

# Practical Manual

## Agricultural Finance and Cooperation

Course Code AEC 226 Credit Hours 3(2+1)  
(For Undergraduate Agricultural students)

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2020

College of Agriculture  
RANI LAKSHMI BAI CENTRAL AGRICULTURAL UNIVERSITY  
Jhansi-284003

**Syllabus:** Determination of most profitable level of capital use. Optimum allocation of limited amount of capital among different enterprise. Analysis of progress and performance of cooperatives using published data. Analysis of progress and performance of commercial banks and RRBs using published data. Visit to a commercial bank, cooperative bank and cooperative society to acquire firsthand knowledge of their management, schemes and procedures. Estimation of credit requirement of farm business – A case study. Preparation and analysis of balance sheet – A case study. Preparation and analysis of income statement – A case study. Appraisal of a loan proposal – A case study. Techno-economic parameters for preparation of projects. Preparation of Bankable projects for various agricultural products and its value added products. Seminar on selected topics.

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**Exercise 3:** Suppose Mr. Pankaj, a farmer based at Jhansi district, has Rs.25 lakh to invest in the green house to realize a product combination of tomato (Y1) and capsicum (Y2). Suggest him a suitable product combination with the following yield levels given the price of tomato (py1) being Rs.14.75 per kg and price of capsicum (Py2) being Rs. 60.50 per kg.

Tomato yield (Y1) in Qtl	25	50	75	100	125	150	175
Capsicum yield (Y2) in Qtl	72	68	62	53	42	28	10

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**Exercise 4:** Apply equi-marginal returns principle to optimally allocate the capital resource.

Amount of capital used in Rs.		Added Returns in Rs		
		Crop	Dairy	Poultry
First	10000	20000	19000	21000
Second	10000	19000	18000	19000
Third	10000	15000	15000	15000
Fourth	10000	12000	11000	12000
Fifth	10000	10000	9000	11000
Total returns from Rs.	50000	76000	72000	78000
Net profit Rs.		26000	22000	28000

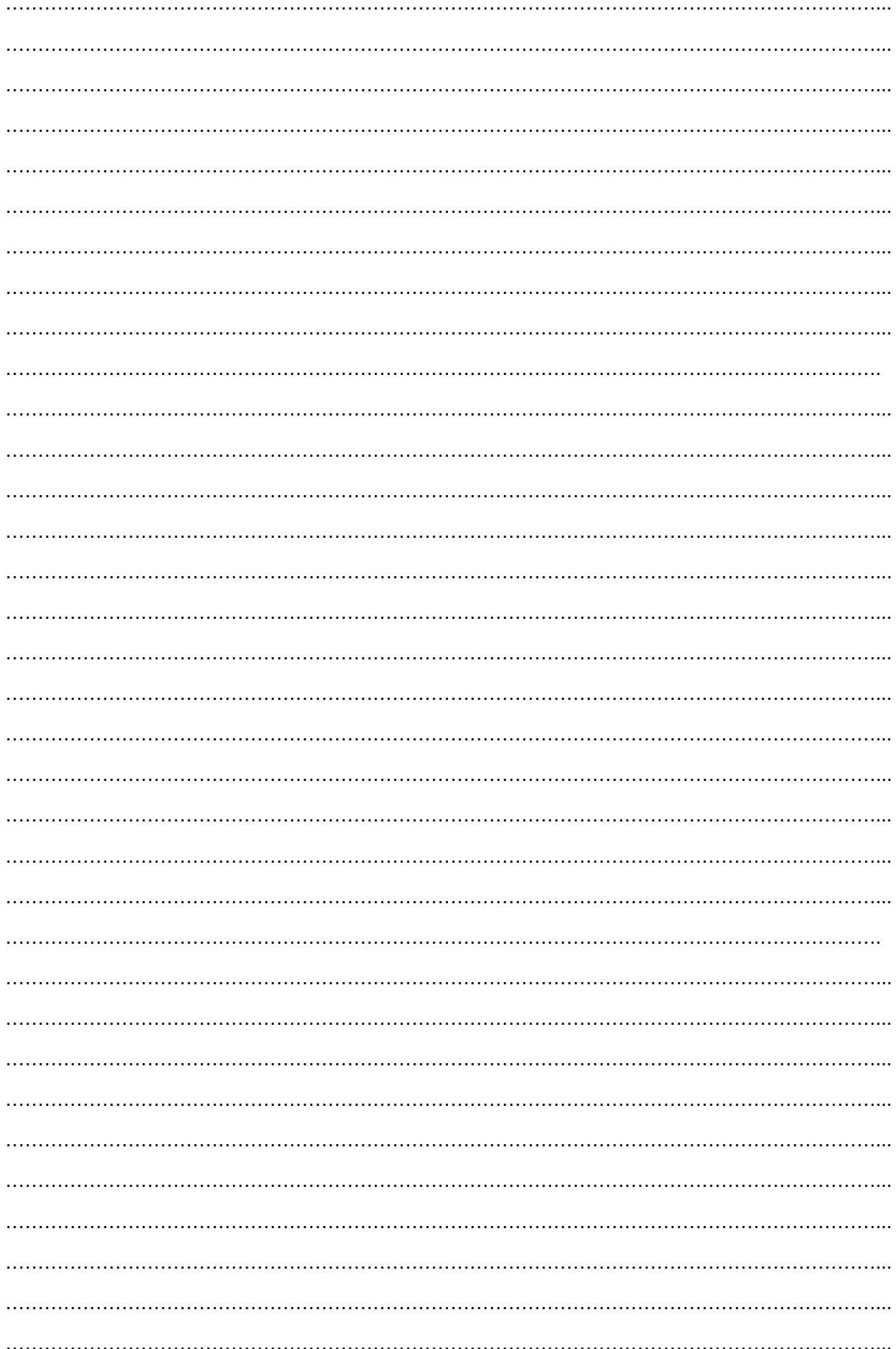
Expenditure according to principle of equi-marginal return

Year	Amount	Enterprise	Marginal Return
First	10000		
Second	10000		
Third	10000		
Fourth	10000		
Fifth	10000		
Total	50,000		
Net Profit			

