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(q) Explain process of RNA splicing. 4

(r) Describe inhibitors of transcription. 4

4. Describe initiation, elongation and termination of translation.

OR

Explain mechanism of regulation of gene expression in bacteria with example of lac operon and Trp operon. 12

5. Answer the following :—

(a) Describe use of bacteriophage in recombinant DNA technology. 4

(b) Explain DNA library. 4

(c) Explain properties and use of DNA ligase in gene cloning. 4

OR

(p) Describe polymerase chain reaction. 4

(q) Explain northern blotting. 4

(r) Describe Sanger method of DNA sequencing. 4

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Fifth Semester B.Sc. (Part – III) Examination

5S – BIOCHEMISTRY

(Molecular Biology and Biotechnology)

P. Pages : 5

Time : Three Hours] [Max. Marks : 80

Note : (1) All question are compulsory and carry equal marks except question no.1 which carries **8** marks.

(2) Draw neat and labelled diagram wherevre necessary.

1. (A) Fill in the blanks.

(i) —— Sub unit of DNA polymerase III has 5'→3' polymerase activity. $\frac{1}{2}$

(ii) Non coading nucleotide sequence present in eukarytotic newly synthesized m-RNA is known as ——. $\frac{1}{2}$

(iii) As per Watson and Crick model the diameter of double helical DNA is —. $\frac{1}{2}$

(iv) —— is present at the 3' end of eukartoyic m-RNA.. $\frac{1}{2}$

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(B) Choose the correct alternative.

(i) Which of the following is not a stop codon ?

(a) UAA (b) UGA

(c) UAG (d) UGG $\frac{1}{2}$

(ii) Which of the following enzyme is not involved in DNA replication ?

(a) DNA PO/.I (b) Helicase

(d) DNA gyrase (d) Hexokinase $\frac{1}{2}$

(iii) T_m of DNA

(a) Increases with GC content.

(b) Increases with AT content,

(c) Both'a' and'b'.

(d) None of the above. $\frac{1}{2}$

(iv) Which of the following enzyme is not coaded by retroviral genome ?

(a) Reverse transcriptase

(b) Amylase

(c) Integrase

(d) Protease. $\frac{1}{2}$

(C) Answer in one sentence.

(1) Define primary cell culture. 1

(2) Define callus. 1

(3) Draw the structure of 3', 2' dideoxy analog of ATP. 1

(4) Define T_m of DNA. 1

2. Describe properties and functions of different types of RNA.

OR

Describe in detail experimental evidences for DNA as genetic material. 12

3. Answer the following.

(a) Describe Meselson and Stahl experiment. 4

(b) Explain properties and function of DNA polymerase III. 4

(c) Describe inhibitors of DNA replication. 4

OR

(p) Describe termination of transcription in prokaryotes. 4

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6. Answer the following :—

(a) Describe history of development of animal cell culture. 4

(b) Explain applications of animal cell culture. 4

(c) Describe characteristic of commonly used animal cell lines. 4

OR

(p) Explain importance of growth factors of serum in animal cell culture. 4

(q) Describe scope and application of organ culture. 4

(r) Describe growth kinetics of cell in culture. 4

7. Answer the following :—

(a) Describe history of plant tissue culture. 4

(b) Describe role of different growth regulator used in plant tissue culture. 4

(c) Explain callus culture. 4

OR

(p) Describe any two practical applications of genetic transformation in plant. 4

(q) Explain cell suspension culture. 4

(r) Describe in–vitro fertilization. 4

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