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| **Scheme of Valuation/Answer Key**(Scheme of evaluation (marks in brackets) and answers of problems/key) |
| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018 |
| **Course Code: FT201** |
| **Course Name: FOOD MICROBIOLOGY** |
| Max. Marks: 100 |  | Duration: 3 Hours |
| **PART A** |
|  |  | ***Answer any three full questions, each question carries 10 marks.*** | Marks |
| 1 | a) | Who was Robert Koch? What was his contribution to the field of microbiology?**Koch- Introduction****Four postulates** | (1)(4) |
|  | b) | Comment on the important methods used for preservation and maintenance of pure cultures.**Preservation methods****Maintenance methods** | (2.5)(2.5) |
| 2 | a) | Draw the bacterial growth curve and explain the four stages.**Growth curve -Graphical representation****Four stages-Lag,log,stationery and death phase** | (2)(4) |
|  | b) | Describe dye reduction and discuss on the dyes used to distinguish viable from nonviable cells.**Dye reduction-Principle** **Detailed description about any one dye** | (2)(2) |
| 3 | a) | Describe how various extrinsic parameters affect the ability of microorganisms to grow in foods.**List out extrinsic parameters- Relative humidity, Temperature, Gaseous atmosphere** **Detailed description** | (2)(3) |
|  | b) | List the steps involved in Gram Staining Technique.**Gram Staining –Definition- Principle****Steps-4-Primary stain, Mordant, Decolouriser, Secondary/Counter stain** | (1)(4) |
| 4 | a) | Elaborate on the different bacterial genera normally associated with food.**Different types of bacteria- Introduction** **Detailed description****Examples** | (2)(4)(4) |
| **PART B** |
| ***Answer any threefull questions, each question carries 10 marks.*** |
| 5 | a) | Define the terms intoxication and infection. Give an example for each. **Intoxication- Definition-Example- Staphylococcal intoxication, Botulism****Infection- Definition- Example** | (2)(2) |
|  | b) | List and discuss the various toxin types of *S.aureus.***Staphylococcal enterotoxicosis****Toxins-types****Description** | (1)(3)(2) |
| 6 | a) | **Mycotoxin- Definition-Fungal metabolites****Aflatoxin-definition****Types****Description** | (1)(1)(1)(3) |
|  | b) | Describe the general characteristics of *Clostridium botulinum* and its toxins***C.botulinum*- Introduction****Toxins- types****Description-mode of action** | (1)(1)(2) |
| 7 |  | **Preliminary steps****Describe the principles of HACCP- 7 principles****Logical sequence** **HACCP worksheet** | (2)(3)(2)(3) |
| 8 |  | **Food quality standards- introduction****FSSAI-objectives and Detailed description****CAC- objectives and Detailed description****BIS- objectives and Detailed description** | (2)(3)(2)(3) |
| **PART C** |
| ***Answer any fourfull questions, each question carries 10 marks.*** |
| 9 | a) | What are the characteristics of effective probiotics? Give examples of probiotics.**Characteristics of probiotics****Examples**  | (3)(2) |
|  | b) | Write about the important enzymes used in food industry.**Any 5 enzymes -Description** | (5) |
| 10 | a) | Explain the preparation of Fermented beverages-Beer and Vinegar.**Beer-Ingredients****Process****Vinegar- Basic principle****Process- Frings generator** | (2)(3)(2)(3) |
| 11 | a) | Name some organisms that are commonly used as starter cultures in dairy fermentation.**Organism and fermented product-Introduction****Examples** | (2)(2) |
|  | b) | Comment on fermented vegetable products.**Introduction** **Sauerkraut-Introduction****Process****Varieties****Other products-olives-pickles** | (1)(1)(2)(1)(1) |
| 12 |  | Explain the principle and working of biosensors with suitable examples. **Principle** **Diagramatic representation****Working** **Examples** | (2.5)(2.5)(2.5)(2.5) |
| 13 | a) | Define and describe immunological methods for detection of microorganisms.**Mention all methods** **Detailed description of any two** | (1)(4) |
|  | b) | Flow cytometry-introduction-descriptionATP measurement- introduction-description | (2.5)(2.5) |
| 14  |  | Write notes on rapid methods for detection of food borne Pathogens. **Introduction****Detailed description about any 5 methods****Diagrams if any** | (2)(4)(4) |
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