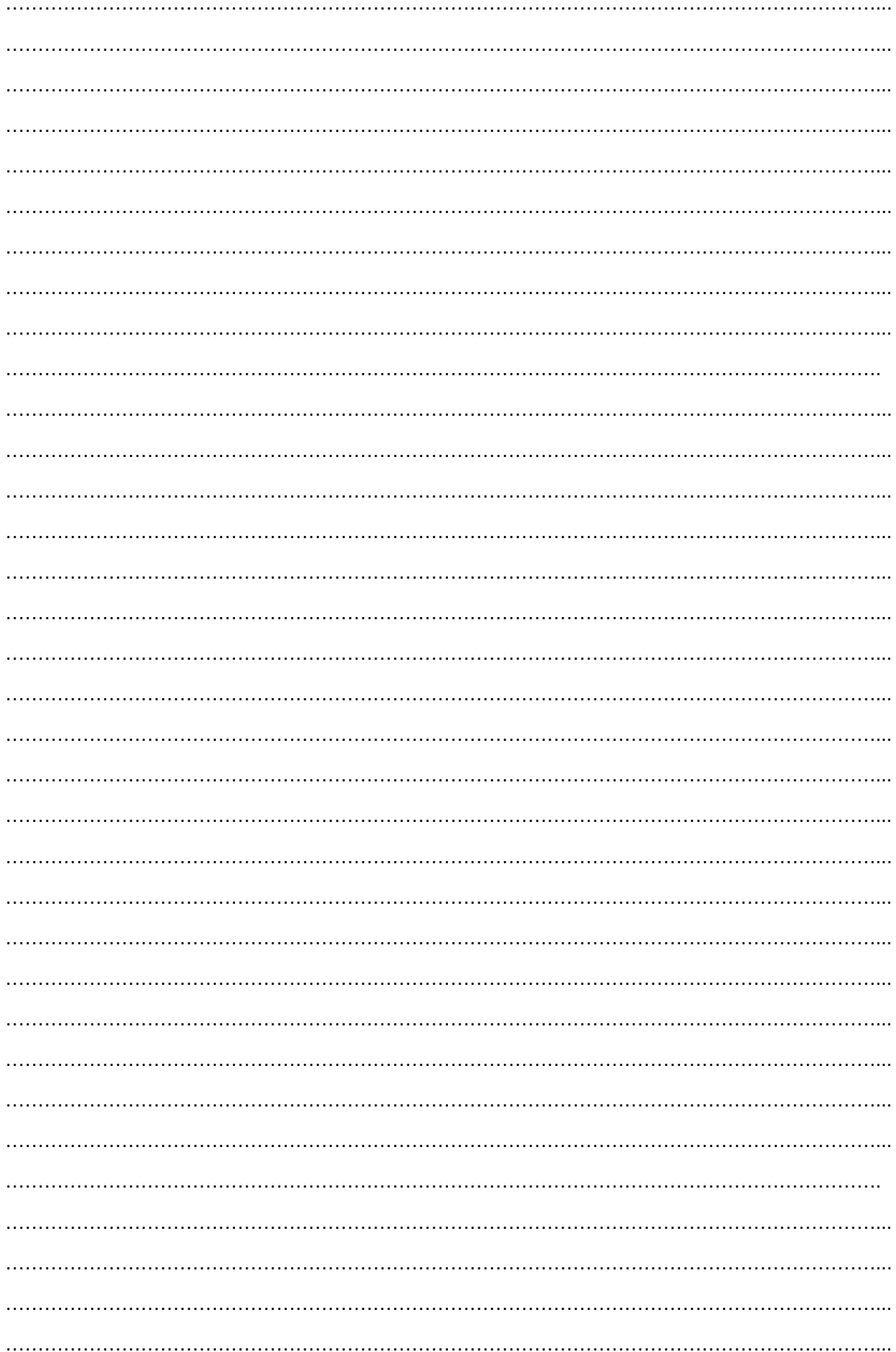
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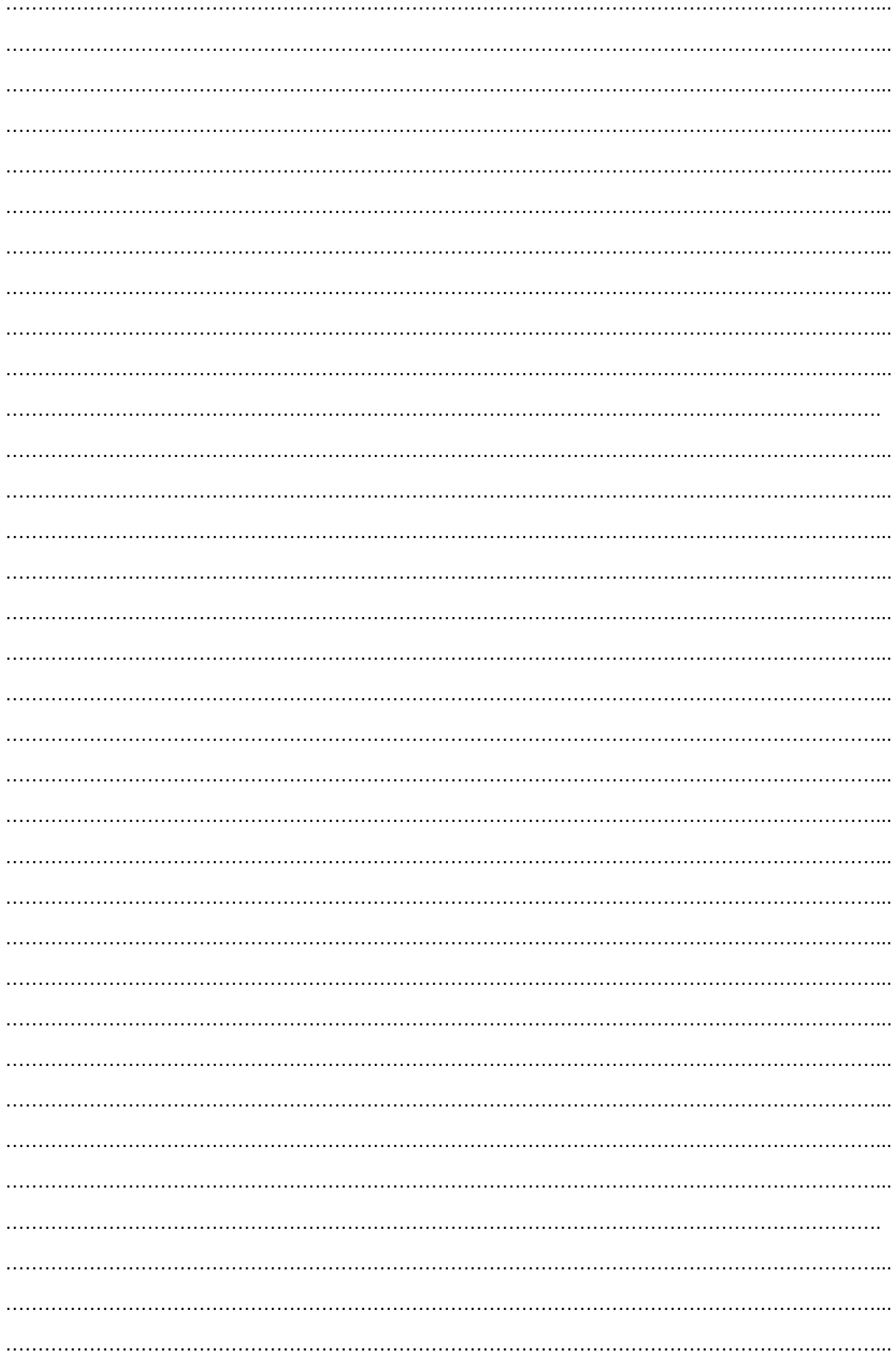




