

B.Sc. 5th Semester (Honours) Examination, 2022 (CBCS)

Subject : Nutrition

Course : DSE-2

(Molecular Biology)

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.

1. Answer *any five* questions of the following: 2×5=10
 - (a) What is okazaki fragment?
 - (b) Differentiate between nucleoside and nucleotide.
 - (c) What do you mean by splicing?
 - (d) What is Chargaff's rule of equivalence?
 - (e) Write the main function of mRNA with regards to protein synthesis.
 - (f) What is promoter?
 - (g) Define restriction endonuclease.
 - (h) What is Wobble hypothesis?

2. Answer *any two* questions of the following: 5×2=10
 - (a) What is plasmid? Write down its application. 2+3
 - (b) Write any five differences between translation in prokaryotes and eukaryotes.
 - (c) What do you mean by genetic code? Write down the importance of genetic code in molecular biology. 2+3
 - (d) "DNA acts as genetic material"— explain the statement.

3. Answer *any two* questions of the following: 10×2=20
 - (a) Discuss the 'Watson and Crick Model' of DNA double helix with suitable diagram. 8+2
 - (b) What do you mean by semi conservative replication of DNA? With suitable diagram briefly discuss about lagging and leading strands of DNA. Name any two enzymes involved in replication process and state their role. 2+4+4
 - (c) Define transcription? What are the different activities shown by reverse transcriptase enzyme? Briefly discuss about initiation and termination of transcription process in *E.coli*. 2+2+6
 - (d) Differentiate between genomics and proteomics. Briefly discuss about recombinant DNA techniques and mention its application. 2+6+2

B.Sc. 5th Semester (Honours) Examination, 2022 (CBCS)**Subject : Nutrition****Course : DSE-2 (OR)****(Biophysics and Bioinstrumentation)****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.*

1. Answer *any five* questions of the following: 2×5=10
 - (a) What is wave number?
 - (b) Write the application of spectrophotometer.
 - (c) What is bed volume in column chromatography?
 - (d) What are the 3 types of centrifuge rotor?
 - (e) What is meant by fluorescence probe?
 - (f) What do you mean by mobile phase? Give example.
 - (g) Differentiate between UV light and visible light.
 - (h) What is RF value?

 2. Answer *any two* questions of the following: 5×2=10
 - (a) State Beer-Lambert law. How is the Beer-Lambert law used in spectroscopy? 2+3
 - (b) Write a comparative discussion between partition chromatography and absorption chromatography.
 - (c) Briefly describe the role of fluorescent probe in the study of protein and nucleic acid.
 - (d) What is sedimentation coefficient? Comment on factors affecting sedimentation velocity. 2+3

 3. Answer *any two* questions of the following: 10×2
 - (a) Write down the principle of paper chromatography. How do you identify an amino acid by this method? 2+8
 - (b) Write down the basic principle of flow cytometry. Give a brief description on types of flow cytometer. Write any two applications of it. 2+6+2
 - (c) State the principle of centrifugation. Elaborate the applications of analytical and preparative ultracentrifugation. Write down the advantages and limitations of ultracentrifugation. 2+4+4
 - (d) What are the general properties of electromagnetic radiation? Discuss about static and dynamic quenching in reference to fluorescence spectroscopy. 4+6
-