B.Sc. RNLK-/Zoology /C11T/21

2021

Zoology

[Fifth Semester]

Paper - C11T (Molecular Biology)

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

1. Answer any five from the following : 5×2=10

a) What is alternative splicing? 2

b) Write down the name of enzymes involved in RecBCD model. 2

c) A double standed DNA molecule is 100000 bp (100 kb) long. How many nucleotides does it contain and how long is the DNA molecule? 2

d) What is Shine Dalgarno Sequence? 2

e) What is Polysome? 2

f) What is Pribnon Box? 2

g) What is Wooble hypothesim? Give example. 2

h) What do you mean by Diauxic growth? 2

2. Answer any four from the following: 4×5=20

a) A DNA segment contains 100 nucleotide pairs– 5

(i) What is the length of the DNA segment?

(ii) Calculate the number of spirals in the molecule.

(iii) There are in total 70 ademine bases. Calculate the number of guanine present in the segment.

b) Using (+) for production and (–) for non-production of enzymes, complete the following table : 5

Genotype	No Lactose β-gal(z) β-per(y)	Lactose β-gal(z) β-per(y)
(i) $\frac{i^s p^+ o^+ z^+ y^-}{i^+ p^+ o^+ z^- y^+}$		
(ii) $\frac{i^d p^+ o^+ z^+ y^-}{i^+ p^+ o^+ z^- y^+}$		

c) What is calabolic repression or glucose effect? How does it occur? 2+3

d) How does initiation of translation occur in E.coli? 5

e) Briefly describe the process of SOS repair mechanism. 5

f) What are the processes involved for transcriptional modification and why? 5

3. Answer any one from the following : 1×10=10

a) What are the enzymes involved in DNA replication in E.Coli?
Write a short note on Topoisomerase.
What do you mean by proof rreading of DNA polymerase?
How does termination of transcription occur in prokaryotes? 2+2+2+4

b) How does the elongation cycle occur in translation in prokaryotes?
What are the roles of RF1, RF2 and RF3? What is the function of GTP hydrolysis in initiation of translation? 5+3+2