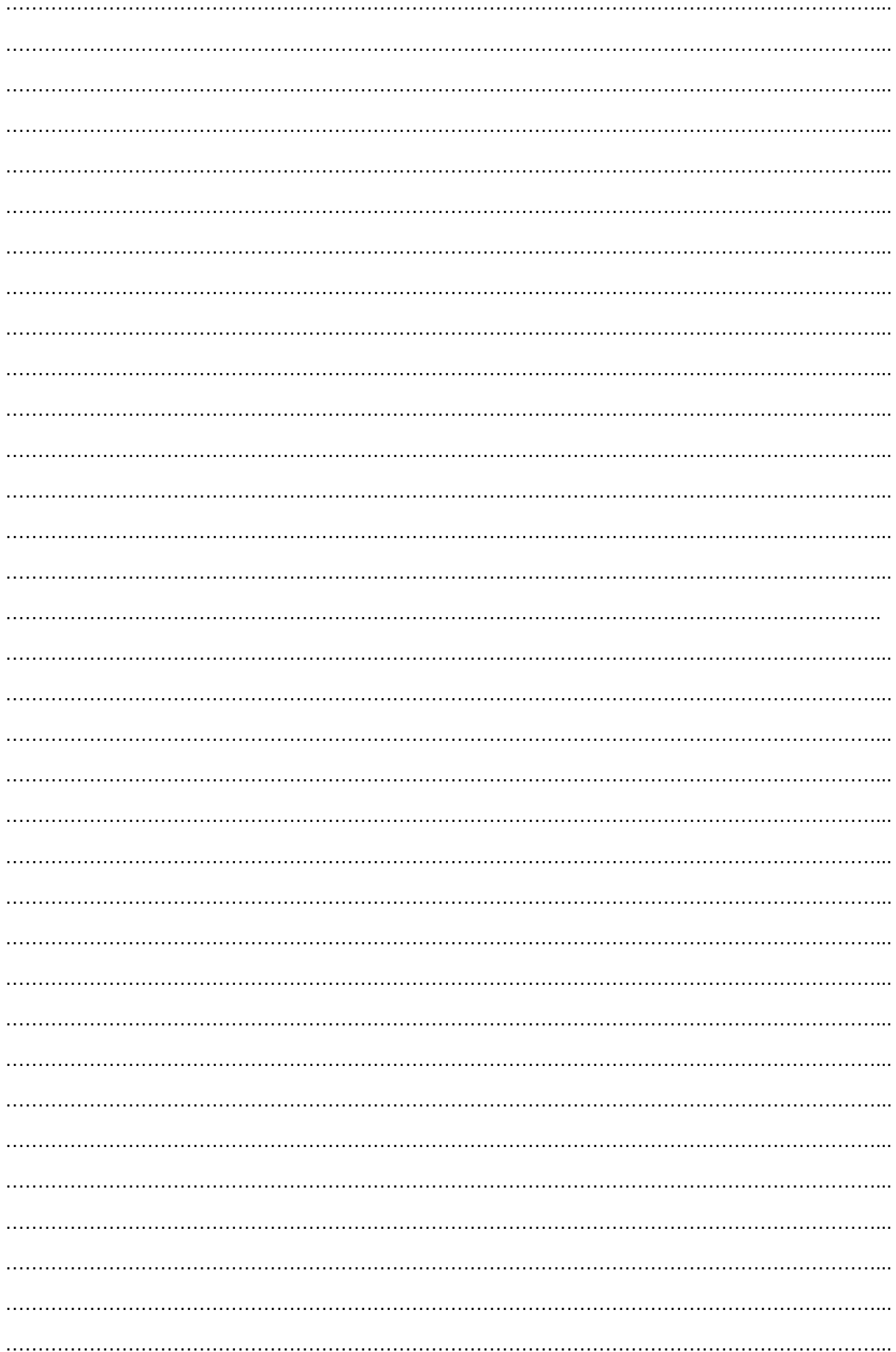






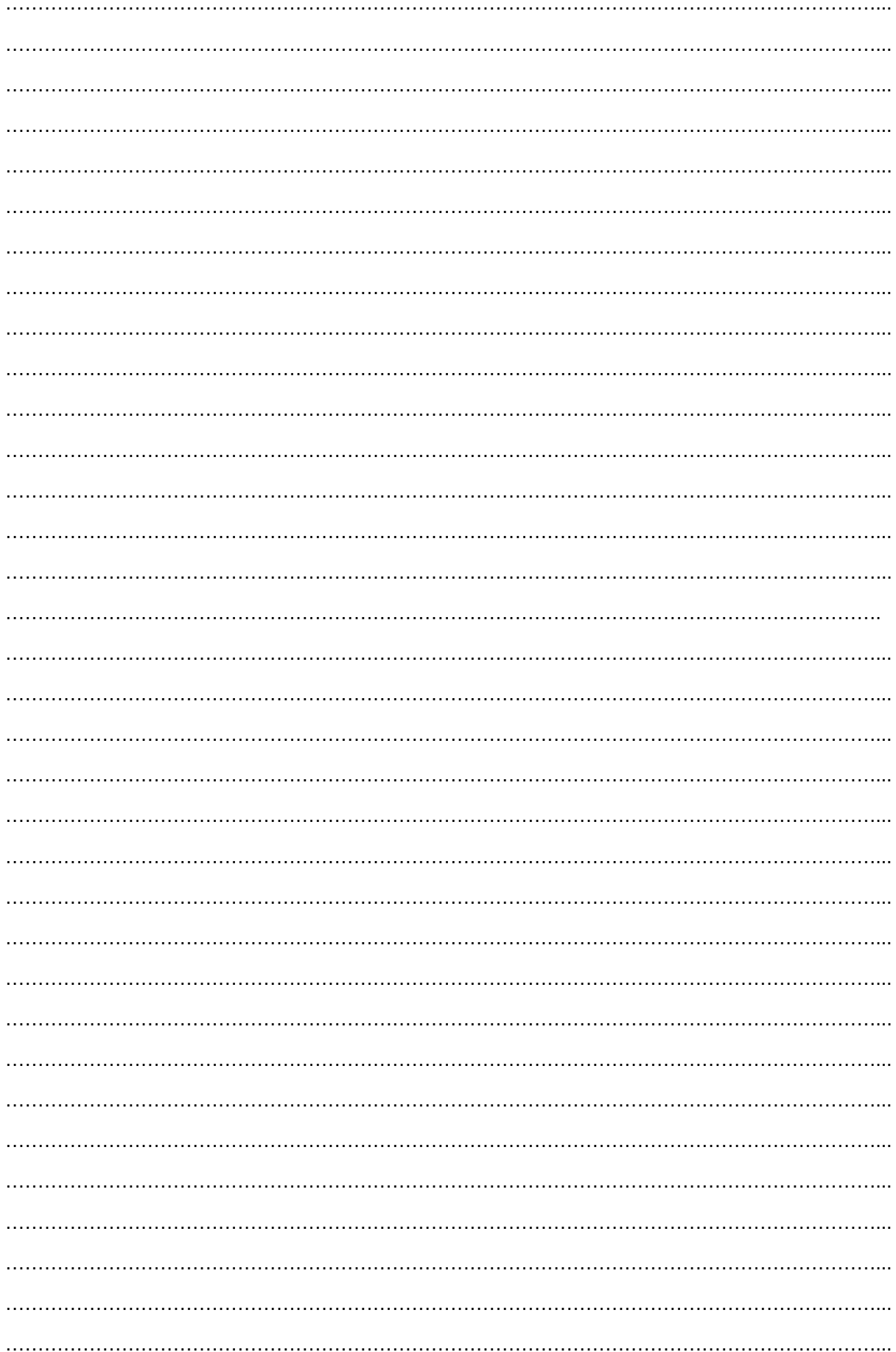












## Exercise No. 7

### Objective: Estimation of Credit Requirement of Farm Business – A Case Study

Estimate the credit requirement of a groundnut farmer per ha using cost of cultivation approach

S. No.	Item	Physical unit	Value (Rs.)	Working capital
1.	Farm Buildings (Rs.)	1	1.75 lakh	-
2.	Tractor (Rs.)	1	15 lakh	-
3.	Land value (Rs. / ha)	1	22 lakh	-
4.	Depreciation rate of tractor @ 12.50%	10% x 15 lakh	= 15 lakh x	150,000
5.	Depreciation rate of farm buildings	7.5%	=1.75 lakh x 7.5%	13,125
6.	Seed	100 kg @ Rs.65/ kg	6500	6500
7.	Fertilizer	200 kg @ Rs.72/ kg	14,400	14,400
8.	Manures–purchased (Rs./ha)	5 tonnes @ Rs.4000 per tonne	20,000	20,000
9.	Plant protection chemicals (Rs./ha)	4 litres @ Rs.800 per litre	3200	3200
10.	Human labour (Rs./ha)	Rs.300/-day for 43 man-days	12,900	12,900
11.	Animal labour (Rs./ha)	4 bullock pair @ 1200 / pair	4800	4800
12.	Working capital			224,925
13.	Interest on working capital (7%)			15,745
14.	Total working capital (Cost A)			240,760
15.	Depreciation amount			163,125
16.	Credit requirement = Cost A – Depreciation			77,545

In this example, the credit requirement of a groundnut farmer comes out to be Rs.77,545 for per ha.

