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M.Sc. Semester-II Examination - 2022
Biotechnology
Paper X - (Practical)
(Microbiology, Immunology, Virology, Biostatistics)

Time: 6 h + 6 h (2 days)

Full Marks: 80

1. Solve the following problems with proper computer programme.
 - a) In supplied plant sample (S-I), there are two different types of leaf. One set of leaf was collected before application of insecticide and another set of leaf is collected after application. Is there any significant difference in leaf length between the two leaf samples. Justify your answer with proper statistical test and briefly describe your remark.
 - b) In supplied plant sample (S-II), there are two different types of leaf from two different plants. Is there any significant difference in leaf length between these two leaf samples. Justify your answer with proper statistical test and briefly describe your remark.
 - c) In supplied plant sample (S-III), there are three different types of leaf. Are there significant amount of variation present in the studied sample. Justify your answer with proper statistical test and briefly describe your remark.

5+5+5=15

2. Dissect the supplied sample (S-IV) and identify the cyanobacterial sample present. Draw rough diagram, describe and identify the cyanobacterial species.

3+3+1½=7½

- 3.a) You are being provided with a bacterial culture. Using Gram's staining, identify the culture as Gram positive or Gram negative. Mention the identifier of the culture provided to you.

- b) What is the basis of this protocol?

5+2½=7½

4. Write the working principle of plaque assay. Prepare a hard agar plate. Prepare the soft agar and perform the phage assay from the given sample. Count the colonies from the phage plate. Comment on your result.

3+3+5+3+1=15

5. Estimate the specific protein concentration (IL-10) from the given sample (any one out of C1, C2, C3, C4 & C5) by performing sandwich ELISA. Show the calculation of the serial dilution of the standards, plot the standard curve with your readings and write down the estimation procedure.

8+4+3=15

6. Viva-voce.

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7. Submit your laboratory note books.

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