বিদ্যাসাগর বিশ্ববিদ্যালয়
VIDYASAGAR UNIVERSITY

Question Paper

B.Sc. Honours Examinations 2021

(Under CBCS Pattern)

Semester - V

Subject: ZOOLOGY

Paper : DSE 2-T & P

Full Marks : 60 (Theory-40 + Practical-20)
Time : 3 Hours

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Animal Biotechnology

[Theory]

Group-A

A. Answer any **three** questions from the following : 12×3=36

1. Write the difference between Prokaryotes and Eukaryotes genome? Compare between cosmid & phasmid? What is plasmid? What is BAC? 4+3+3+2

2. Write down the different steps of PCR. What is restriction endonucleases with discuss the type-II endonuclease? Write down the application transgenic animals? Write the short note on C-DNA Libraries? 4+4+2+2

3. What is sanger method? Write the different steps of this method. What is the difference between sticky end and blunt end? What is calcium chloride method and how does calcium chloride help in the transformation process? 4+3+2+3

4. What is the application of Southern Blotting? What is the difference between southern blotting and western blotting? What is electroporation method and write the advantage and disadvantage of this method. 3+4+3+2

5. What is DNA Finger printing? Write the principle of DNA Finger printing. What is the application of cell line and write down the primary cell culture and secondary cell culture? 2+3+3+4

6. What is Cystic Fibrosis? Write down the diagnosis of CF. What is the best molecular technique to diagnose the Cystic Fibrosis? What is the molecular basis for Sickle cell anemia? What is mammalian gene expression? 2+3+2+3+2

Group-B

B. Answer any **two** questions from the following : 2×2=4

1. What is DNA micro-array?

2. Write the principle of gel Electrophoresis

3. What is the main cause of Cystic Fibrosis?

4. What is Retroviral method?

[Practical]

Group-A

A. Answer any **one** question from the following : 15×1=15

1. Write in brief the process of Genomic DNA isolation from E. coli. 15

2. Write in brief the process of Plasmid DNA isolation (pUC18/19) from E. coli. 15

3. (a) A linear DNA molecule 1000 bp long give the following size fragments when treated with these restriction enzyme :

   Eco-RI = 300bp, 700bp

   BamHI = 150bp, 200bp, 250bp, 400bp

EcoRI + Bam HI = 50bp, 100bp, 200bp, 250bp, 400bp.

Derive Restriction map.

(b) A DNA fragment produced by the restriction enzyme Sal 1 is inserted to a unique Sal I cloning site in a vector molecule. Digestion with RE produces the following fragment sizes that originate from the inserted DNA.

Sal I = 20kb

Sal I + Eco-RI = 7kb, 13kb

Sal I + Hind III = 4kb, 5kb, 11kb

Sal I + Eco-RI + Hind III = 3kb, 4kb, 5kb, 8kb

What restriction map of the insert is consistent with these fragment sizes?

(c) Calculate the average distance (in nucleotide pair) between the restriction sites in the organism X for the following RE, assume an AT : GC ratio of 50 : 50.

AluI	5'AGCT3'
	3'TCGA5'
ECO-RI	5'GAATTC3'
	3'CTTAAG5'
Acyl	5'GP$_U$CGP$_Y$C3'
	3'CP$_Y$GCP$_U$G5'

5+5+5

Group-B

B. Answer any **one** question from the following : 5×1=5

1. Write the principle and procedure of Southern Blotting. 5

2. Construction of Circular and Linear restriction map from the data provided by examiner. 5

3. Describe the polymorphic markers? State SNP and write a note on SNP diagnosis. 5

Or,

Write down the significance of submission of Laboratory Note Book and viva voce 5

Or

Microbiology

Group-A

A. Answer any **three** questions from the followings : 12×3=36

1. (a) Describe the Five kingdom classification according to Whittaker.

   (b) Describe the concept of domain by Carl Woese. 8+4

2. (a) Distinguish between Gram positive bacteria and Gram negative bacteria.

   (b) What is slime layer and glycocalyx? 8+4

3. (a) Differentiate between endotoxin and exotoxin.

   (b) What is communicable disease? Explain endemic, pandemic and epidemic diseases. 5+2+5

4. (a) Distinguish between Generalised transduction and specialized transduction.

   (b) Write two functions of Pili. 6+6

5. (a) What is enriched media and complex media?

   (b) Write short notes on : (a) Acid fast Bacteria (b) Prions (c) Plasmid 6+(3×2)

6. (a) Write difference between Transformation and Conjugation.

   (b) Classify bacteria on the basis of their oxygen requirement.

   (c) Distinguish between Archae bacteria and Eubacteria. 4+4+4

Group-B

B. Answer any **two** questions from the following : 2×2=4

1. Mention two harmful effects of normal flora.
2. Distinguish between Endemic and Pandemic.
3. What is cytopathic effect?
4. What is selective media?

[Practical : Marks : 20]

Group - A

A. Answer any **one** question from the following : 15×1=15

1. Write the principle, procedure and possible interpretation of Gram staining with diagram. 5+8+2

2. Write down the procedure of liquid media (broth) and solid media for routine cultivation of bacteria. 7½+7½

3. State the principle, requirements, procedure of methylene blue reduction test of milk sample. 4+3+8

Group - B

B. Answer any **one** question from the following : 5×1=5

1. Write the principle of simple stain.

2. Illustrate streak plate culture technique.

3. Write down the significance of laboratory note book and viva-voce in the subject Mecrobiology. 2+3