



COLLEGE OF AGRICULTURE, FISHERIES AND FORESTRY

SCHOOL OF AGRICULTURAL SCIENCES

DEPARTMENT OF CROP PRODUCTION

BACHELOR OF SCIENCE IN AGRICULTURE YEAR I

AGM-501 (Principles of Agricultural Meteorology)

FINAL EXAM TRIMESTER- 1, 2017

DURATION 3 HOURS

INSTRUCTIONS TO STUDENTS

1. This paper consists for 6 pages. Please check to see that your paper is complete.
2. Printed or written material is not allowed in examination hall.
3. Answer all the questions in the answer booklet. Number your answers correctly in the answer booklet.
4. Attach all the sheets used as your answer paper in their correct sequence and secure with a string.
5. Use both sides of the answer sheet and write your candidate number on each sheet.

SECTION	PARTICULARS	TOTAL MARKS	THE ALLOCATIONS
A	Part 1: Multiple Choice Questions Part 2: Fill in the Blanks Part 3: True and False Part 4: Matching	30	30 minutes
B	Short answers	30	60 minutes
C	Long answers	40	90 minutes
	Total	100	

SECTION –A

There are three parts in this section. All the questions are compulsory. In your answer booklet write the question number followed by the answer.

Part 1: Multiple Choice Questions. Pick the correct answer. (10×1=10 Marks)

1. is the process of transmission of energy from one body to another without the aid of a material medium (solid, liquid, or gas)
 - a. Radiation
 - b. Conduction
 - c. Convction
 - d. None of these

2. The albedo value for cropped field is.....
 - a. 75-79
 - b. 12-13
 - c. 7-10
 - d. 15-25

3. The dampness (wetness) of air is called
 - a. Acidity
 - b. Acid rain
 - c. Humidity
 - d. Vapor content

4. A physical process in which liquid water is converted into its vapor is
 - a. Transpiration
 - b. Evapotranspiration
 - c. Evaporation
 - d. None of these

5. Combined loss of water vapor from transpiration and evaporation is
 - a. Transpiration
 - b. Evapotranspiration
 - c. Evaporation
 - d. None of these

6. An instrument or apparatus for measuring plant transpiration is known as.....
 - a. Evaporimeter
 - b. Potometer
 - c. Rain gauge
 - d. Photometer

7. Due to presence of layer of atmosphere radio communication is possible.
 - a. Troposphere
 - b. Stratosphere
 - c. Thermosphere
 - d. None of the above
8. is used to determine the wind speed.
 - a. Wind vane
 - b. Anemometer
 - c. Psychrometer
 - d. Barometer
9. refers to the direction a wind comes from.
 - a. Windward
 - b. Leeward
 - c. Seaward
 - d. Howard
10. "An applied science which deals with the relationship between weather/climatic conditions and agricultural production" is known as
 - a. Meteorology
 - b. Agro meteorology
 - c. Climatology
 - d. None of these

Part 2: Fill in the blanks.

(10×1 = 10 Marks)

1. At a relative humidity of 100%, the air is
2. Water can only evaporate from the plant if the water potential is in the air surrounding the plant.
3. The atmosphere has a mass of about kg.
4. An instrument that is used to determine atmospheric pressure is known as
5. The atmosphere provides to build biomass in photosynthesis.
6. Fiji enjoys a climate with heavy rain under prevailing conditions.
7. Poor light availability causes abnormalities and in plants.
8. CO₂ contributes most.....to the anthropogenic greenhouse effect.
9. The study of earth's atmosphere and its processes is called.....
10. is defined as a typical physical condition of the atmosphere.

