

2021

Time : 3 Hours

Full Marks : 100

Candidates are required to give their answers in their own words as far as practicable.

Figures in the margin indicate full marks.

Answer five questions, selecting at least two from each group in which Q. No. 1 is compulsory.

1. Choose the correct answer from the options given below : 1×20=20

- (a) The mechanical support to the cell is provided by :
- (i) Golgi complex
  - (ii) ER
  - (iii) Micro fibrils
  - (iv) Chromatin

- (b) Lysosomes is present in all except
- (i) Muscle cell
  - (ii) Acinar cell
  - (iii) Erythrocyte
  - (iv) Hepatocyte
- (c) The most important function of nuclear envelope is to :
- (i) Regulate nucleocytoplasmic traffic
  - (ii) Protect genetic material
  - (iii) Prevent the entrance of active ribosome into nucleus
  - (iv) Synthesis of r RNA
- (d) Which of the following ions are required for binding of ribosomal subunit :
- (i) Na<sup>++</sup>
  - (ii) Mg<sup>++</sup>
  - (iii) Mn<sup>++</sup>
  - (iv) Fe<sup>++</sup>

- (e) The term endoplasmic reticulum was coined by
- (i) Reinert
  - (ii) Porter
  - (iii) Pomaret
  - (iv) Johnson
- (f) The best method to determine the homozygosity and heterozygosity of an individual is
- (i) Self fertilization
  - (ii) Back cross
  - (iii) Test cross
  - (iv) Inbreeding
- (g) Which of the following terms represent a pair of contrasting characters
- (i) Homozygous
  - (ii) Heterozygous
  - (iii) Allelomorphs
  - (iv) Codominant genes

- (h) Which of the following RNA molecule serve as adapter molecule during protein synthesis.
- (i) r RNA
  - (ii) m RNA
  - (iii) t RNA
  - (iv) t RNA & m RNA
- (i) Which is the energy rich molecule required for initiation of translation:
- (i) ATP
  - (ii) GTP
  - (iii) CTP
  - (iv) AMP
- (j) The lowest level of chromosome organization is
- (i) Solenoid
  - (ii) Nucleosome
  - (iii) 30 nm fibre
  - (iv) None of these

- (k) Euchromatin
- (i) Genetically active chromatin with genes
  - (ii) Stains lightly
  - (iii) Is partially condensed
  - (iv) All of these
- (l) Genes for colourblindness in man are located on
- (i) X – chromosome only
  - (ii) Y – chromosome only
  - (iii) Either X or Y chromosome
  - (iv) Both X and Y chromosome
- (m) Which of the following disease is genetically linked
- (i) Dysentery
  - (ii) Plaque
  - (iii) Hemophilia
  - (iv) Tuberculosis
- (n) Which of the following is the example of sex linked disease ?
- (i) AIDS

- (ii) Colourblindness
  - (iii) Syphilis
  - (iv) Gonorrhoea
- (o) The recessive genes located on X chromosome in human are always
- (i) Expressed in female
  - (ii) Lethal
  - (iii) Sublethal
  - (iv) Expressed in males
- (p) The first transgenic plants to be produced :
- (i) Brinjal
  - (ii) Tobacco
  - (iii) Rice
  - (iv) Cotton
- (q) Which of the following is genetically modified crop.
- (i) Bt - cotton
  - (ii) Bt - Brinjal
  - (iii) Golden rice
  - (iv) All of these

- (r) Restriction enzyme were discovered by
- Smith and Nathan
  - Alexander flaving
  - Berg
  - None of these
- (s) The chromosomal basis of sex determination was discovered in .
- ~~(i)~~ Melandrium
  - Rumex
  - Sphaerocarpus
  - Coccinea
- (t) Turner's syndrome is a result of
- Nullisomy
  - Monosomy
  - Trisomy
  - ~~(iv)~~ Polysomy

**Group-A**

- ✓ 2. Describe the ultrastructure and function of plasma membrane. 20
- ✓ 3. Give an account of structure and function of mitochondria. 20

- 4 Discuss above types of cell junction and its importance. 20
- 5 Describe the chi-square test with suitable example. 20

**Group-B**

6. Discuss about the process of transcription in prokaryotes. 20
- ✓ 7 Describe the sex determination in drosophila and human. 20
- ✓ 8 Describe the basic concept of genetic engineering. 20
9. Discuss the interaction of genes with references to coat colour in mammals. 20
- ✓ 10 Write short notes on any two of the following. 10×2=20
- ~~(a)~~ Chromosomal aberrations
  - (b) Culture of animal tissue
  - (c) RNA polymerase
  - ~~(d)~~ Importance of Biotechnology.

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