Unit 1: Introduction to cytogenectics

Q.1 Define or explain (each 2 marks)

1. Cytogenetics.

Unit 2: The cell and its diversity

Q.1 Define or explain (each 2 marks)

1. Prokaryotic cell.
2. Eukaryotic cell.
3. Archaebacateria.

Q.2 Write short notes on (each 4 marks)

1. Concept of archaebacteria.
2. Sketch and label eukaryotic cell.

Q.3 Attempt the followings (each 3 marks)

1. Virus.
2. Prokaryotic cells.
3. Sketch and label prokaryotic cell.

Unit 3: Chromosome

Q.1 Multiple choice questions. (each 2 marks)

1. Mutation occurs in organism due to change in-------.
   a. DNA. b. ribosome.
   c. mitochondria. d. none.
2. Chromosomal spread picture is called------
   a. Karyotype. b. Karyograph.
   c. Kymograph. d. none.

Q.1 Define or explain (each 2 marks)

1. Aneuploidy.
2. Polyploidy
3. Euploidy .
4. Karyotype.
5. Genome.
6. Polytene chromosome.
7. Lampbrush chromosome.

Q.2 Write short notes on (each 4 marks)

1. Morphology of chromosome.
2. Chromosomal banding pattern.
3. Human karyotype.
4. Polytene chromosome.
5. Lampbrush chromosome.
6. Sketch and label polytene chromosome.
7. Sketch and label Lampbrush chromosome.
8. Sketch and label forms of chromosome.
9. Sketch and label structure of chromosome.

Q.3 Attempt the followings (each 3 marks)

1. Sketch and label polytene chromosome.
2. Sketch and label Lampbrush chromosome.
3. Sketch and label forms of chromosome.
4. Sketch and label structure of chromosome.

Q.4 Answer the followings (each 6 marks)

1. Explain polytene chromosome and its importance.
2. Explain Lampbrush chromosome and its importance.
3. Describe Human karyotype.
4. Describe different numerical anomalies of chromosome.
5. Describe different structural anomalies of chromosome.

Unit 4: Cell cycle

Q.1 Multiple choice questions (each 2 marks)

1. In cell cycle --------- phase known as synthetic phase.
   a. S phase. b. G1 phase.
   c. G2 phase. d. M phase.

Q.1 Define or explain (each 2 marks)

1. Cell cycle . 2. M phase. 3. S phase.
4. G1 phase. 5. G2 phase .

Q.2 Write short notes on (each 4 marks)

1. Cell cycle.
2. Regulation of cell cycle.
3. Sketch and label cell cycle.

Unit 5: Cellular aging and senescence

Q.1 Define or explain (each 2 marks)

1. Cell aging.
2. Senescence.

Q.3 Attempt the followings (each 3 marks)

1. Morphological changes during cell aging.
2. Subcellular changes during cell aging.
3. Physiological changes in aging.

Unit 6: Cell signaling

Q.1 Multiple choice questions (each 2 marks)

1. The self signaling is nothing but -------.
   a. Paracrine signaling. b. Endocrine signaling.
   c. Autocrine signaling. d. none.

Q.1 Define or explain (each 2 marks)

1. Cell signaling.

Q.2 Write short notes on (each 4 marks)

1. Describe the cellular changes during cell aging.

Q.3 Attempt the followings (each 3 marks)

1. Endocrine signals
2. Receptors of special importance

Unit 7: Human genetics

Q.1 Multiple choice questions (each 2 marks)

1. Sticky and thick mucus production is a symptom of ----------.
   a. Hutingston chorea. b. Cystic fibrosis.
   c. Diabetes. d. Haemophilia.

2. In Turner's syndrome the karyotype shows----------.
   a. 47 chromosome (Trisomy of 21). b. 47 chromosome (AA+XXY).
   c. 46 chromosome (AA+XY or XX). d. 45 chromosome (AA+XO).

