## ARUNACHAL PRADESH PUBLIC SERVICE COMMISSION

#### SOIL SCIENCE PAPER - II

Time: 3 (Three) hours

Full marks: 100

2x10=20

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

## <u>GROUP – A</u>

#### (This Group is COMPULSORY)

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

a) What is 'Organic Farming? Write in short.

b) Draw a distinction between 'Weather & Climate'?

c) What are the different types of cloud precipitation?

d) What do you mean by the term ' conservation irrigation'? Explain.

e) State the causes of soil erosion.

f) Write the characteristics of sodic soils.

g) What do you mean by consumption? State in brief.

h) What are the major functions of green manuring crops?

i) Describe what do you mean by 'Farm mechanization'.

j) What is water conservation? State in your own words.

k) What is soil tilth? List the different types of soil tillage implements.

1) What do you mean by 'nutrient antagonism'?

#### GROUP – B

### (Answer any Four.)

Q.2. Attempt any 8 (eight)

a) Define marketing margin and marketing cost.

b) State the control measures of weeds that commonly found in oilseed crops.

c) Conservation agriculture vis-a vis sustainability of production system.

d) What is insecticide? How it is classified?

e) Briefly discuss what you mean by 'Nematodes'?

f) Distinguish between the terms 'Farm and Firm.

g) Write down the different cost concepts used in farm Management?

h) State what do you understand by nitrogen fixation?

i) What is Soil-Plant-Water relationship?

j) Write a note on Drainage engineering.

Q.3 Write short notes on any 4 (four) of the following

a) Farm Record Books

b) Role of A V aids in extension education

c) Plant protection equipments

d) Soil pollution

e) Integrated Pest Management (IPM)

f) Agro forestry system

5x4=20

2.5x8=20

- d. Afforestation
- e. pH dependent charges
- f. Soil structure

# Q. 4. Attempt any 4 (four)

- a. What do you mean by carbon sequestration? Write the importance of carbon sequestration in carbon budgeting of hilly areas.
- b. What is C:N ratio ? Explain the role of C: N ratio in soil fertility.
- c. Write the forms of water movement in soil. State the differences between saturated flow and unsaturated flow of water.
- d. Define soil colloids. Write the phases of soil colloids with suitable example.
- e. What is parent material? How it controls the composition of soil?

# Q. 5. Attempt any 2 (two)

- a. What is soil biomass? Give an account of major microorganism present in forest land, cultivated land and grazing land.
- b. What is biological nitrogen fixation? Write about different group of nitrogen fixer with example.
- c. Explain the classification of soil micro organism on the basis oxygen, temperature and mode of nutrition.

# Q. 6. Attempt any 4 (four)

- a. Define nitrification. Write its significances in agriculture.
- b. What are the factors affecting organic matter decomposition
- c. Describe the most suitable method of soil texture evaluation in field.
- d. What is VAM? Write the roles of VAM in plant nutrition.
- e. Define ammonification. Describe the pathway of transformation of amino acids, amines and other organic nitrogenous compound to NH4+

## Q.7. Attempt any 2 (two)

- a. What do you mean by land capability classification? Describe the major factors determining Land capability classification. Discuss the limitation of each class.
- b. What is soil survey? Why it is important? Write about the detail soil survey method?
- c. What are the types of soil colloids? Justify the importance of silicate clays in agriculture.
- What do you mean by soil profile? Give a clear diagrammatic description of a typical soil profile. Q. 8. Distinguish Podzolisation from Laterisation from pedogenic points of view. 20
- Q. 9. What is watershed management? Write the objectives of watershed management practices. Discuss the socio-economic aspects of a model watershed management project. 20
- Q.10. What is soil erosion? Draw the basic concept of a model watershed suitable to protect river, channel and hill erosion in your region.

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20

10x2=20

5x4=20

10x2=20

5x4=20