

VCD: **140522** Class: FYBT

SUB: LIFE SCIENCES I: PHYSIOLOGY AND ECOLOGY

2½ HOURS

TOTAL MARKS: 75

1. Attempt **all** questions.
2. Draw **neat labeled diagrams** wherever necessary.
3. Use of **log tables** and **non-programmable calculator** is **allowed**.
4. For **Q 2, Q 3 and Q 4** attempt A and B **OR** C and D.

Q1. Select the appropriate option for the following questions.

40

1. The _____ accepts electrons from cytochrome b6f complex and donates them to PS1. (PSII, Plastocyanin, Pheophytin, ATP Synthase).
2. _____ is helpful in eradication of weeds. (Gibberellins, Auxin, Cytokinin, ABA).
3. _____ is a common air pollutant and is also a powerful plant hormone. (Ethylene, Sulphur Dioxide, CO₂, CO).
4. A major amount of incident light about 10 percent is _____. (Reflected, Transmitted, Absorbed, Adsorbed).
5. Cyclic photophosphorylation involves _____ system. (PS I & PS II, PS II, FMN, PSI).
6. The production of ATP in the membrane of the thylakoids is known as _____. (Photoinhibition, Photophosphorylation, Photoinduction, Photoactivation).
7. _____ is a Hill's reagent. (Phosphate, Oxalic acid, Potassium oxalate, Dichlorophenolindophenol).
8. Breathing is also called _____. (Pulmonary ventilation, pulmonary contraction, pulmonary relaxation, pulmonary extension).
9. Oxygenated blood passes from the left atrium into the left ventricle guarded by a valve which is called a _____ valve. (Sinus valve, bicuspid valve, pulmonary artery, tricuspid valve).
10. _____ is the blood vessel which supplies blood to the kidney. (Renal tubules, renal arteries, blood vessels, renal tube).
11. In normal, quiet breathing, the primary muscle involved in inspiration is the _____, a dome shaped muscle that separates the thoracic cavity from the abdominal cavity. (diaphragm, sternum, carina, trachea)
12. Which of the following prevents entry into the windpipe? (Trachea, larynx, epiglottis, pharynx)
13. _____ natural pacemaker of the heart. (sinus node, left node, parietal node, natural node)

14. In an ecosystem, energy flows in a non-cyclic manner (unidirectional). Set the order of flow of energy from _____. (sun to carnivores to herbivores to producers, Sun to producers to herbivores to carnivores, sun to herbivores, carnivores to sun)
15. The _____ are producers or transducers which convert or transduce radiant energy into chemical form. (Herbivore, carnivores, green plants, top predator).
16. The pattern of eating and being eaten forms a linear chain called _____. (Food chain, Food taken, Food consumption, Food uptake)
17. _____ is an ecosystem which is man-engineered and maintained artificially by man. (Natural ecosystem, Artificial ecosystem, Environmental ecosystem, Climatic ecosystem)
18. Mutually beneficial relationships between species are called as _____. (Mutualism, commensalism, ectoparasites, decomposers).
19. Living organisms, atmosphere and earth maintain between them a circulation of water and moisture, which is referred to as _____ Cycle. (Carbon, Water, Air, Nitrogen).
20. Degradation of nitrate is called _____. (Denitrification, Nitrification, nitrogen fixation, Nitrogen formation)

Q.2 A. Write a note on non-cyclic photophosphorylation. 07

Q.2 B. What is Hill's reaction? Write significance of Hill's reaction. 04

OR

Q.2 C. Give an account of C4 cycle. 07

Q.2 D. Write a note on ethylene. 04

Q.3 A. Describe the structure of a human heart with a neat labeled diagram. 07

Q.3 B. write a note on Hemoglobin. 04

OR

Q.3 C. Give a brief account on respiratory tract in humans with labeled diagrams. 07

Q.3 D. Give a brief account on glomerular filtration. 04

Q.4 A. Elaborate on non-living and living components of an ecosystem. 07

Q.4 B. Write in brief about oxygen cycle. 04

OR

Q.4 C. Describe in detail about parasitism with suitable examples 07

Q.4 D. Describe the water cycle in detail. 04

Q5. Do as directed (Any Two) 02

- a. Correct and rewrite the statement: Ethylene is also known as 'anti-gibberellin' hormone.
- b. Define ATP synthase.
- c. Explain the term 'commensalism'.
- d. Define: Ecosystem.