**Proportionate cost approach:** The credit requirement of a farmer can also be determined by the proportion of credit requirement of an  $i^{\text{th}}$  farmer for  $j^{\text{th}}$  crop ( $P_{ij}$ ). As the proportion of credit requirement ( $P_i$ ) varies upon the farm size ( $A_{ij}$ ), the specification will be,

Credit requirement = Cost A X  $P_{ij}$  X  $A_{ij}$

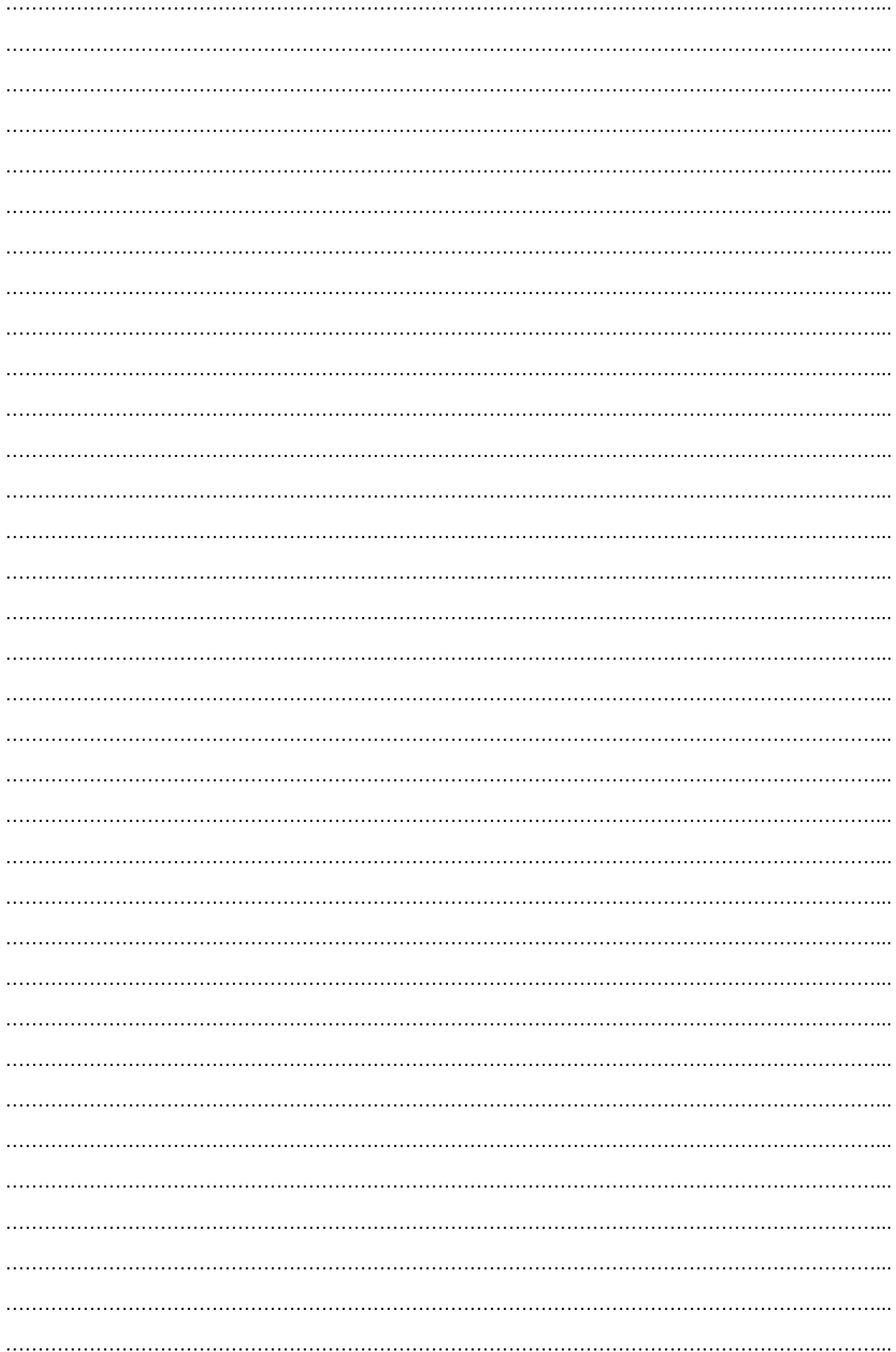
Type of farmer	Proportion ( $P_{ij}$ )	Cost A (Rs.)	Area ( $A_{ij}$ )	Credit Requirement estimation = Cost A x $P_{ij}$ x $A_{ij}$	Credit Required (Rs.)
Small	55%	240,760	1	= 240,760*0.55*1	132418
Medium	45%	240,760	3	= 240,760*0.45*3	325026
Large	35%	240,760	5	= 240,760*0.35*5	421330

**Exercise 1:** Estimate the credit requirement of a 1 ha groundnut farmer with the given data using (i) Gross value approach. (ii) Cost of cultivation approach, and (iii) proportionate cost approach. Specify appropriate formula as required.

Sl. No.	Item	Rs./ha
1.	Farm Buildings (Rs.)	1.75 lakh
2.	Tractor (Rs.)	12.5 lakh
3.	Land value (Rs./ha)	22 lakh
4.	Depreciation rate of tractor	12.50%
5.	Depreciation rate of farm buildings	7.5%
6.	Seed (Rs./ha)	6500
7.	Fertilizer (Rs./ha)	7200
8.	Manures – purchase (Rs./ha)	1250 / quintals for 5 tonnes
9.	Plant protection chemicals (Rs./ha)	6800
10.	Human labour (Rs./ha)	Rs.300/- day for 43 man days
11.	Animal labour (Rs./ha)	4 bullock pair @ 1200/- pair

