

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-III (New) EXAMINATION – WINTER 2018****Subject Code:2131407****Date:01/12/2018****Subject Name:Basic Food Microbiology****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Draw diagrams wherever necessary.
5. Write scientific names as per the norms

**MARKS**

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|------------|-----|---|-----------|
| <b>Q.1</b> | (a) | Draw a flowchart to depict the scheme of five kingdom classification based on characteristics.  | <b>03</b> |
|            | (b) | Justify why Robert Koch is also known as Father of Modern bacteriology  | <b>04</b> |
|            | (c) | Describe the difference between gram +ve and gram -ve bacteria. Give example of gram +ve rod, gram +ve cocci, gram -ve rod, gram -ve cocci  | <b>07</b> |
| <b>Q.2</b> | (a) | Write a short note on chemical and physical methods to control microorganisms   | <b>03</b> |
|            | (b) | Describe the difference between eukaryotic and prokaryotic cell   | <b>04</b> |
|            | (c) | Microbial growth occurs is observed as sigmoidal curve. Describe each phase of the sigmoidal curve. During which phase the primary metabolites are formed?  | <b>07</b> |
|            |     | <b>OR</b>   |           |
|            | (c) | Justify the statement "Louis Pasteur is aptly known as Father of Microbiology"  | <b>07</b> |
| <b>Q.3</b> | (a) | An apple pie sample contained 10000 cells of <i>S. aureus</i> . And it was kept at room temperature for 4 hrs. What would be the generation time if the final no. of cells is $6.5 \times 10^8$ . | <b>03</b> |
|            | (b) | Explain Redi's, Needham's and Spallanzani's experiments. Which scientist favored concept of biogenesis  | <b>04</b> |
|            | (c) | Using a schematic diagram, describe the steps of western blotting technique. For which substance, northern blotting is used?  | <b>07</b> |
|            |     | <b>OR</b>   |           |
| <b>Q.3</b> | (a) | Enlist the significance of microorganisms in agricultural microbiology  | <b>03</b> |
|            | (b) | Give example of microorganisms 1) gram positive spherical cells in chain 2) photoautotrophic bacteria 3) poisonous fungi 4) gram negative spherical   | <b>04</b> |

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- (c) Describe PCR, its applications, advantages and disadvantages. Draw a diagram to depict PCR cycle and enlist the ingredients used for PCR **07**
- Q.4** (a) Explain the formation of HFr and F' strains formed during bacterial conjugation. Also write about the significance of HFr and F' **03**
- (b) Write a descriptive note on battery of tests abbreviated as IMViC. Write the IMViC reaction for any two microorganisms **04**
- (c) Bacteria change from non-pathogenic strain to pathogenic strain. Explain the concept with experiment conducted by Griffith. Also suggest an application in reference to food industry. **07**
- OR**
- Q.4** (a) Draw a diagram to depict parts of compound bright field microscope. Why immersion oil is necessary while using 100X objective? **03**
- (b) Draw a diagram to depict Holliday junction. How does it helps in evolution? **04**
- (c) What is synbiotic food? Enlist any 7 fermented foods along with the starter organism. **07**
- Q.5** (a) What is direct and indirect ELISA and list down applications. **03**
- (b) Explain the concept of reactions observed in Triple sugar iron agar test. Suggest an application of the same. **04**
- (c) Virus can transfer bacterial DNA from donor bacteria to recipient bacteria. Explain the concept in reference to lytic and lysogeny cycle. **07**
- OR**
- Q.5** (a) If 220 colonies were obtained on a given plate which was prepared by pour plating with 7th dilution, determine the microbial count in terms of log cfu/ml **03**
- (b) Explain the role of intrinsic and extrinsic factors which affect the microbial load in foods **04**
- (c) Justify how moist heat is better option for sterilization than dry heat. Explain the terms antiseptic, aseptic, sanitization, sterilization. **07**