

--	--	--	--	--	--	--	--	--	--



GIET UNIVERSITY, GUNUPUR – 765022

B. Sc (AG) (Fifth Semester – Regular) Examinations, December – 2020
AG-369 – RAINFED AGRICULTURE AND WATERSHED MANAGEMENT

Time: 2 hrs

Maximum: 50 Marks

The figures in the right-hand margin indicate marks.

PART – A

Q1. Fill in the blanks with suitable word / figure. **(10 × 0.5 = 5 Marks)**

- a. The chemicals used to check transpiration losses of water are called _____.
- b. Change in normal crop planning to meet weather abnormalities is termed as _____.
- c. The length of growing period, suitable for growing only a single dry land crop is generally _____ weeks.
- d. CRIDA is located at _____.
- e. The concept of 'ideotype' was introduced by _____ in 1968.
- f. Stripping of leaves helps to control _____ loss temporarily.
- g. The long-term average annual rainfall in Odisha is _____ mm.
- h. If water stress occurs before flowering, crop duration will be _____.
- i. A natural hydrological unit having common runoff outlet point is termed as _____.
- j. Micro watershed covers an area of about _____ ha.

Q. 2. Define/ explain the following in one or two sentences. **(5 × 1 = 5 Marks)**

- a. Agricultural drought
- b. Dryland farming
- c. Moisture deficit index
- d. Contingent cropping
- e. Length of growing season

Q3. Choose the most appropriate answer from the following. **(10 × 0.5 = 5 Marks)**

- a. Under the condition of sufficient amount of soil moisture, which one of the following is responsible for water deficits on hot mid days?

(i) Low transpiration	(ii) High Transpiration
(iii) High absorption	(iv) Low absorption
- b. Which of the following amino acids is a good indicator of moisture stress?

(i) Lysine	(ii) Methionine
(iii) Proline	(iv) Tryptophan
- c. Which one of the following crops is the most drought tolerant?

(i) Maize	(ii) Ragi
(iii) Bajra	(iv) Wheat
- d. Which one of the following nutrients is universally deficient in soils of dry region?

(i) Nitrogen	(ii) Phosphorus
--------------	-----------------

--	--	--	--	--	--	--	--	--	--

- (iii) Potassium (iv) Sulphur
- e. Physiological drought of plant is caused by _____.
 (i) salinity & alkalinity (ii) excess water
 (iii) humidity (iv) diseases
- f. Which one of the following microorganism group helps the plant to tolerant moisture stress in soil?
 (i) Rhizobium (ii) Azospirillum
 (iii) Azotobacter (iv) Mycorrhiza
- g. Which one of the following cropping is recommended for the area receiving annual rainfall of 650-750 mm and having length of growing period of 140-180 days?
 (i) Sole cropping (ii) Double cropping
 (iii) Inter cropping (iv) Multiple cropping
- h. Rapid phenological development and remobilisation of pre-anthesis assimilates to grain are some of the mechanisms of _____.
 (i) Drought escape (ii) Drought tolerance
 (iii) Drought avoidance (iv) None of these
- i. Which one of the following has a considerable importance for mid-season corrections mitigating water stress in crop plants?
 (i) Planofix (ii) Ethrel
 (iii) Polaris (iv) Glyphosate
- j. Crop growing season of dryland farming is _____ days.
 (i) 50-70 (ii) 75-120
 (iii) 100-150 (iv) 140-200

Q4. Write True or False against each statement

(10 × 0.5 = 5 Marks)

- Mini watershed covers an area of 100 – 1000 ha.
- As per Thornthwaite's classification, Odisha comes under the 'sub-humid' category, implying deficient winter rains.
- The simplest way of adaptation of plant to drought is evasion.
- Dry farming areas receive an annual rainfall of 500 mm or less.
- Physiological drought occurs when plant roots fail to absorb water and nutrients from the soil due to increased concentration of soil solution.
- Plastic emulsion may be used as an antitranspirant.
- India meteorology department defines meteorological drought as a situation when there is a 50% decrease in the normal rainfall for a given period in a region.
- Dry spell is rainless period more than 25 days in light soils areas.
- Crop ideotype refers to model plant or ideal plant type for a specific environment.
- In rainfed farming tree-based farming system may be recommended.

--	--	--	--	--	--	--	--	--	--

PART – B

Attempt ANY FIVE questions. All question carries equal marks (6 × 5 = 30 Marks)

5. Briefly give the concept of watershed management. What are the objectives and principles of watershed management?
6. Discuss crop management practices for efficient utilization of water in rainfed areas. Give suitable examples.
7. What are the different types of drought? Describe the effect of water deficit on physiological and morphological characteristics of the plants.
8. What are the major problems of rainfed agriculture in India? Discuss the prospects of rainfed agriculture in your state.
9. What is water harvesting? Describe the importance and techniques of water harvesting.
10. What is contingent crop planning? What are the contingent management practices done in the standing crop to overcome the unfavourable soil moisture conditions due to prolonged dry spells?

--- End of Paper ---