



## **PUNJAB PUBLIC SERVICE COMMISSION**

### **COMBINED COMPETITIVE EXAMINATION 2017** **FOR RECRUITMENT TO THE POSTS OF** **PROVINCIAL MANAGEMENT SERVICE, ETC.**

**SUBJECT: BOTANY (PAPER-II)**

**TIME ALLOWED: THREE HOURS**

**MAXIMUM MARKS: 100**

**NOTE:** **Attempt Any FIVE Questions in All. Attempt ONE Question Each from Section 1, 2, 3 and TWO Questions from Section 4. Attempt in Urdu Or English.**

#### **SECTION-1**

- Q No. 1:**
- a) Discuss water conservation strategies adopted by a plant in a desert environment for its successful survival.
  - b) Describe the role of macronutrients in growth and development of a plant.
  - c) Define Vernalization and seed dormancy? Discuss in detail the ecological consequences of these phenomena.
  - d) Write a note on Biochemistry of carbohydrates.
- (5x4=20 Marks)**

- Q No. 2:**
- a) Write a note on factors affecting photosynthesis in plants.
  - b) Discuss the mechanism of action and role of ethylene in plants.
  - c) Write a note on photoperiodism. Discuss commonly occurring short-day, long-day and day neutral plants.
  - d) Describe the economic importance of secondary metabolites in plants.
- (5x4=20 Marks)**

#### **SECTION-2**

- Q No. 3:**
- a) Discuss the role of abiotic factors in growth and development of a plant.
  - b) How can you compare a marine and a forest ecosystem keeping in view their productivity?
  - c) What is a quadrant method for sampling vegetation? How can you compare this method with other sampling techniques?
  - d) Discuss the importance *ex-situ* conservation for rare, threatened and endangered plant species.
- (5x4=20 Marks)**

- Q No. 4:**
- a) Discuss different vegetation zones in the Punjab with reference to dominant plant species.
  - b) Write a note on structural and functional modifications for salinity tolerance in crop species.
  - c) Discuss the hazardous effects of industrial effluents on native vegetation of the Punjab region.
  - d) What is soil erosion? Discuss its causes and control in Pakistan.
- (5x4=20 Marks)**

**P.T.O**