

G.R. No.	
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Paper code - U239-112 (ESE)

**DECEMBER 2019/ ENDSEM**  
**S. Y. B.TECH. (CIVIL ENGINEERING) (SEMESTER (III))**  
**COURSE NAME: BIOLOGY FOR ENGINEERS**  
**COURSE CODE: ES21182CV**  
**(PATTERN 2018)**

Time: [2 Hours]

[Max. Marks: 50]

(\*) Instructions to candidates:

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data wherever required.

- Q.1) Attempt any **one**
- a) Differentiate between Prokaryotic Cell and Eukaryotic Cell [4]
  - b) Explain the importance of Photosynthesis [4]
- Q.2) Attempt any **one**
- a) List out the types of Micro-organisms. Explain characteristics of Fungi. [4]
  - b) What are the various forms of culture? [4]
- Q.3) Attempt any **one**
- a) What are sources of Sewage? Explain any one in detail. [6]
  - b) What are the objectives of Wastewater Treatment Plant? [6]
- Q.4) Attempt any **one**
- a) Draw a Labelled layout of Sewage Treatment Plant. [6+4]  
Explain Purpose of Sedimentation Tank.
  - b) What are the factors affecting for selection of location of Pumping stations for Wastewater treatment plant? [6+4]  
List out the elements of Pumping station.
- Q.5) Attempt any **one**
- a) Draw & Explain Flow sheet for Activated Sludge Process. [7+6]  
Explain objectives of Secondary treatment for waste water.
  - b) Draw & Explain the working of Trickling Filter. [7+6]  
List out design considerations for Activated Sludge Process.
- Q.6) Attempt any **one**
- a) Describe in detail – Anaerobic Digester. [7+6]  
Give the stages of Anaerobic Digestion.
  - b) Explain Bio – Gas Production Its Characteristics & Application. [7+6]  
Give the factors governing Anaerobic Digestion.