

2021

INDUSTRIAL FISH AND FISHERIES — MAJOR

Paper : DSE-4

(Tools and Techniques in Biology)

Full Marks : 50

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Answer **any ten** questions.

1. Calculate the limit of resolution of a light microscope using wavelength of light 100 nm, refractive index 1.6 and $\sin \alpha = 1$. 5
 2. Write the working principle of phase contrast microscope. Mention the application of phase contrast microscope. 2+3
 3. Differentiate between ratezonal and isopycnic centrifugation. 5
 4. Write the applications of Radio Immuno assay. 5
 5. Write the principle of autoradiography. Mention two commonly used radio isotopes in autoradiography. 3+2
 6. Briefly describe the image forming mechanism of fluorescence microscope. 5
 7. What is 2-dimensional gel electrophoresis? Write the importance of SDS in PAGE. 3+2
 8. How sizes of the cells can be determined using flow cytometry? 5
 9. Write the applications of autoradiography. 5
 10. Briefly describe the process of indirect ELISA. 5
 11. Define centrifugation. Write the stocks equation for the rate of sedimentation. 2+3
 12. Discuss the application of radioisotope technique in ecology. 5
 13. Write the similarities and differences of an image captured with phase contrast microscopy and DIC microscopy. 5
 14. Mention three dyes commonly used in fluorescent microscopy. Name two density gradient forming agents generally used for density gradient centrifugation. 3+2
 15. Two protein (A and B) have similar molecular weight but with different charge. How can you separate these proteins? 5
-