



**WEST BENGAL STATE UNIVERSITY**

B.Sc. Honours 4th Semester Examination, 2020

**IFFACOR09T- INDUSTRIAL FISH AND FISHERIES (CC9)**

**BIOLOGICAL TOOLS AND TECHNIQUES**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.  
All symbols are of usual significance.*

1. Answer any **seven** questions from the following: 2×7 = 14
  - (a) What is the function of immersion oil in optical microscope?
  - (b) What are the embedding medium and fixative agent in Transmission Electron Microscopy?
  - (c) Classify Ion exchange Chromatography.
  - (d) What is the difference between magnification and resolution?
  - (e) What is the mobile phase in Gas chromatography? Give example.
  - (f) Why infiltration is necessary in histological tissue preparation?
  - (g) What do you mean by  $R_f$  value in Chromatography?
  - (h) What is the radiation source in Electron microscopy?
  - (i) What is SDS – PAGE?
  - (j) What is the difference between stains used in Light microscopy and Electron microscopy?
  
2. Write short notes on any **two** of the following: 3×2 = 6
  - (a) Principle of Phase-Contrast microscopy
  - (b) Micrometry
  - (c) Application of Gel Electrophoresis
  - (d) Fixative.
  
3. Answer any **four** questions from the following: 5×4 = 20
  - (a) Write an account of working procedure in Dark field microscopy. 5
  - (b) Give a comparative account of Scanning and Transmission Electron microscopy. 4+1  
Why the samples are coated with heavy metal in Scanning Electron microscopy?
  - (c) What do you mean by Stationery phase and Mobile phase in paper Chromatography? Describe the process of Paper Chromatography with a simple experiment. 2+3

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| (d) Elucidate the working principle of Fluorescence microscope. Add a note on fluorochrome. | 3+2 |
| (e) What is centrifugation? Write an account of different types of centrifugation.          | 1+4 |
| (f) Describe the major steps involved in the process of histological tissue preparation.    | 5   |

**N.B. :** *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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