

2021
ZOOLOGY
[HONOURS]
Paper : VIII

Full Marks : 80

Time : 4 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.*1. Answer any **seven** of the following questions:

1×7=7

- a) What is Shine-Dalgarno sequence?
- b) What is Taq polymerase?
- c) What do you mean by Klenow fragment?
- d) What is chitin?
- e) What is carnitine?
- f) What do you mean by sex influenced gene?
- g) What is Philadelphia Chromosome?
- h) What is peptidyl transferase?
- i) What is OriC region?

2. Answer any **six** questions of the following:

2×6=12

- a) What are SINE and LINE?
- b) Distinguish between genomic library and cDNA library.
- c) What is Cori Cycle?
- d) Distinguish between amylose and amylopectin.
- e) What are XIC and XIST?
- f) What are EF-Tu and EF-Ts?
- g) Comment on the importance of introns.
- h) Distinguish between plasmid and cosmid.

3. Answer any **three** questions of the following:

7×3=21

- a) What is CAP? How does DNA methylation regulate gene expression? Write down the steps of DNA fingerprinting. 2+2+3
- b) Distinguish between apoenzyme and coenzyme. What is isoenzyme? What do you mean by competitive and non-competitive inhibition of enzyme activities? What is ribozyme? 2+2+2+1

- c) What is criss-cross inheritance? What do you mean by sex linked lethals? What is sex limited trait? Distinguish between alpha and beta thalassemia. $2+2+1+2$
- d) Distinguish between linkage map and cytological map. What is coefficient of coincidence? Define genetic recombination. Distinguish between base substitution mutation and frame shift mutation. What are chemical mutagens? $2+1+1+2+1$
- e) What is RNA splicing? Write about the molecular mechanism of RNA splicing. What is self splicing? $1+4+2$

4. Answer any **four** questions of the following:
 $10 \times 4 = 40$

- a) Discuss the methods of DNA sequencing. What is RFLP? How does it differ from RAPD? Write the uses of DNA fingerprinting. $5+1+2+2=10$
- b) What is IS element? What are retrotransposons? How can sex linked mutation in *Drosophila* be detected by ClB method? $2+2+6=10$

- c) Describe the process of DNA transcription in prokaryotes. How does it differ from that in eukaryotes? What is Hogness box? $7+2+1=10$
- d) Discuss the process of sex determination in *Drosophila*. How does it differ from that in human? $6+4=10$
- e) Discuss the causes and symptoms of the following genetic disorders:
Cri-du-chat, PKU, Albinism and sickle cell anaemia $2 \frac{1}{2} \times 4 = 10$
- f) Discuss in detail the chemical reactions of Krebs cycle. Why it is called amphibolic pathway? $8+2=10$
