serial dilution?

   (e) Discuss any two disadvantages of pour plate method.

   (f) Define the term budding with suitable example.

   (g) Name any four factors that affect sterilization by thermal process.

2. Answer ***any two*** from the following :

   (a) Describe the extrinsic factors affecting growth and survival of microbes in the food. 5

   (b) Discuss in detail about the cell wall composition of different bacteriae with suitable diagram. 5

   (c) What is a pure culture? Explain the methods of streak plate and spread plate techniques for isolating microbes. 1+2+2

   (d) Elaborate the nutritional factors that are required for cultivation of microbes. 5

3. Answer ***any three*** from the following :

   (a) What is a culture? Why we need to do microbial culture? Discuss the methods of culturing microorganisms in detail with suitable diagrams. 1+2+7

   (b) Define the term sterilization. Write any two differences between disinfection and sterilization. Elaborate the usage of chemical agents as disinfectants with appropriate examples. 1+2+7

   (c) What is intermittent sterilization? Write the effects of heat as sterilizing agent on a microbe. Explain the process of steam under pressure with a descriptive diagram. 1+2+7

   (d) Explain the factors present in the food which determines the growth of microbes in them. Write short notes on ***any two*** (i) pasteurization (ii) Canning (iii) Blanching. 5+2½+2½

Please Turn Over

(c) Define food spoilage. Write about the microbes associated with spoilage of the following foods—

   (i) Fruits and vegetables

   (ii) Milk and milk products

   (iii) Eggs

   (iv) Cereal and cereal products. 2+(2×4)

2023

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1. Answer ***any five*** of the following : 2×5

   (a) What is viable cell count?

   (b) Define bacteriostatic agent with example.

   (c) Write any two advantages of spread plate method.

   (d) Name two spoilage microorganisms in fish.

   (e) What are spores? Name any two microorganism that form spores.

   (f) What is Pasteurization? Mention its types (any two).

   (g) Define ropiness. Give example of one food, where ropiness is observed.

2. Answer ***any two*** from the following :

   (a) Mention any five nutrients required for the bacterial growth. Explain the role of each of them. 2½+2½

   (b) Differentiate between dehydration and freezing. What is pour plate method? 3+2

   (c) What are the microorganisms usually present in (i) canned food, (ii) milk and milk products, (iii) egg, (iv) bread and (v) grapes? 5

   (d) Name any five extrinsic factors that affect the growth and survival of Microbes in food. 5

3. Answer ***any three*** from the following :

   (a) What is a synthetic media? Give one example of (i) Differential media, (ii) Natural media and (iii) Selective media. Differentiate between natural and synthetic media. Write the function of agar in solid media preparation. 2+3+3+2

   (b) What are the different types of radiation used in food preservation? Mention the role of each of them. What is ultra high temperature processing of food? Give example of a food that can be processed in this method. 3+3+3+1

   (c) What is log phase in the microbial growth? What happens when penicillin is added in the log phase? What do you mean by stationary phase? Describe the stationary phase. 2+2+2+4

2+1+2+3

Please Turn Over

   (d) Write short notes on : 5×5

   (i) Freeze drying

   (ii) Autoclave.

   (e) With a neat labelled diagram explain the cell wall and cell membrane composition of a gram-negative bacteria. How it is different from gram-positive bacterial cell wall composition? Give example of one gram-positive and one gram-negative bacteria. 5+3+2

2022

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

   (a) What do you mean by CFU?

   (b) What are the advantages of streak plate method?

   (c) Why moist heat is more effective than dry heat in sterilization?

   (d) Name one fungal medium and one bacterial medium.

   (e) How can you sterilize a vitamin?

   (f) What is the role of benzoic acid as food preservative?

   (g) Which spoilage microorganisms are present in fruits?

2. Answer *any two* from the following : 5×2

   (a) Differentiate between gram positive and gram negative bacteria.

   (b) How the intrinsic factors affect the growth of microorganisms?

   (c) Differentiate between pour plate and spread plate method.

   (d) What are the different phases of microbial growth? Draw a diagram showing proper labels.

3. Answer *any three* from the following :

   (a) Write the principle and functioning of an autoclave. Name the substances that cannot be used in autoclave for sterilization. 2+5+3

   (b) Write short notes on : 2½×4

   (i) Dehydration

   (ii) Freeze drying

   (iii) Irradiation

   (iv) Meat and meat products spoilage microorganisms.

   (c) What are food preservatives? Elucidate on chemical preservation of food. 2+8

   (d) Why is tap water not used for preparation of media for growth of microorganisms? Clearly mention the ingredients of Nutrient Broth along with their functions. 2+(4×4)

   (e) Write the differences between complex media and selective media. Give example in each case. Name one fungal and one bacterial contaminant in (i) canned food, (ii) poultry and (iii) sea food. 4×6