5. Explain the methodology of DNA fingerprinting and describe its applications.

OR

Describe euploidy and aneuploidy. 12

6. Describe the following :

(s) Splicing and cloning of genes

(t) M-13 Bacteriophage vector

(u) Hazards of biotechnology and genetic engineering in animals.

OR

(v) DNA ligase

(w) λ phage vector

(x) Application of genetic engineering in animals. 12

7. Describe types and production of immune cell.

OR

Explain types and functions of Antibody. 12

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

6S : ZOOLOGY

(Molecular Biology & Biotechnology)

Time—Three Hours] [Maximum Marks—80

Note :—(1) All questions are compulsory.

(2) Question No. 1 carries only 8 marks.

(3) Question Nos. 2 to 7 carry 12 marks each.

(4) Illustrate your answers with suitable diagrams wherever necessary.

1. (a) Fill in the blanks :

(i) _____ used Diplococcus pneumoniae in transformation experiment.

(ii) Gene as a unit of mutation is known as _____.

(iii) Sickle cell anemia is caused by _____ mutation.

(iv) _____ form of DNA is left-handed. 2

(b) Choose correct alternatives from the following :

(v) Chemically interferons are :

(a) Proteins (b) Glucose

(c) Lipids (d) None of these

(vi) Two antiparallel strands of DNA are oriented as :

(a) 3' – 3' and 5' – 5'

(b) 3' – 5' and 5' – 5'

(c) 3' – 5' and 5' – 3'

(d) 3' – 3' and 5' – 3'

(vii) The site of protein synthesis in cell is :

(a) Mitochondria

(b) Ribosome

(c) Plasma membrane

(d) Chloroplast

(viii) Adaptive Immunity is :

(a) Active (b) Passive

(c) Innate (d) Both (a) and (b)

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(c) Answer in **one** sentence :

(ix) How many base pairs are there per turn in B-DNA ?

(x) In spinocerebellarataxia which triplet is repeated ?

(xi) What is polyploidy ?

(xii) Name the largest antibody in human circulation.

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2. Describe the following :

(a) Avery and coworkers experiment

(b) Watson and Crick's model of DNA (dia. only)

(c) Comparison between B-DNA and Z-DNA.

OR

(d) Mitochondrial DNA

(e) Pyrimidine bases

(f) Griffith's experiment of genetic material. 12

3. Explain the following :

(g) Split Genes

(h) Enlist the enzymes involved in DNA replication

(i) Modern concept of gene.

OR

(j) Any two modes of DNA Replication

(k) Messelson and Stahl experiment

(l) Overlapping genes. 12

4. Describe the following :

(m) Wobble hypothesis

(n) Process of transcription

(o) RNA polymerase.

OR

(p) Features of Genetic code

(q) Elongation of the polypeptide chain in translation

(r) Regulation of gene expression at genome level.

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