

**Government of Karnataka  
Forest Department**

*Recruitment Examination (Main) for Range Forest Officer training 2007*

Optional Paper: **AGRICULTURE**  
**5<sup>th</sup> November, 2007 (10.30 am to 1.30 pm)**

**Maximum marks: 100**

**Time: 3 hours**

**All Questions are compulsory**

**PART A**

**Question 1:** Fill in the blanks

(10x1=10 marks)

- a) Nitrogen is absorbed by plants mainly in ----- form
- b) Chlorophyll contains -----as metallic element in its structure
- c) Gypsum is used to reclaim ----- soils
- d) Cyanobacteria are earlier called as ----- algae
- e) Scientific name of citrus leaf miner is -----
- f) The scientific name of causal organism for Late blight of potato is -----
- g) Urea contains nitrogen in ----- form
- h) If clay lattice has 1:1 of silica and aluminum, the clay is -  
-----
- i) Actinomycetes fix ----- in soil.
- j) The capacity of the soil to hold moisture against gravity is called as ----- of the soil.

**Question 2:** Match the following

(5x1= 5 marks)

- |                      |                    |
|----------------------|--------------------|
| a) Xenia             | i) wilt disease    |
| b) Fusarium          | ii) Seed treatment |
| c) Organo-mercurials | iii) Maize         |
| d) Greenhouse gas    | iv) Ozone          |
| e) Root-knot disease | v) Nematode        |
|                      | vi) Methane        |
|                      | vii) Foliar spray  |

**Question 3:** Define the following (5x1= 5 marks)

- a) *hybrid vigour / heterosis*
- b) *pureline*
- c) *Biological pest control*
- d) *Mutation breeding*
- e) *Smut diseases*

### **PART B**

**Question 4:** (5x4=20 marks)

Write short notes on **any five** of the following

- a) *Cation Exchange Capacity of soils*
- b) *C:N (Carbon:Nitrogen) ratio and its significance in soils and organic matter*
- c) *Land Capability classification*
- d) *Organic farming*
- e) *Hydroponics*
- f) *Photoperiodism in plants*
- g) *Global warming & Greenhouse gases*

**Question 5:** (3x4=12 marks)

Define & differentiate **any three** of the following

- a) *Particle density & Bulk density*
- b) *Soil fertility & Soil productivity*
- c) *Variable costs & Opportunity costs*
- d) *Laterisation & Podsolisation*
- e) *Infiltration & Percolation*

**Question 6:** (12 marks)

What is soil erosion and its implication? Elaborate on agents of soil erosion. What are agronomic, mechanical and agrostological measures of checking soil erosion ?

**Or**

What are the essential elements for plant growth ? Explain: the role of phosphorus in plant metabolism; forms of phosphorus availability in soils; phosphorus fixation in soil; fertilizers to replenish soil phosphorus.

**Question 7:**

(2x6=12marks)

Narrate the recommended package of improved practices for **any two** of the following crops in the state of Karnataka covering improved varieties, agronomic practices, irrigation schedule, fertilizer recommendations etc.

- 1) Maize
- 2) Cotton
- 3) Groundnut
- 4) Grape

**Question 8:**

(2x6= 12 marks)

Write about causal organism, symptoms, various preventive and control measures (agronomic, chemical & biological) in case of **any two** of the following plant diseases.

- 1) Red-rot of Sugarcane
- 2) Blast disease of paddy
- 3) Tikka leaf spot of Ground nut
- 4) Citrus canker

**Question 9:**

(12 marks)

Write about input-output relationship in farm economics and elaborate on law of diminishing returns (use graphical representation).

**Or**

The contribution of agriculture sector to national income comes down as the country develops economically. At the same time no economic development can be sustained if agriculture sector is neglected? What is your vision for agriculture sector in India in the scenario of globalization and privatization?

