BIOLOGY

Time : 3 Hrs. **July - 2016** **Marks : 70**

SECTION - I : Botany

Q.1. Select and write the most appropriate answer from the given alternatives for each sub-question: **(7)**

(1) Genotype of human blood group 'O' will be ..... .

(a) $I^A I^A$ (b) $I^A I^B$ (c) *i i* (d) $I^A i$

(2) 'Cry' genes are present in..... .

(a) *Agrobacterium tumefaciens* (b) *Bacillus thuringiensis*

(c) *Rhizobium species* (d) *Escherichia coli*

(3) 'Tropane' is obtained from ..... .

(a) *Daucus carota* (b) *Catharanthus roseus*

(c) *Datura stramoneum* (d) *Mentha piperata*

(4) Which of the following vitamins is not fat soluble?

(a) Vitamin A (b) Vitamin B (c) Vitamin D (d) Vitamin K

(5) How many meiotic divisions are required to produce 200 seeds?

(a) 50 (b) 100 (c) 200 (d) 250

(6) Energy flow in ecosystem is ..... .

(a) reverse (b) unidirectional

(c) bidirectional (d) multidirectional

(7) Endosperm of angiosperm is ..... .

(a) haploid (b) diploid (c) triploid (d) tetraploid

Q.2. (A) Answer in 'one' sentence only: **(6)**

(1) What is Bacteriophage?
(2) What is emasculation?
(3) What is VAM?
(4) What is the role of decomposers in an ecosystem?
(5) Name any two edible mushrooms.
(6) What is ecological succession?

(B) Sketch and label the 'Ultrastructure of Mitochondrion'. **(2)**

(C) Attempt any TWO of the following: **(4)**

(1) Give the floral adaptations for anemophily.
(2) Name any two antibiotics with their microbial source.
(3) Describe the formation of helobial endosperm.
(4) Give the hazardous effects of agrochemicals.

Q.3. (A) Attempt any TWO of the following: **(6)**

(1) Explain incomplete dominance with suitable example.
(2) What are transgenic plants? Explain with any two examples.
(3) Explain micropropagation and somatic hybridization.

(B) Sketch and label stages in development of angiospermic female gametophyte from functional megaspore. **(3)**

Q.4. Give the central dogma of protein synthesis. Explain the process of translation. **(7)**

OR

What is dark reaction in photosynthesis? Describe C_3 Pathway.

SECTION - II : Zoology

Q.5. Select and write the most appropriate answer from the given alternatives for each sub-question: **(7)**

(1) Vermiform appendix is an example of ..... organ.
(a) vestigeal (b) homologous (c) sense (d) analogous

(2) In which of the following disorders number of chromosomes present is 47?
(a) Turner's syndrome (b) Cushing's syndrome
(c) Acquired Immuno-Deficiency Syndrome
(d) Down's syndrome

(3) Human blood clotting factor VIII is used to treat ..... .
(a) pituitary dwarfism (b) diabetes mellitus
(c) haemophiliacs (d) cystic fibrosis

(4) A person suffering from diabetes insipidus shows ..... .
(a) hyperglycemia (b) hypoglycemia
(c) polyuria (d) hypertension

(5) Photoreceptor cells are present in ..... .
(a) blind spot (b) retina (c) cochlea (d) cornea

(6) 'HAART' is suggested for the treatment of ..... .
(a) malaria (b) cancer (c) AIDS (d) high chloesterol level

(7) For DNA fingerprinting radioactive probe obtained from ..... is used in India.
(a) Banded Krait (b) King Cobra (c) Viper (d) Rat snake

Q.6. (A) Answer the following in 'one' sentence each: **(6)**

(1) Give any two examples of commensalism.

(2) What is the common name of *Apis mellifera*?

(3) Which growth hormone is used to enhance dairy productivity?

(4) Define Linkage.

(5) Name of two classes to which *Archaeopteryx* acts as connecting link.

(6) Define the term natality.

(B) Sketch and label Malpighian body. **(2)**

(C) Attempt any Two of the following: **(4)**

(1) Enlist any four sequential evolutionay names of human ancestors.

(2) Give the significance of transgenic animals for betterment of life.

(3) Give the economic importance of lac.

(4) Give the fate of mesoderm.

Q.7. (A) Attempt any Two of the following: **(6)**

(1) Explain the mechanism of sex determination in birds.

(2) Give any two unique features of acquired immunity.

(3) With the help of pyramid, describe the growing population.

(B) Sketch and label reflex arc. **(3)**

Q.8. Explain the process of early cleavage till the formation of morula. **(7)**

OR

Describe five types of leucocytes, with the help of diagrams. Add a note on their functions.

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