

Time: 2:40 Hours

SUBJECTIVE

Marks: 68

Note: Section I is compulsory. Attempt any THREE (3) questions from Section II.

SECTION – I**2. Write short answers to any EIGHT questions.**

(2 x 8 = 16)

- For what purpose, leaves have large surface area?
- Why dehydration is the major problem for terrestrial animals?
- How can you avoid making of kidney stones?
- Which tissues arise from vascular cambium?
- Differentiate between hyaline and elastic cartilage.
- Define callus and describe its importance.
- In which way sertoli cells support reproduction?
- Why testosterone is important for reproduction?
- Differentiate between limnetic and profundal zone.
- Name four major ecosystems in Pakistan.
- What is ozone? Give its importance.
- Define soil and give its basic constituents.

3. Write short answers to any EIGHT questions.

(2 x 8 = 16)

- Define diurnal rhythms. How they are different from circannual rhythms?
- Compare sympathetic with parasympathetic nervous system.
- How etiolation differs from chlorosis?
- Workout all possible types of gametes from the individual having genotype "AaBbCc".
- What do you know about the dominance relations among multiple alleles of "ABO" blood group system?
- What are the limitations of Mendelian law of independent assortment?
- Describe the term "Gene Pharming".
- Why biotechnology is important for humans?
- How to get the gene of interest?
- Differentiate between Autecology and Synecology.
- Define mutualism. Give example.
- What do you know about the biotic components of an ecosystem?

4. Write short answers to any SIX questions.

(2 x 6 = 12)

- Differentiate between morulla and blastula.
- Define regeneration, also write down two examples.
- What is point mutation? Give one example.
- Define phosphodiester bond, also draw it.
- What are chromosomes? Also write down number in man and mouse.
- What is mitotic apparatus? Write down its function.
- Compare kinetochore microtubule with polar microtubule.
- What are hydrothermal vent? How did they support life?
- Define homologous organ, give one example.

SECTION - II

- Describe the adaptation in plants to low and high temperature. (4)
 - Describe the stages of karyokinesis of mitotic cell division. (4)
- Write down different types of plant movements due to external causes and also describe their importance. (4)
 - Define succession. Write down different stages of xerosere in detail. (4)
- Why is anterior lobe of pituitary gland referred as Master Gland? Explain how does anterior lobe control thyroids, adrenals and gonads? (4)
 - Write down a note on endangered species. How they can be protected? (4)
- Explain the male reproductive system in human. (4)
 - Describe the mechanism of incomplete dominance with an example. (4)
- Define meristem. Discuss its various types. (4)
 - What is polymerase chain reaction (PCR)? How it is carried out to produce multiple copies of DNA segment? (4)