

2016

ZOOLOGY

[Honours]

PAPER – VI

Full Marks : 90

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*

Illustrate the answers wherever necessary

GROUP – A

1. Answer *one* of the following : 12 × 1
- (a) (i) What is complementation ? 2
- (ii) How can you prove from Benzer's experiment that complementation and not recombination was taking place. 4

(Turn Over)

- (iii) Differentiate between rII mutants and rII wild. 2
- (iv) Prove that physical contact is required for conjugation in bacteria. 4
- (b) (i) Differentiate between generalised and specialised transduction. 4
- (ii) Mention the steps of hydrogenic life cycle. 4
- (iii) How F' is formed? 2
- (iv) What is codominance? Explain with example. 2
- (c) (i) Write a short note on telomeric DNA. 2
- (ii) Describe the Holliday model of homologous recombination. 5
- (iii) Mention the genetic basis of sickle cell anaemia. 3
- (iv) What is primosome? 2

2. Answer any *three* of the following : 7 × 3

(a) (i) Write two applications of biotechnology. 2

(ii) The following offsprings were obtained from a cross between *Drosophila* female heterozygous for three alleles and male homozygous for these alleles

+++	337
app cu sr	348
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app ++	49
++ sr	55
app cu +	48
+ cu +	3
app + sr	2
	900

Calculate the sequence of genes and interlocus distance. Find out the coefficient of coincidence. 5

(b) (i) What is V-*onc* and C-*onc*? 4

- (ii) How does a cell stop its progress from one cell cycle to the next. 3
- (c) Write a short notes on : $3\frac{1}{2} \times 2$
- (i) p factor
- (ii) mt DNA.
- (d) (i) What is selfish DNA ? 2
- (ii) What is gynandromorph ? 2
- (iii) Discuss the role of Y-chromosome in sex determination of man. 3
- (e) (i) Write down the steps of initiation of replication in prokaryotes. 5
- (ii) Discuss the role of gyrase. 2
3. Answer *three* of the following : 4×3
- (a) What is EFTu-EFTs cycle ? 4
- (b) What is the functional role of RNA polymerase ? 4

- (c) What is missense mutation ? How bar eye is generated ? 3 + 1
- (d) What is cDNA library ? What is Klenow fragment ? 2 + 2
- (e) Write short note on : 4
Base analogue.

GROUP - B

4. Answer *one* of the following : 12 × 1
- (a) (i) What is saltatory conduction ? 3
- (ii) Define resting potential and mention how it is generated. 4
- (iii) Mention the changes that occur during contraction of skeletal muscle. 5
- (b) (i) Discuss the role of buffer. 2
- (ii) Discuss the role of pH and temperature in enzyme Kinetics. 4
- (iii) Write short note on : glycogenesis. 4
- (iv) What is Urea bicycle ? 2

- (c) (i) Discuss the hormonal changes during menstrual cycle. 5
- (ii) Discuss counter-current mechanism of urine formation. 4
- (iii) Write a short note on JGA. 3

5. Answer *three* of the following : 7 × 3

- (a) What ultrafiltration ? What is GFR ? How is it measured ? 2 + 2 + 3
- (b) Discuss the bonds present in primary structure of protein. Differentiate between α helix and β pleated sheet. 5 + 2
- (c) (i) Discuss how camels adapt themselves in desert condition ? 5
- (ii) What is Bohr shift ? 2
- (d) (i) Write briefly on β oxidation of fatty acids. 5
- (ii) Why oxygen is not required in glycolysis but is required in Krebs's cycle ? 2

- (e) (i) How insulin controls blood sugar level ? 4
(ii) Differentiate between osmoregulator and osmoconformer. 2
(iii) Mention the role of parathormone. 1
6. Answer *three* of the following : 4 × 3
- (a) How the volume of water in urine is regulated ?
- (b) Differentiate between TEM and SEM.
- (c) Differentiate between homopolysaccharide and heteropolysaccharide.
- (d) Differentiate between estrus cycle and menstrual cycle.
- (e) Briefly describe competitive inhibition of enzyme.
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