3. In Klinefelter's syndrome the karyotype shows ----------.
   a. 47 chromosome (Trisomy of 21). b. 47 chromosome (AA+XXY).
   c. 46 chromosome (AA+XY or XX). d. 45 chromosome (AA+XO).

4. Webbed neck and Bar body negative are the symptoms of ----------.
   a. Turner's syndrome. b. Klinefelter's syndrome.
   c. Down syndrome. d. Cat-cry syndrome.

5. Polyuria, polydispia and polyphagia are the classical symptoms of ------.
   a. Diabetes. b. Cystic fibrosis.
   c. Haemophilia. d. Hutingston's chorea.

6. In Down's syndrome the karyotype shows----------.
   a. 47 chromosome (Trisomy of 21). b. 47 chromosome (AA+XXY).
   c. 46 chromosome (AA+XY or XX). d. 45 chromosome (AA+XO).

7. Sickle cell anaemia shows ------- type of haemoglobin.
   a. Hbs . b. HbT.
   c. HbV. d. none.

Q.1 Define or explain (each 2 marks)

1. Human genetics. 2. Sickle cell anemia.
3. Cystic fibrosis. 4. Hutington's chorea.
5. Turner's syndrome. 6. Klinefelter's syndrome.

Q.2 Write short notes on (each 4 marks)

1. Sickle cell anaemia.
2. Cystic fibrosis.
3. Phenylketonuria.
4. Turner's syndrome.
5. Klinefelter's syndrome.
6. Down's syndrome.
7. Alkaptonuria.

Q.4 Answer the followings (each 6 marks)

1. Explain the causes of phenyl ketonuria, its symptoms and treatment.
2. Explain the types of diabetes, its causes, symptoms and treatment.

Unit 8: Genetic screening and prenatal diagnosis

Q.1 Multiple choice questions (each 2 marks)

1. In vitro study of amniotic fluid is called------.
   a. Embryology. b. Amniocentesis.
   c. Pediatric biology. d. none.

Q.1 Define or explain (each 2 marks)

1. Amniocentesis.

Q.2 Write short notes on (each 4 marks)

1. Amniocentesis.
2. Chorionic villus sampling (CVS).

Unit 9: Genes in human heredity

Q.1 Multiple choice questions (each 2 marks)

1. ------- pigments gives colouration to the skin.
   a. Melanin. b. Cyanin.
   c. Deravin. d. none.

2. ------- twins attached to each other by one or more parts.
   a. Fraternal. b. Siamese.
   c. both. d. none.

Q.1 Define or explain (each 2 marks)

1. Genetic counseling. 2. Twin.

Q.2 Write short notes on (each 4 marks)

1. Inheritance of skin color in human.
2. Explain risk of marriages in affected families.
3. Explain the flow of recessive genes in consanguineous marriages.
4. Identical twins.
5. Crossing of White (Caucasian) with Black (Negro).

Q.3 Attempt the followings (each 3 marks)

1. Enlist the types of twins.
2. Significance of twin study.
3. Inheritance of eye colour.

Q.4 Answer the followings (each 6 marks)

1. Genetic counseling.
2. Describe types of twins and significance of twin study.
3. Explain polygenic inheritance with skin colour as an example in human.

Unit 10: Genetic engineering

Q.1 Define or explain (each 2 marks)

1. Recombinant DNA technology. 2. Transgenic animals.
3. Eugenics. 4. Negative Eugenics.
5. Positive Eugenics. 6. Human genome project.
7. DNA or genetic finger printing. 8. Gene/DNA probe.

Q.2 Write short notes on (each 4 marks)

1. Transgenic animals.
2. Positive eugenics.
3. Genetic counseling.
4. Concept of human genome project.

Q.3 Attempt the followings (each 3 marks)

1. Recombinant DNA technology.
2. Stem cell.
3. Transgenic animals.
4. Genetic finger printing.
5. Enlist different methods used for genetic finger printing.

Q.4 Answer the followings (each 6 marks)

1. Explain transgenic animals and their importance.
2. Describe eugenics in detail.
3. Concept of human genome project.
