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Daffodil International University

Department of Agricultural Science

Course Title: Cropping System and Crop Farm Management, Course Code: 0811 2206

Semester: Fall 26, Sec: C

Final Examination

Time: 1 Hours Full Marks: 40

Question 1. Calculations (Farm records, cropping system and irrigation) 20

(a) A farmer has 2.5 ha of land. The cropping pattern of each plot in one year (Kharif-I – Kharif-II – Rabi, as listed) and the field duration of each crop are given below. (7)

Plot	Area (ha)	Cropping pattern (duration in days)
A	0.8	Mustard (85) – Boro (145) – T. Aman (125)
B	0.6	Potato (90) – Fallow – T. Aman (125)
C	0.4	Boro (145) – Fallow – T. Aman (125)
D	0.4	Fallow – Fallow – T. Aman (125)
Homestead and pond	0.3	Not cropped

(i) Find the net cropped area and gross cropped area. (ii) Calculate the cropping intensity and the area sown more than once.

(b) Wheat + lentil intercropping (2 : 1 row ratio) was compared with sole crops in a rabi trial. Intercrop yields are per hectare of the whole plot. Field duration: wheat 115 days, lentil 95 days; the intercropping system occupied the land for 115 days. (7)

Crop	Sole crop yield	Intercrop yield
Wheat	4,500 kg/ha	3.15 t/ha
Lentil	1.2 t/ha	0.60 t/ha

(i) Calculate the partial LERs and the total LER. (ii) Interpret the result and find the percentage of land saved. (iii) Calculate the ATER and comment on it.

(c) A wheat field of 0.6 ha is to be irrigated at the soil moisture status below. Application efficiency is 70% and conveyance efficiency is 80%. Calculate the soil moisture deficit of each layer, the net irrigation water requirement (NIWR, cm), the gross irrigation water requirement (GIWR, cm), the pumping requirement (PR, cm) and the total volume of water to be pumped (m^3). (6)

Soil layer (cm)	Field capacity, FC (%)	Present moisture, ω (%)	Apparent specific gravity, As
0 – 15	28	18	1.35
15 – 40	26	16	1.40
40 – 60	24	20	1.50

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Question 2.

Prepare a proforma of a cultivation register and fill it up with the cultivation of **lentil** in the following farm. Work out every cost in taka and show the column totals, the value of the yield and the profit over operational cost.

Farm and field information: DIU Farm; Field reference: Plot No. 9, Block B; Area: 1 ha; Crop: Lentil; Nature of experiment: General cultivation. Labourer rate: Tk 500/day. Bullock pair rate: Tk 500/pair/day.

Manures and fertilizers used: Cowdung 3 tons at Tk 1,000/ton; Urea 40 kg at Tk 28/kg; TSP 80 kg at Tk 27/kg; MoP 40 kg at Tk 20/kg. **Seed:** 40 kg at Tk 120/kg. **Pesticide (miscellaneous):** Tk 800.

Date	Work done	Area	Labour (No.)	Bullock pair (No.) / Input
12.11.2026	1st ploughing	1 ha	4	4
14.11.2026	2nd ploughing	1 ha	4	4
15.11.2026	Manure and fertilizer application	1 ha	3	All manures and fertilizers listed above
16.11.2026	Sowing	1 ha	6	All seed listed above
12.12.2026	Weeding	1 ha	10	–
05.01.2027	Plant protection (spraying)	1 ha	2	Pesticide Tk 800
20.02.2027	Harvesting	1 ha	12	–
24.02.2027	Threshing, drying and cleaning	1 ha	8	–

Yield: Lentil seed 1,000 kg at Tk 110/kg; stover 1,500 kg at Tk 4/kg. Stock book: enter the overseer's initial and the value against each product. Use the Remarks column for any note.

Question 3. Overseer's Diary

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(a) Define Overseer's Diary, master roll, cultivation register. State the function of prepare it. (3)

(b) List the importance of making farm layout. (4)

Question 4. Irrigation machinery and water requirement

8

(a) What is BCR ratio. Why it is important to calculate BCR ratio to run a farm. Explain with result found in BCR ratio. (4)

(c) Explain what is meant by net irrigation water requirement (NIWR). Describe the steps by which NIWR is adjusted for application and conveyance losses to give the gross irrigation water requirement (GIWR) and the pumping requirement (PR). Write the formula for the total volume of water to be pumped for a field of given area. (4)