Part 3: Mark True or False

(10×.5 =5 Marks)

1. Warm air is more dense than cold air. (True/False)
2. The effectiveness of isolation in heating the earth's surface is largely determined by altitude. (True/False)
3. Air in horizontal motion is known as prevailing winds. (True/False)
4. Low pressure usually results in good weather. (True/False)
5. Water vapor accounts for 80% of the atmospheric greenhouse effect. (True/False)
6. Black body is an ideal hypothetical body which absorbs none of the electromagnetic radiation falling on it. (True/False)
7. Albedo is defined as the ratio between incident radiations to the reflected radiation on a crop field, snow, leaves. (True/False)
8. The higher the wind speed, the lower the process of evapotranspiration. (True/False)
9. There are four points of temperature which influence the growth of crop plants termed as "cardinal points". (True/False)
10. Freezing damage is caused by the formation of ice crystals in the intracellular spaces and extracellular spaces. (True/False)

Part 4: Matching

(5×1 =5 Marks)

S/N	Instrument	Uses	Answers
1	Psychrometer	An instrument use to measure the amount of rainfall.	
2	Photometer	An instrument use to determine the atmospheric humidity.	
3	Wind vane	An instrument use to determine light intensity.	
4	Anemometer	An instrument use to determine wind direction.	
5	Rain gauge	An instrument use to determine wind speed.	

SECTION- B Short Answers

(6×5 = 30 Marks)

Answer all the questions. Each question carries 5 marks.

1. Enlist environmental factors affecting transpiration?
2. Calculate reference crop evaporation using following information.
Type of pan: Class A evaporation pan
Water depth in pan on day 1=140mm
Water depth in pan on day 2=133mm after 24 hours
Rain fall (during 24 hours)= Zero mm
3. What are different functions of light?
4. Define albedo. Support your answer with suitable example.
5. Maximum and minimum temperatures for January 1st 2015 were 32.1°C and 20.3°C respectively. What was the daily mean temperature for January 1st 2015?
6. Convert 37°C to Fahrenheit scale.

Section-C (Long answers) (5×8=40 Marks)

Answer only four from the following questions. Question 1 is compulsory for all. Each question carries 10 marks.

1. Following is the evaporation (mm) data for first six months of year 2011.

July	August	September	October	November	December
705	690	685	861	810	944

- a) Calculate mean evaporation for this period.
 - b) Calculate range of evaporation for this period.
 - c) Calculate mean evaporation for second quarter of year 2011.
2. Write an essay on the injuries caused by high air temperature in plants.
 3. Differentiate and discuss in detail between cyclone and anticyclones in detail.
 4. Define Agricultural Meteorology. Discuss its significance in agriculture.
 5. Enlist major differences between weather and climate.
 6. What is weather forecasting? Discuss utility of weather forecasts in detail?

7. List down the steps of using psychrometer in determination relative humidity of atmosphere.
8. Using the information below, calculate the percentage relative humidity.

Dry bulb temperature: 14°C

Wet bulb temperature: 10°C

Relative Humidity (%)

Dry-Bulb Temperature (°C)	Difference Between Wet-Bulb and Dry-Bulb Temperatures (C°)															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
-20	100	28														
-18	100	40														
-16	100	48														
-14	100	55	11													
-12	100	61	23													
-10	100	66	33													
-8	100	71	41	13												
-6	100	73	48	20												
-4	100	77	54	32	11											
-2	100	79	58	37	20	11										
0	100	81	63	45	28	11										
2	100	83	67	51	36	20	6									
4	100	85	70	56	42	27	14									
6	100	86	72	59	46	35	22	10								
8	100	87	74	62	51	39	28	17	6							
10	100	88	76	65	54	43	33	24	13	4						
12	100	88	78	67	57	48	38	28	19	10	2					
14	100	89	79	69	60	50	41	33	25	16	8	1				
16	100	90	80	71	62	54	45	37	29	21	14	7	1			
18	100	91	81	72	64	56	48	40	33	26	19	12	5			
20	100	91	82	74	66	58	51	44	36	30	23	17	11	9		
22	100	92	83	75	68	60	53	46	40	33	27	21	15	10	4	
24	100	92	84	76	69	62	55	49	42	36	30	25	20	14	9	4
26	100	92	85	77	70	64	57	51	45	39	34	28	23	18	13	9
28	100	93	86	78	71	65	59	53	47	42	36	31	26	21	17	12
30	100	93	86	79	72	66	61	55	49	44	39	34	29	25	20	16

THE END