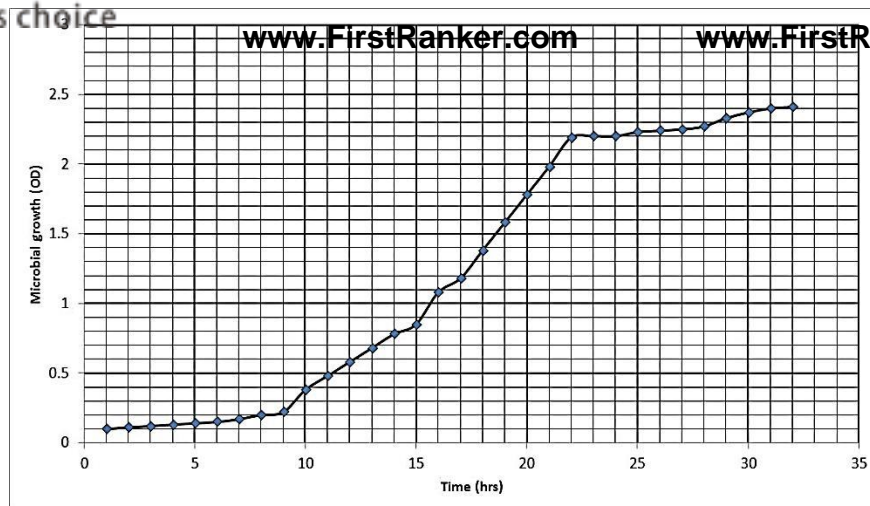


GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– III (New) EXAMINATION – WINTER 2019****Subject Code: 2131407****Date: 30/11/2019****Subject Name: Basic Food Microbiology****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Draw a flowchart to depict the scheme of five kingdom classification based on characteristics.	03
	(b) Describe koch postulates in form of flowchart.	04
	(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	07
Q.2	(a) Draw a diagram to depict procedure of gram staining	03
	(b) Draw a flowchart to depict the health benefits rendered by probiotics. Give examples for the probiotics which render health benefit in large intestine and small intestine	04
	(c) Draw flowchart to depict the steps of western blotting technique and suggest its applications	07
	OR	
	(c) Describe the difference between prokaryote and eukaryote along with diagram	07
Q.3	(a) Bacteria are farmers best friends but sometimes may also act as enemy. Explain the statement with examples.	03
	(b) Write a short note on chemical and physical methods to control microorganisms	04
	(c) Louis Pasteur has contributed towards significant milestones in microbiology. Justify the statement with examples	07
	OR	
Q.3	(a) Give example of bacteria of following categories a) photoautotrophic b) photoheterotroph c) chemoautotroph	03
	(b) Explain replica plating for the selection of auxotrophic strains. How do auxotrophic strain differ from bradytrophic strain	04
	(c) Describe characteristics of each phase depicted in the given diagram. Calculate the doubling time from the given graph. Derive the microbial generation time equation.	07



- Q.4** (a) What are intrinsic and extrinsic factors, which affect the microbial load? **03**
- (b) Explain the concept of each test included in IMViC test. Suggest an application of the same. **04**
- (c) An apple pie sample contained 10000 cells of *S. aureus*. And it was kept at room temperature for 4 hrs. What would be the generation time if the final no. of cells is 6.5×10^8 . **07**

OR

- 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) Draw a flowchart to explain experiment which proved the bacterial transformation. Write the name of scientist who conducted the experiment, strain of bacteria used, scientist/s who proved the transforming principle. **04**
- (c) Draw a diagram to depict a typical PCR cycle and detection of PCR product. Enlist the ingredients in PCR reaction. What is the significance of Taq polymerase? Which enzymes are actually used by cells for removing primers, and filling in gap, joining the strands **07**

- Q.5** (a) Write a short note on contribution of Lady Mary Wortley Montagu in the field of immunology **03**
- (b) What is holliday junction? Draw the steps for the same. **04**
- (c) Draw flowchart depicting steps of ELISA. What is sandwich ELISA? Suggest few applications, advantages and disadvantages of ELISA. Explain how it is semiquantitative assay. **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) Draw a flowchart to depict long term preservation of cultures at 10°C, -20°C, -80°C and -196°C **04**
- (c) Draw steps of bacterial transduction. Comment on prophage, generalized transduction and specialized transduction. **07**
