



DEFENCE SERVICES MEDICAL ACADEMY
ENTRANCE EXAMINATION
BIOLOGY

ATTEMPT ALL QUESTIONS

17 - 8 - 2018.

(Write down the answers on the answer book)

Time allowed: (2) hours

SECTION (A) ZOOLOGY

1. State TRUE or FALSE to the following statements. Do not copy the statements.

(10 marks)

- i. The vacuole containing food and water is formed at the anterior end of the cytopharynx in *Paramecium*.
- ii. The cytopharynx of *Paramecium* ends in the endoplasm.
- iii. Respiratory impulses travel down the phrenic nerves to the diaphragm during gaseous exchange in mammals.
- iv. The air is driven out of the lungs during the process of inspiration in mammals.
- v. Lymphatics are similar to most veins in many ways.
- vi. Plasma consists of about 10 % water and 90% materials in solution and suspension.
- vii. The lymph capillaries are closed at one end and join with the larger tube called the lymphatics at the other end.
- viii. The nervous system of mammal is made up of the brain and spinal cord.
- ix. Neurones conduct nerve impulses from one part of the body to another.
- x. The process in which an egg unites with a sperm is called implantation.

2. Complete the following statements with appropriate words. Do not copy the statements.

(10 marks)

- i. The function of premolar and molar are for crushing and ----- food.
- ii. During exercise, the physiological dead space is -----.
- iii. Thrombocytes are also termed as -----.
- iv. Each lymph node is made up of ----- tissue and cells.
- v. Some serum globulins are ----- while some carries hormones and vitamins.

- vi. The hormone ----- increases the rate of heart beat.
 - vii. Iris of the human eye controls the size of the -----.
 - viii. Epididymis in the male reproductive system stores up mature----- temporarily.
 - ix. Breast-feeding ensures close contact between mother and baby, and ----- care.
 - x. The embryo eventually develops into a ----- with recognizable human features.
3. (a) Name the seven groups of limb muscles in man. **(3 marks)**
- (b) Give the functions of testes, urethra and sperm duct in male reproductive system. **(3 marks)**
4. (a) Explain how muscular contractions of the gut wall increase the efficiency of chemical digestion. **(4 marks)**
- (b) Name the two stages of gaseous exchange in man and explain the stage that concerns with drawing of air into the lungs. **(4 marks)**
5. (a) With a labelled diagram explain the prominent features of parts of the rabbit's brain that are concealed by the cerebral hemispheres from the dorsal view. **(8 marks)**
- (b) List the various stages of nitrogen cycle and describe the processes that convert ammonium compounds into nitrogenous compounds which in turn into gaseous nitrogen. **(8 marks)**

SECTION (B) BOTANY

6. State TRUE or FALSE to the following statements. Do not copy the statements. **(10 marks)**
- i. Plants that live upon dead organic matter are termed as hydrophytes.
 - ii. Each stamen consists of ovary, style and stigma.
 - iii. Fruits develop from the ovules of the flowers.
 - iv. Fats and oils are obtained from a large variety of seeds.
 - v. The release of oxygen from green plants is an indication of photosynthesis.

- vi. Aerobic respiration takes place in the absence of oxygen.
- vii. Water makes up two-thirds or more of living active protoplasm.
- viii. Plants respond to light, gravity touch and water.
- ix. A sexual reproduction is common in plants.
- x. The roots of orchids obtain nutrients and water from the air.

7. **Complete the following statements with appropriate words. Do not copy the statements.** **(10 marks)**

- i. Plants which live for many years are termed as -----.
- ii. The function of both the androecium and gynoecium is -----.
- iii. Three groups of fruits are simple, ----- and composite.
- iv. Seeds play an ----- role in our everyday lives.
- v. Nutrition of green plants is termed as -----.
- vi. Plants would wilt without ----- pressure.
- vii. Lateral roots grow at right angles to -----.
- viii. One functional ----- is produced from the megaspore mother cell by the process of meiosis.
- ix. Chromosome number of ----- products is half that of the mother cell.
- x. Pollution can occur in the atmosphere, in the soil, in the sea or in -----.

- 8. (a) Differentiate fleshy and dry fruits. **(3 marks)**
- (b) State the types of messages that result from information. **(3 marks)**

- 9. (a) Define the term osmosis and give differences between a weak and a strong solution. **(3 marks)**
- (b) Describe the external structure of a maize grain and mention its type of germination. **(5 marks)**

- 10. (a) State briefly about diffusion and how water is absorbed by cells of root and then to central vascular bundle in land plants. **(8 marks)**
- (b) Explain the process of sexual reproduction as found in plants. **(8 marks)**