



**Q.1. Give short answers of the following:**

**(15x2=30)**

- i. What is clitellum?
- ii. What is solitary or colonial mode of life in invertebrates?
- iii. What is Tympanal organs?
- iv. Differentiate between endo and ecto parasites in invertebrates?
- v. What is spongocoel?
- vi. Differentiate between food vacuole and contractile vacuole in protozoans?
- vii. Differentiate between silicious and calcareous spicules?
- viii. Write about internal structure of cilia?
- ix. What is Aristotle's lantern in echinoderms?
- x. Differentiate between sessile and motile in protozoans?
- xi. What is metameric segmentation?
- xii. Define necrotization?
- xiii. Differentiate between determinate and indeterminate cleavage?
- xiv. What is Flying squids?
- xv. Write about Asteroidea class of Echinoderm?

**Answer the following questions.**

**(3x10=30)**

- Q.2** Write detail notes on phyletic lineage and its types, and discuss its role in phylogenetic systematics?
- Q.3** What are various modes of locomotion in Protozoan?
- Q.4** Discuss in detail classification and important characteristics of Phylum Echinodermata?