

Student Name :.....Student ID.....

Mid-Term Exam, CE – 261

Examiner : Mohammed Imran

Environmental Microbiology

Date: 13/02/2019, Time : 1 Hour

Instructions: Answer all questions

Total Marks-15

Qn. No.1 (a) Read the statement below and writes down the TRUE/FALSE in the space.

Each question carries equal mark- (2.5 Marks)

- (i) Microorganisms are classified into Prokaryotes and Eukaryotes on the basis of size of the microorganism. (false)
- (ii) Microbes Are Used in Environmental Engineering because of their high surface to volume ratio (S/V). (true)
- (iii) (iii) Amoeba is a protozoan. The locomotion or movement in Amoeba is by cilia. (false)
- (iv) (iv) An enzyme is a protein which works as a catalyst in a biochemical reaction. (true)
- (v) (v) The mycelium creates the visible fruit bodies of fungi called Mushrooms. (true)

Qn. No.1 (b) Multiple Choice Questions (MCQ). Each question carries equal mark- (2.5 Marks)

(i) Myxomycetes and Oomycetes are-

- a. Bacteria
- b. Algae
- c. Fungi
- d. Protozoa

(ii) Pigments and unsaturated fatty acids can be manufactured as by-products from-

- a. Bacteria
- b. Fungi
- c. Algae
- d. Protozoa

(iii) Photosynthesis is the process of-

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- a. Production of cell biomass using sunlight and CO₂
- b. Oxidation of inorganic substances
- c. Oxidation of organic substances
- d. None of the above

(iv) Fermentation is the process of –

- a. Intermolecular oxidation-reduction
- b. Intramolecular oxidation-reduction
- c. Hydrolysis
- d. Pyrolysis

(v) A microorganism in which changes in the genes takes place is known as-

- a. Metabolite
- b. Prokaryotes
- c. Eukaryotes
- d. Mutant

Qn. No. 2 (a) Fill in the blank- Each question carries equal marks- (Total- 2.5 Marks)

- (i) The changes in molecules during life processes in the life systems are called
...metabolism...
- (ii) ...enzymes... are protein catalysts of biochemical reactions.
- (iii) The unit of the life is ...cell...
- (iv) Bacteria and Archaea are ...prokaryotes...
- (v) ...conjugation.. is the process where some parts of DNA is transferred to the other cells.

Qn. No. 2 (b) Match the following-Each question carries equal marks- (Total- 2.5 Marks)

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1 High surface to volume ratio	5 Catalyst
2 <u>Cyanobacteria</u>	4 Protein synthesis
5 <u>Enzyme</u>	3 Human cell
3 2 mm length DNA	2 Blue green Algae
4 <u>Amino acid</u>	1 Prokaryotes

Qn. No.3 (a) Why microbes are used in environmental engineering? (1)

1. Microbes have the highest cell surface to cell volume ratio.
2. microbes with the highest S/V ratio have the highest rate of biodegradation

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Qn. No.3 (b) Write down any 2 importance of prokaryotes in civil and Environmental Engineering? (2)

1-bioclogging and biocementation in civil engineering.

2- Prevention of bacteria-caused corrosion of metals and biodeterioration of materials are essential tasks in civil engineering.

Qn. No.3 (c) Compare between conjugation, transformation and transduction process (2)

Conjugation is the transfer of genetic information from a donor cell that gives a portion of its total DNA to a recipient cell. **DNA→DNA**

Transformation in prokaryotic cell a gene transfer from cell to other cell . **Gene→Gene**

Transduction bacterial DNA transfer from a donor cell to recipient cell in bacteria (transfer of DNA through virus from one cell to other)

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