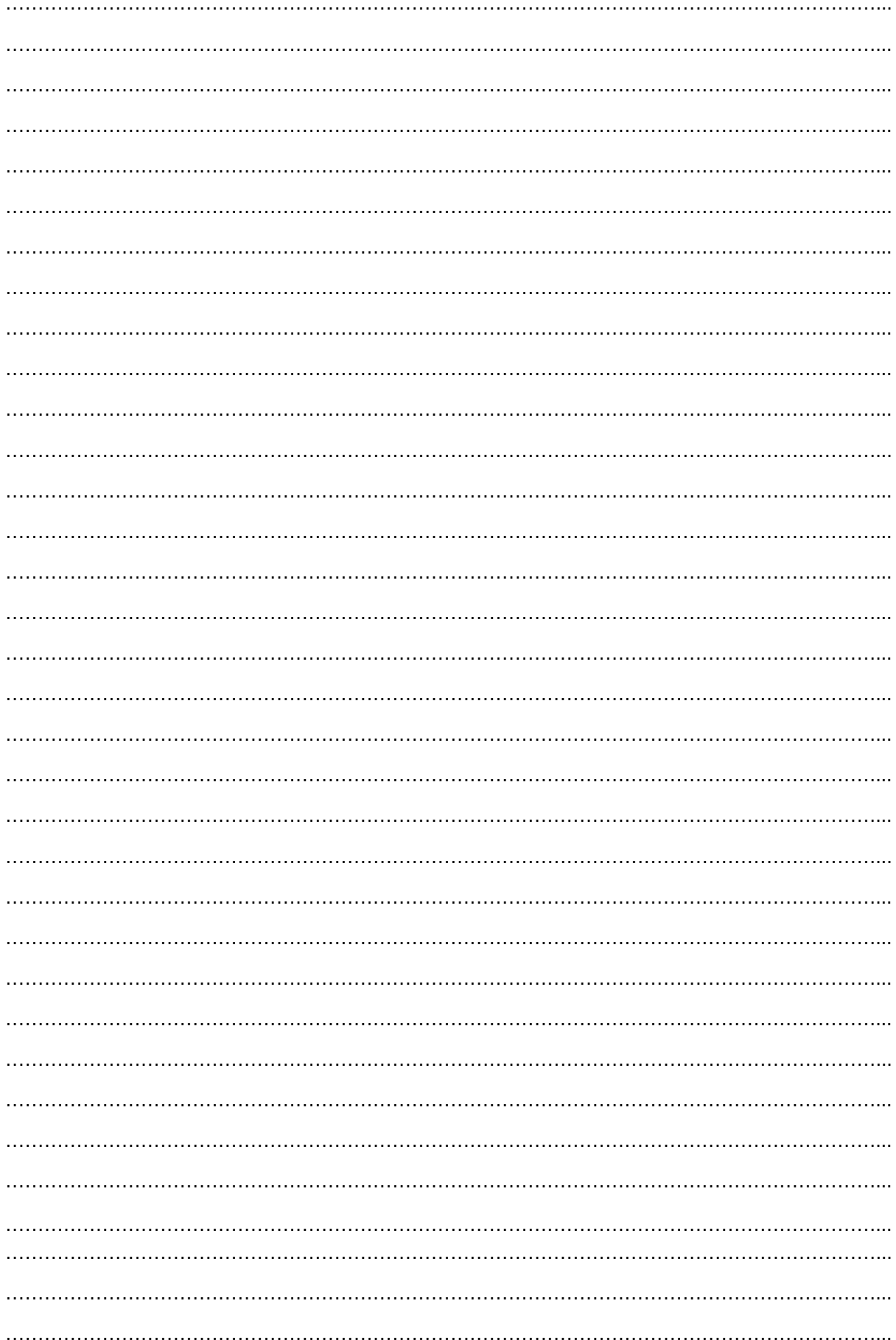














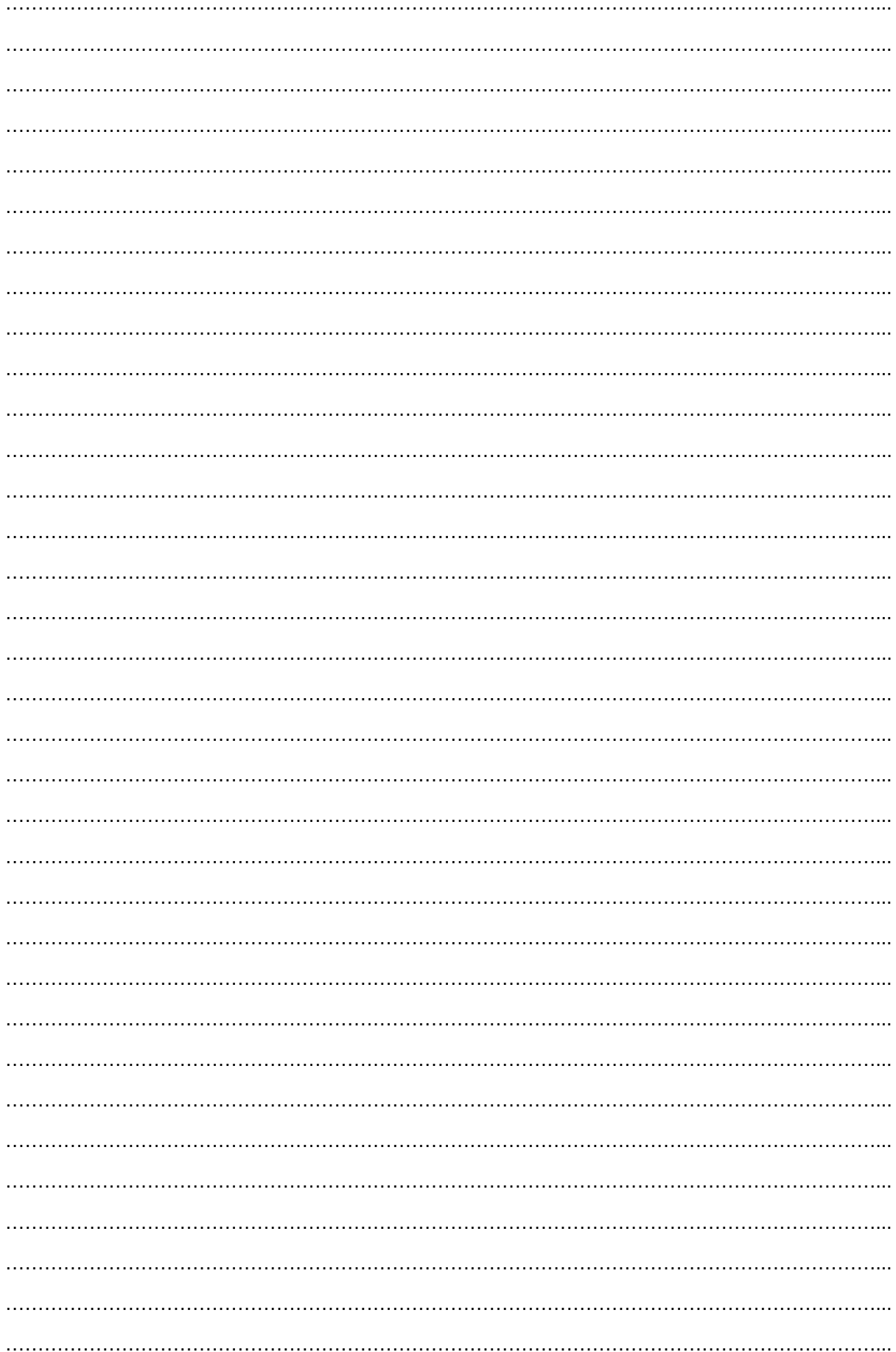
**Exercise: 3:** From the given table, work out the total cash income, total cash expenses, net cash farm income, total capital sales, net capital flow, total other income, total other expenditure, net other income less expenditure, net cash farm income, net capital expenditure, net income, net other income, cash surplus and closing bank balance for all the four quarter's and for the whole year.

