

ARUNACHAL PRADESH PUBLIC SERVICE COMMISSION

SOIL SCIENCE PAPER – I

Time: 3 (Three) hours

Full marks: 100

(Group – A is compulsory. Attempt any FOUR questions from Group – B).

GROUP – A

(This Group is COMPULSORY)

Q.1. Answer any 10 (ten) of the following questions.

10x2=20

- a. What is soil? How it is different from land.
- b. Write different fraction of soil composition.
- c. Define soil texture. Which textual class is considered to be most ideal for growing upland crops?
- d. What is soil air? How it is different from atmosphere.
- e. What is Darcy's Law? Deduce it mathematically for saturated flow in soil.
- f. Write the basic concept of soil mineral.
- g. Give the major reasons of soil erosion in Arunachal Pradesh.
- h. How soil pH affects on growing plants.
- i. What is suitable pH for growing forest crops?
- j. What is humus? Write down the role of humus in soil.
- k. What do you mean by Green Manuring? Write down the methods of Green Manuring with suitable example.
- l. What is leg-haemoglobin? Discuss the role of leg-haemoglobin.

GROUP – B

(Answer any Four.)

Q.2. Attempt any 8 (eight)

2.5x8=20

- a. What is soil moisture? Describe the importance of soil moisture constant.
- b. Write about the different classes of soil water.
- c. Explain the movement of water in soil.
- d. Write the classification of organic matter with the suitable example.
- e. How humus form in soil in different environment?
- f. Write the principle of soil organic matter estimation.
- g. What is humic substance? How does it bind the soil particles?
- h. $AW = FC - PWP$ -explain the situation in soil.
- i. How do you estimate and maintain field capacity in a field growing crops?
- j. What are the erosion control measures on hilly terrain with more than 30% slope?

Q.3. Attempt any 5 (five)

4x5=20

(Write short notes on any five of the following)

- a. Master horizon
- b. Denitrification
- c. Amorphous clay

Q.4. Attempt any 5(five)

4x5=20

- a) Describe the different types of bulky organic manures.
- b) What practices will you suggest for preventing spread of weeds?
- c) What do you mean by winds-break? Describe why it is important.
- d) Describe the mechanism of mineral absorption?
- e) What are the climatic factors which effect fruit production? Briefly discuss.
- f) Name two common pests of Banana and describe the methods of their control.
- g) What is storage? State the different system of storage used in Arunachal Pradesh.

Q.5. Attempt any 2 (two)

10x2=20

- a) Define marketing? Give a classification of markets prevailing in your state.
- b) What do you mean by farm labour? Explain how farm labour efficiency can be increased?
- c) What is IC engine? Describe the working mode of an IC engine.

Q. 6. Explain any 4(four) of the following

5x4=20

- a) Cost of production
- b) Regulated market
- c) Inter cropping and relay cropping
- d) Role of micro organisms in fertility build up in soil
- e) Farm Planning in relation to resource availability.
- f) Criteria for organic farming and its scope in relation to increasing population.

Q. 7 Attempt any 2(two)

10x2=20

- a) Define biological control in relation to plant diseases. Describe the control measures of early blight of potato with biological approach.
- b) What is shifting cultivation? How would you like to suggest for a remedial and alternative to shifting cultivation for sustainable utilization of resources.
- c) What is Agricultural marketing cooperation? State the role of government in promoting the agricultural marketing in Arunachal Pradesh.

Q. 8. What are the plant growth regulators? State at least 10 of them and narrate about their use in horticulture. Write the importance of photoperiodism in flowering.

4+8+8=20

Q. No. 9. State the important characteristics of weed plants. What are crop bound, crop associated and season bound weeds? Discuss the biological methods of weed control.

6+6+8=20

Q. No. 10. Define essential plant nutrients. Describe the deficiency symptoms and functions of plant nutrients.

20

#####