



WEST BENGAL STATE UNIVERSITY
B.Sc. Honours 6th Semester Examination, 2022

PHYADSE05T-PHYSIOLOGY (DSE3/4)
GENETICS AND MOLECULAR BIOLOGY

Time Allotted: 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.*

Answer any five questions from the following

8×5 = 40

1. (a) What is consensus sequence? 2+2+4
(b) What is heteroduplex DNA?
(c) Briefly describe the role of UvrA and UvrB protein in the DNA damage repair mechanism.

2. (a) What are upstream elements? 2+2+2+2
(b) What is centimorgan?
(c) What is G banding?
(d) What are the positive and negative strands of DNA? For RNA transcription which one is responsible?

3. (a) State the role of DNA helicase and DNA primase in replication of *E.coli*. 4+4
(b) Describe the structure of DNA polymerase III. Mention function of its different parts.

4. (a) What is non-disjunction? 2+2+4
(b) What is polyploidy?
(c) With structure show how DNA is formed with phosphate, sugar and nitrogenous base?

5. (a) What is DNA gyrase? Mention its function. 3+5
(b) Briefly describe the density gradient centrifugation.

6. (a) What are the basic components of a plasmid? 4+2+2
(b) What do you mean by recombination?
(c) What is transposon?

7. (a) Describe the process of transcription initiation in *E.coli*. 2+3+3
(b) How RNA transcript is elongated in *E.coli*?
(c) What is Rho-dependent termination in *E.coli*?
8. (a) Briefly enumerate the process of elongation in bacterial translation. 5+3
(b) State the principles of polymerase chain reaction.

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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