

B.Sc. 5th Semester (Honours) Examination, 2022 (CBCS)**Subject : Zoology****Course : DSE-1(T1)****(Animal Biotechnology)****Time : 2 Hours****Full Marks : 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***Group-A**

1. Answer *any five* questions of the following: 2×5=10
- (a) What is the role of H1 in chromatin organization? 2
- (b) Differentiate between primary cell culture and secondary cell culture. 2
- (c) What is conjugative plasmid? What is the difference between conjugative and non-conjugative plasmid? 1+1=2
- (d) Mention the properties of an ideal cloning vector. 2
- (e) What are the differences between colony and plaque hybridization? 2
- (f) Why are two different primers required in polymerase chain reaction to multiply a particular segment of DNA? 2
- (g) Expand the EcoRI. 2
- (h) Elaborate the acronyms: 'NOD/SCID' mouse, 'YAC-Vector'. 2

Group-B

2. Answer *any two* questions of the following: 5×2=10
- (a) Write short note on DNA fingerprinting. 5
- (b) What is expression vector? Mention the key features of an expression vector. 2+3=5
- (c) Define transgenic animal. How is the Microinjection method advantageous over Retroviral method of transgene delivery? Mention two applications of transgenic animals. 1+2+2=5
- (d) Who invented PCR? What are the three reaction stages of a standard PCR? What may happen if one uses Calcium or Zinc ions instead of Magnesium ions in the PCR reaction mixture? Mention the applications of PCR. 3+2=5

Group-C

3. Answer *any two* questions of the following: 10×2=20
- (a) What is cDNA library? Explain in detail the procedure of cDNA library construction. What is the difference between cDNA library and Genomic library? 1+8+1=10
- (b) What is Northern blotting? How does it differ from Southern blotting? Write in detail the process of Northern blotting. 1+1+8=10

- (c) What is sequencing of DNA? Who did develop the chain termination method of DNA sequencing? How is sequencing done with this method? 1+1+8=10

- (d) What do you mean by genetic disease? Give an example of genetic disease. Discuss in detail the diagnosis of a genetic disease using Restriction Endonuclease. 1+1+8=10

B.Sc. 5th Semester (Honours) Examination, 2022 (CBCS)**Subject : Zoology****Course : DSE-1(T2)****(Microbiology)****Time : 2 Hours****Full Marks : 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.***Group-A**

1. Answer *any five* questions of the following: 2×5=10
- (a) Write the target cells and the receptors for HIV. 2
 - (b) Give two important functions of bacterial capsule. 2
 - (c) Explain—Typhoid can not be a zoonotic disease. 2
 - (d) Name any two fungal pathogens with medicinal importance. 2
 - (e) What is cytopathic effect? Is it lethal? 2
 - (f) How does F' plasmid differ from a regular F plasmid? 2
 - (g) Name one flavivirus that can cause disease to humans. Comment on its genetic material. 2
 - (h) What is the difference between epidemic and pandemic? 2

Group-B

2. Answer *any two* questions of the following: 5×2=10
- (a) Write the mode of action and symptoms of staphylococcal food poisoning. 2½+2½=5
 - (b) Describe the mode of action of acid-fast stain. 5
 - (c) Name any two normal microbiota present in the intestine of human body. Can a normal flora be an opportunistic pathogen?— Justify. 2+3=5
 - (d) Describe the structure of bacterial flagellum with suitable diagram. Differentiate between pili and fimbriae. 3+2=5

Group-C

3. Answer *any two* questions of the following: 10×2=20
- (a) Mention some features how bacterial chromosome differs from eukaryotic chromosomes. Describe F factor plasmid and its importance. 5+5=10
 - (b) With a schematic diagram describe the peptidoglycan structure of a Gram positive bacteria. Define spheroplasts. 8+2=10
 - (c) Differentiate enriched media from selective media. What is peptone? Why is it used in most of the media? Name one liquid medium. 6+2+1+1=10
 - (d) What are viroids? How do these differ from virus? In which way prion differs from both viroids and viruses? 2+2+6=10