B.Sc. FOOD SCIENCE & TECHNOLOGY
THIRD SEMESTER
INSTRUMENTATION TECHNIQUES IN FOOD ANALYSIS
BFST-301

SET B

[USE OMR FOR OBJECTIVE PART]

Duration: 3 hrs.   Full Marks: 70

(Objective)

Time: 30 mins.   Marks: 20

Choose the correct answer from the following: $1 \times 20 = 20$

1. Which Radioisotope is used to study the kinetics of photosynthesis?
   - a. Phosphorus-32
   - b. Carbon- 12
   - c. Carbon- 13
   - d. Carbon- 14

2. The acidity of NaOH is:
   - a. 1
   - b. 2
   - c. 3
   - d. 4

3. Total Magnification is obtained by_____.
   - a. Magnifying power of the objective lens
   - b. Magnifying power of eyepiece
   - c. Magnifying power of condenser lens
   - d. Magnifying power of both the objective lens and eyepiece

4. NMR spectroscopy is used for determining structure in which of the following materials?
   - a. Liquids
   - b. Gases
   - c. Radioactive materials
   - d. Insoluble chemical compounds

5. Normal pH of human stomach is_____.
   - a. Below 7
   - b. Below 5
   - c. Below 3
   - d. Below 2

6. Which of the following is not a type of chromatography?
   - a. Paper Chromatography
   - b. Thin Layer Chromatography
   - c. Molecular Chromatography
   - d. Ion-Exchange Chromatography

7. When a solute is present in trace quantities the following expression is used:
   - a. Gram per million
   - b. Parts per million
   - c. Milligram percent
   - d. Microgram percent

8. Sugar is a_____ in a sugar solution.
   - a. Solvent
   - b. Colloid
   - c. Solute
   - d. Suspension

9. What does a spectrophotometer directly measure?
   - a. The amount of a chemical in a material
   - b. The amount of light that a substance absorbs
   - c. What wavelength of light we are seeing
   - d. The weight of a material

10. Which of the following is not a component of Spectrofluorometer?
    a. Atomizer
    b. Light Source
    c. Emission Monochromator
    d. Excitation Monochromator

11. In flame photometry process the observed flame colour for Potassium element is:
    a. Red
    b. Lime Green
    c. Violet
    d. Orange

12. The basicity of H_2SO_4 is:
    a. 1
    b. 2
    c. 3
    d. 4

13. Antibiotics are_____ against plant pathogens.
    a. Non effective
    b. Effective
    c. Weak
    d. None of these

14. The most powerful microscope is_____.
    a. Simple
    b. Compound
    c. Electron
    d. Light

15. Which of the following is not true about Absorption spectroscopy?
    a. It involves transmission
    b. Scattering is kept maximum
    c. Scattering is kept minimum
    d. Reflection is kept maximum

16. "Solution usually containing an acid and a base, or a salt, that tends to maintain a constant hydrogen ion concentration" is the principle of:
    a. Buffer solution
    b. Acidic solution
    c. Basic solution
    d. None of these

17. The solubility of a substance in a solvent depends on:
    a. Temperature
    b. Pressure
    c. Nature of solute and solvent
    d. All of these

18. Number of moles of solute in 1 L of solution is called its_____.
    a. Normality
    b. Molarity
    c. Molality
    d. Conductivity

19. The range of UV-visible region is:
    a. 400-800 nm
    b. 200-800 nm
    c. 22.5-1 μm
    d. 2.5-1 μm

20. When molecules are excited in visible region which lamp is used?
    a. Xenon lamp
    b. Mercury lamp
    c. Tangustan lamp
    d. Hydrogen deturium lamp

-- --- --

(Descriptive)

Time : 2 hr. 30 mins.   Marks : 50

[Answer question no.1 & any four (4) from the rest]

1. What is the significance of instrumentation in our daily life? Explain   10
   them (in terms of food safety and hygiene).

2. Describe the working mechanism of Spectrofluorimetric with suitable   8+2=10
   diagram. Discuss Stoke's shift.

3. What do you mean by the term radioisotopes? Enlist some of their   3+7=10
   applications.

4. Enlist all the chromatographic techniques. Briefly explain-   4+2+2+2=10
   a) NMR
   b) X-Ray diffraction
   c) Spectroscopy

5. Differentiate between: 5+5=10
   a) Flame photometry and atomic absorption spectrophotometry.
   b) Paper and thin layer chromatography.

6. Give a short note on: 5+5=10
   a) Microbiological assays
   b) Buffer

7. Define Solute, Solvent and Solution. Also describe different types of pH   6+4=10
   meters.

8. Define the following terms for a solution: 6+4=10
   a) Molarity
   b) Molality
   c) Normality
   How much amount of solute is required in 10L to prepare 1M NaOH
   solution?

$$= = *** = =$$