

ASUTOSH COLLEGE
INTERNAL ASSESSMENT EXAMINATION, 2021
SEMESTER- IV
PAPER - SEC-B-4-2: MICROBIOLOGICAL ANALYSIS OF
AIR AND WATER (THEORY)

[Answer Question No. 1 and any three questions from the rest]

Full Marks – 25

Time: 1hr

1. **Answer any 5 questions:**

5x2=10

- a. A microbiologist isolated pathogenic bacteria from a patient's stool. The patient was having profuse, watery diarrhoea with vomiting. Sero-group of the bacteria was O1 and it was comma shaped. What may be the bacteria and it produces which toxin?
- b. What does Allergen mean?
- c. Name the toxin that is generally associated with contaminated food, but also, disseminated by aerosolisation. What is the lethal dose of the toxin by inhalation?
- d. What do you mean by faecal coliform? Give their specific characteristics.
- e. How does *Salmonella typhi* behave in IMViC test?
- f. What do you mean by bioaerosol?
- g. Name a water borne viral pathogen and its associated disease.
- h. Name the two forms of chlorine used for disinfection of water.

Answer any 3 questions:

3x5=15

2. (a) Write the principle of desiccation methods as a measure of controlling air pollution.
(b) Write the mode of action of UV lights.
(c) Write the characteristic features of faecal coliform on Endo Agar plate. (1+2+2=5)
3. (a) Write the reaction that occurs on addition of Kovac's reagent with a given water sample cultured in tryptophan broth.
(b) Write the principle of Methyl Red Test of a given water sample. (3+2=5)
4. Draw the diagram of a water purification plant. (5)
5. (a) Name any water borne pathogen infecting eyes and the disease caused.
(b) Differentiate between Rapid Sand Filter and Slow Sand Filter (2+3=5)

6. (a) What do you mean by CFU?
(b) Name any two culture media specific for bacterial growth and two culture media specific for fungal growth.

(1+2+2=5)

7. Air has numerous suspended particles present, moving in various directions. From the following data, calculate the velocity of such particle in cm/s. (5)

Diameter of the particle	= 0.02 cm
Density of the particle	= 1.42 gm/cm ³
Density of air	= 0.0012 gm/cm ³
Acceleration of gravity	= 9.8 m/s ²
Viscosity of air	= 1.83 X 10 ⁻⁴ poise

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