BIOLOGY – 2007

Q. 1. What is the importance of the epiglottis in human body ? 1

Q. 2. What happens to the glycogen concentration in the liver cells when the level of adrenaline increases in the blood stream of humans ? 1

Q. 3. Mention the scientific term used for modified form of reproduction in which seeds are formed without fusion of gametes. 1

Q. 4. What does ecological niche of an organism represent ? 1

Q. 5. It was diagnosed by a specialist that the immune system of the body of a patient has been suppressed. Name the disease the patient has been suffering from and its causative agent. 1

SECTION - B

Q. 6. Where are casparian strips located in a plant body and what are they made up of ? Mention its function. 2

Or

What is respiration quotient (RQ) ? Under what conditions will the value of RQ be 1 ? Explain. 2

Q. 7. What is resting membrane potential of a neuron ? What is the role of sodium potassium pumps in maintaining it ? 2

Q. 8. Draw a diagram of external view of a human brain. Label the frontal lobe, temporal lobe, occipital lobe and cerebellum. 2

Q. 9. How is the milk production regulated by hormones in human female ? Explain. 2

Q. 10. Explain the significance of the auxin / cytokinin ratio in plant tissue culture. 2

Q. 11. What does S-shaped pattern of population growth represent ? How is J-shaped pattern different from it and why ? 2

Q. 12. What does secondary productivity in an ecosystem indicate ? List any two factors by which productivity is limited in aquatic ecosystems. 2

Q. 13. How do viruses enter plant body and spread to long distances within it ? Mention any two ways by which viruses spread from one plant to another. 2

Q. 14. In what form do plants absorb calcium from the soil ? List any two calcium deficiency symptoms in plants. 2

Q. 15. What is vernalisation ? How is the process of vernalisation advantageous to plants ? 2

SECTION - C

Q. 16. Explain the theory of capillarity of water translocation in plants. Can the theory explain translocation of water in 100 m tall trees ? Give one reason. 3

Q. 17. What is symbiotic nitrogen fixation ? Name the two protein components needed for this

process. Explain their role. 3

Or

List the various modes of heterotrophic nutrition in plants. Explain any two modes giving one example of each. 3

Q. 18. What is biological magnification ? Explain how DDT as a water pollutant undergoes biological magnification ? 3

Q. 19. What are exotic species ? Explain with the help of two examples how the exotic species

disturb the native species of an ecosystem ? 3

Q. 20. In what forms are nitrogenous wastes excreted in birds, humans and aquatic turtles respectively ? Why so, explain? 3

Q. 21. A patient was complaining of frequent urination, excessive thirst and dehydration. His fasting glucose level was found to be normal. Name the disease and its cause. Explain why are such symptoms occurring in this patient ? 3

Q. 22. Explain with the help of a suitable example for each of the following terms : (i) morphallaxis (ii) epimorphosis and (iii) compensatory regeneration. 3

Q. 23. Describe the polygonum type of embryo sac. Why is it generally referred to as monosporic ? 3

Q. 24. What is obsessive-compulsive disorder ? How is it different from borderline personality disorder ? What are the two most common obsessions that affect adolescents ? 3

Q. 25. What is human leucocyte antigen complex ? Explain its role in organ transplantation. 3

Q. 26. Why do C_4 plants have dimorphic chloroplasts ? Explain the different steps involved in C4 photosynthetic carbon cycle in such plants. 5

Or

Explain the electron transport system. Where does it occur in a mitochondrion and what is the role of oxygen in it ? 5

Q. 27. Explain the events that occur in the human heart during ventricular systole and ventricular diastole in a cardiac cycle. Name the heart sounds and mention how they are produced. 5

Or

What is oxygen-haemoglobin dissociation curve ? Describe the role of red blood cells in the transport of oxygen and carbon dioxide by blood. 5

Q. 28. Briefly explain the principle, procedure and the role of ELISA. 5

Or

What is somatic hybridisation ? Explain the various steps involved in the process. Mention any two uses of somatic hybridisation.