**Quarterly Cash flow summary for the period from July, 2019 – June 31, 2020**

Sl. No.	Particulars	I Quarter July'16- Sep'16	II Quarter Oct'16 - Dec'16	III Quarter Jan2017- Mar2017	IV Quarter Apr2017- Jun2017	Yearly Total July 2016 - June 2017
<b>Section 1: Net cash farm Income</b>						
<b>A.</b>	<b>Cash Income</b>					
1.	Crops					
a.	Paddy	7,500	---	10,500	---	
b.	Groundnut	6,000	6,000	---	---	
c.	Sugarcane	2,500	3,000	20,000	---	
2.	Broiler sales	5,000	5,500	---	---	
3.	Milk sales	1,150	400	1,250	1,000	
4.	<b>Total cash income</b>					
<b>B.</b>	<b>Cash expenses</b>					
5.	Hired labour	800	300	900	1,000	
6.	Hired bullock labour	700	1,000	2,000	1,300	
7.	Machinery: Fuel and repairs	500	200	800	1,000	
8.	Fertilizers	90	30	180	200	
9.	Other crop expenses (seed plant protection measures)	550	50400	400		
10.	Livestock, machinery, veterinary and marketing expenses	250	250	150	350	
11.	Land rent	1,000	1,500	500		
12.	Interest on current debts, intermediate and long-term debts	800	800			
13.	Other miscellaneous expenses	200	450	50	50	
14.	Land revenue, cess, surcharge and water tax	--	500	---	---	
15.	Attached farm servant wages	500	100	200	200	
16.	<b>Total cash expenses</b>					
<b>C.</b>	<b>Net cash farm income</b>					
<b>Section: II Net Capital Flow</b>						
<b>D.</b>	<b>Capital Sales</b>					
17.	Milch animals	--	4,150	4,000	---	
18.	Machinery sales	---	150	---	---	
19.	Total capital sales					
<b>E.</b>	<b>Capital Expenditure</b>					
20.	Improvement repair	1,000	3,200	---	--	4,200
21.	<b>Capital expenditure</b>					
<b>F.</b>	<b>Net capital flow (19-21)</b>					
<b>Section: III Net other income flow</b>						
<b>G.</b>	<b>Other income</b>					
22.	Off farm income	---	1,000	500	--	
22.a	Non-Farm income	5,000	5,000	5,000	5,000	
23.	<b>Total other income</b>	---			---	
<b>H.</b>	<b>Other expenditure</b>					

