

Total Pages : 3

End Semester Examination of Semester-II, 2016

Subject : ZOOLOGY (PG)

Paper : ZOOPG-201

Group : Gr A + Gr. B

Full Marks : 40

Time : 2 Hrs

The figures in the margin indicate the marks corresponding to the question

Candidates are requested to give their answers in their own word as far as practicable.

Illustrate the answers wherever necessary.

Use separate Answer scripts for Group A and Group B

Group A (Marks : 20)

**Answer Question No. 1 and
any one out of Question No. 2 and Question No. 3**

1. Answer any five questions : 2x5=10
- i) What is telomere? What is its biological function?
 - ii) What is meant by the term polyteny?
 - iii) What is a heterokaryon?
 - iv) Compare FISH with GISH.
 - v) What is it considered to study the fine structure of rII locus?

(2)

- vi) State the difference between euchromatin & heterochromatin.
- vii) State the function of Rec Proteins.
- viii) What do you mean by Philadelphia chromosome?
2. a) What is Chromosome?
b) Describe molecular structure of nucleosome with neat diagram.
c) Why do you think eukaryotes need nucleosome organization when prokaryotes do not?
 $2+(4+2)+2$
3. a) What is kinetochore?
b) Define and illustrate frameshift mutation.
c) Classify mutations on structural basis.
d) Name two human diseases, one dominant and one recessive those follow Mendelian inheritance.
 $2+2+4+2$

Group B (Marks : 20)

Answer Question No. 1 and any one out of Question No. 2 and Question No. 3

1. Answer any five questions : $2 \times 5 = 10$
- i) What is a replicon? How do their number(s) differ(s) between prokaryotes and eukaryotes?

- ii) What is the primary function of the sigma factor? Is there a protein in eukaryotes analogous to the sigma factor?
 - iii) Compare BER and NER.
 - iv) What do you mean by degeneracy of genetic codes?
 - v) Compare $tRNA_f^{Met}$, $tRNA_i^{Met}$ and $tRNA_m^{Met}$.
 - vi) What is Kozak sequence?
 - vii) What is PCNA? State its significance.
 - viii) What are spliceosomes?
2. a) Compare rate of DNA polymerization between prokaryotic and eukaryotic ones.
- b) Briefly describe the molecular events that occur at *oriC* during initiation of replication.
- c) Why does DNA polymerase require two metal ions during its catalysis? 2+6+2
3. a) Mention all the enzymatic activities of DNA POI-I, which one is unique? Describe the molecular structure of DNA Pol III holoenzyme.
- b) State the types of DNA lesions produced by UV radiation. Describe the nucleotide excision mechanism to remove these lesions? (2+1+2)+(2+3)
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