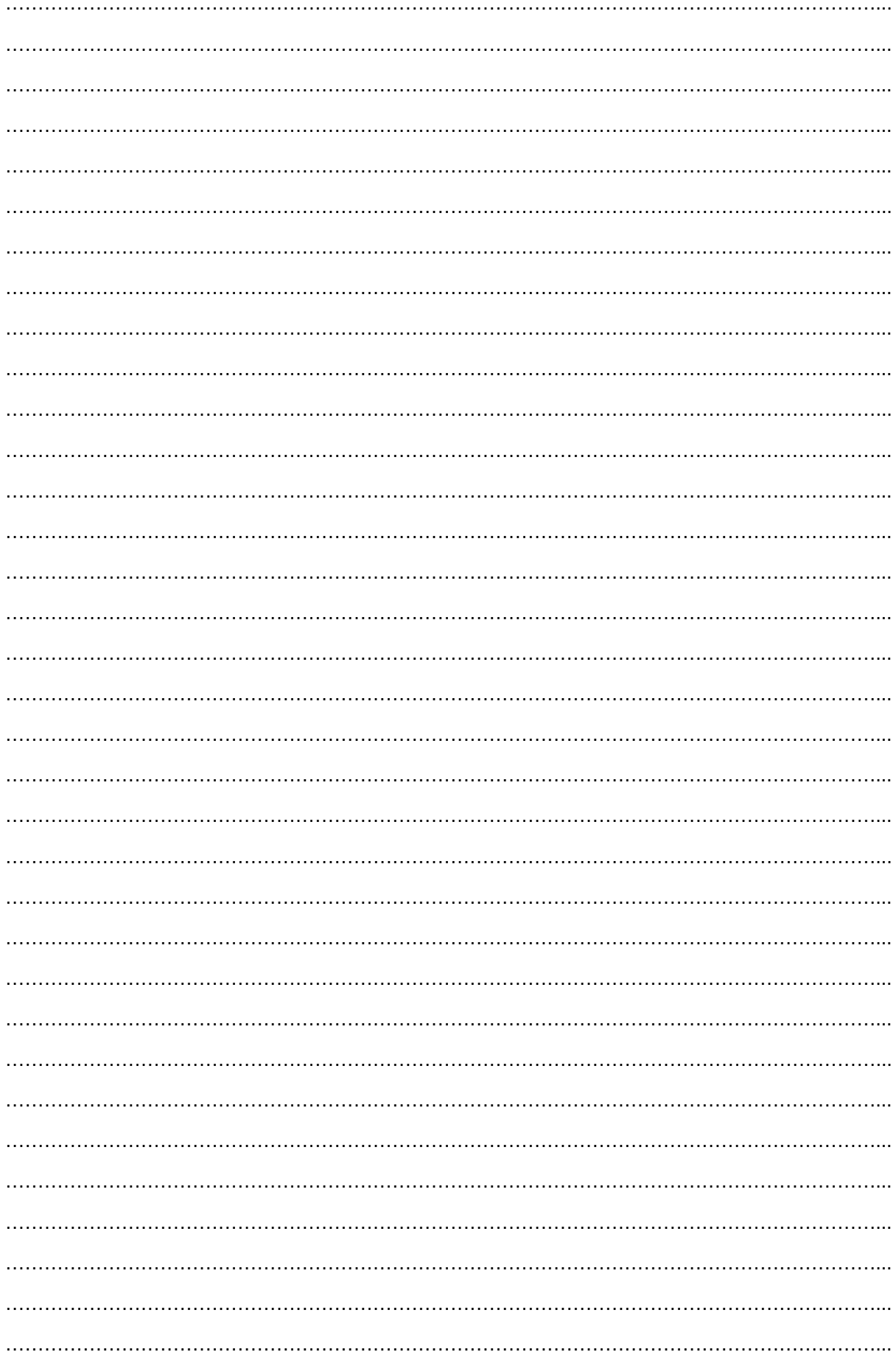






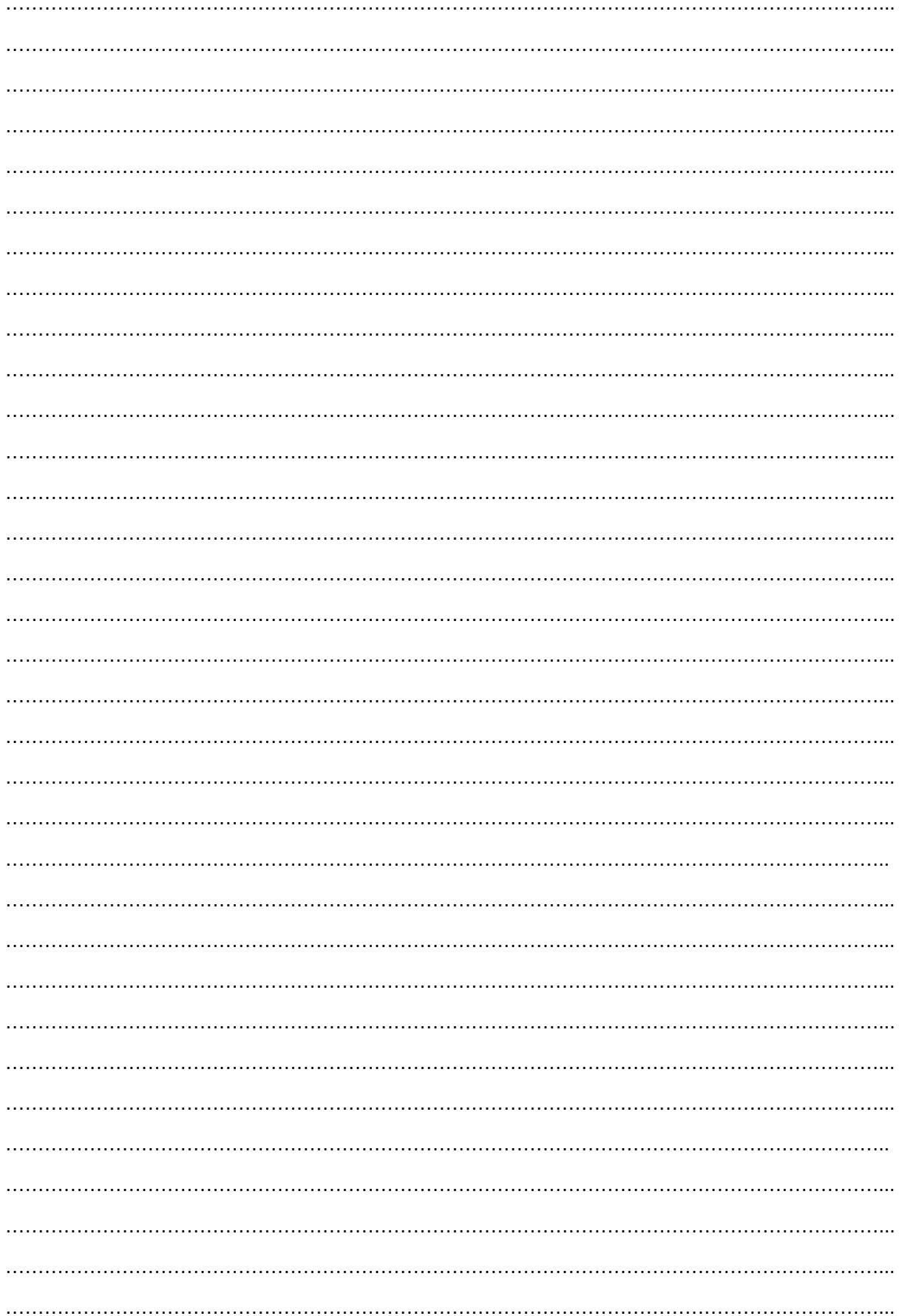




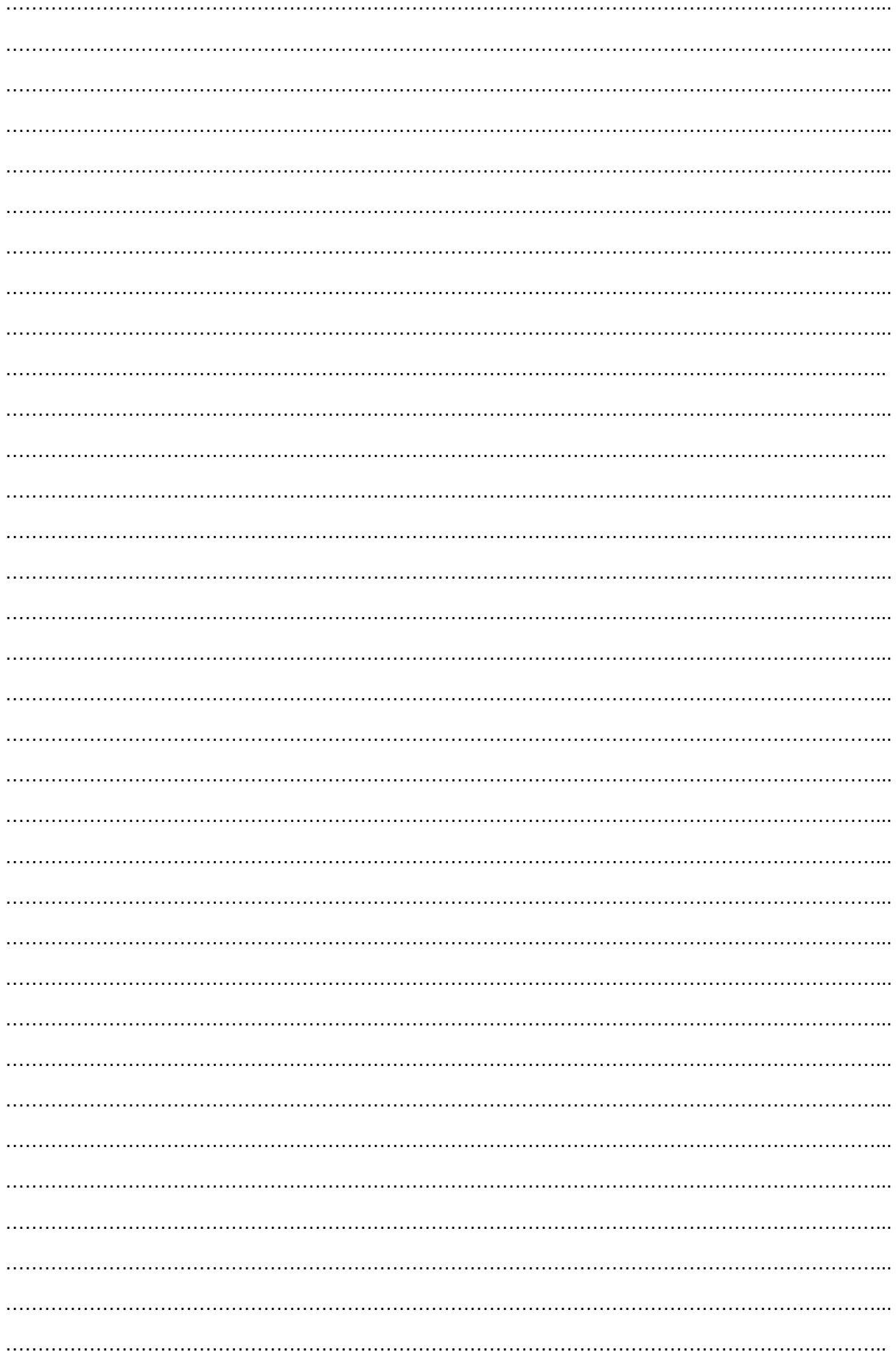




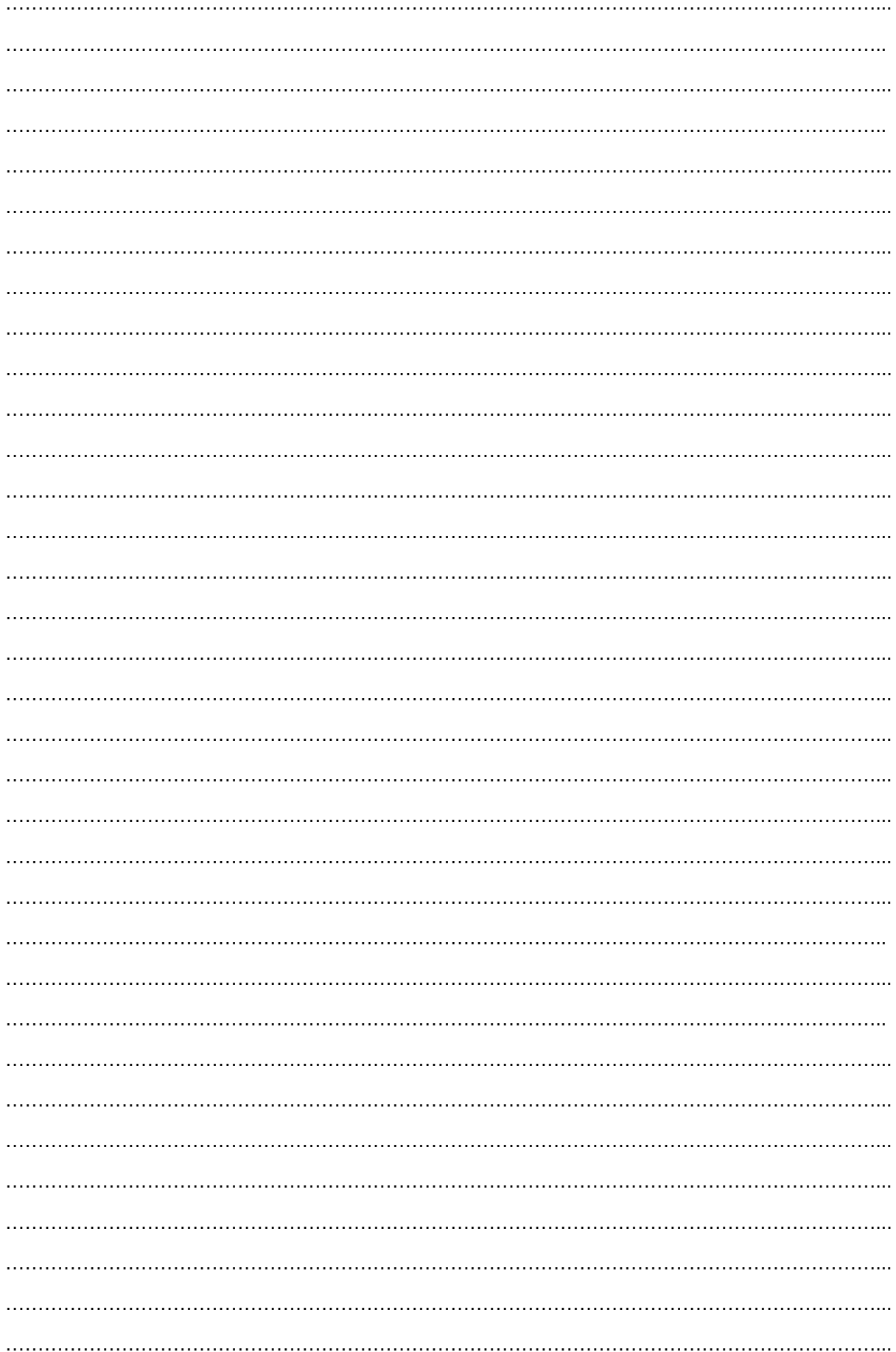


















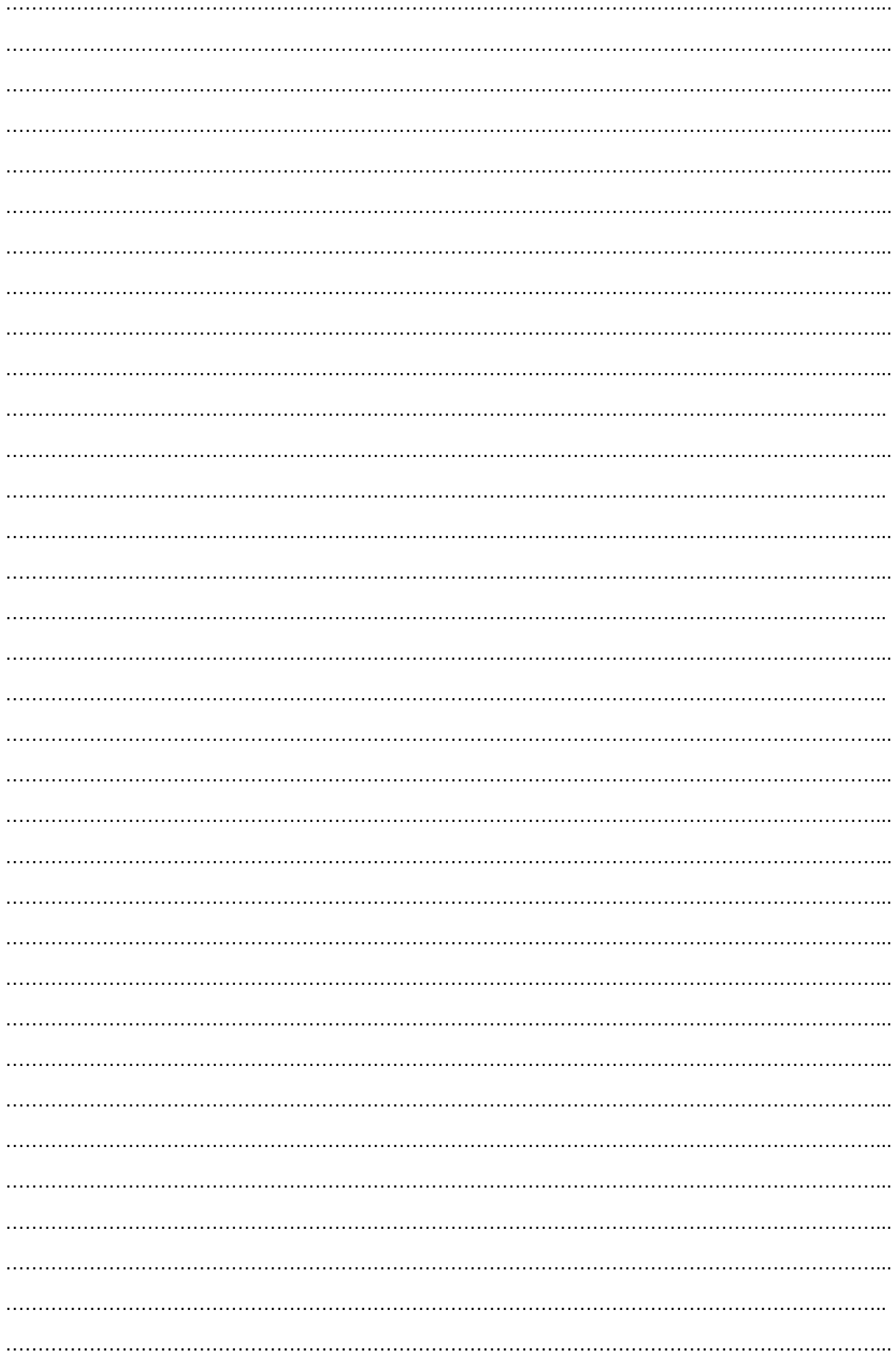


**Exercise No. 13**

**Objective: Preparation of Repayment Plans**

<b>Example of loan amortization: equal total payment plan.</b>				
<b>Year</b>	<b>Loan amount Rs.10,000, annual rate 12% 8 annual payments</b>			
	<b>Annual payment</b>	<b>Principal payment</b>	<b>Interest</b>	<b>Unpaid balance</b>
<b>Rs.10,000.00</b>				
1	2,013.03	813.03	1,200.00	9,186.87
2	2,013.03	910.59	1,102.44	8,276.38
3	2,013.03	1,019.86	993.17	7,256.52
4	2,013.03	1,142.25	870.78	6,114.27
5	2,013.03	1,279.32	733.71	4,834.95
6	2,013.03	1,432.83	580.20	3,402.12
7	2,013.03	1,604.77	408.26	1,797.35
8	2,013.03	1,797.35	215.68	0
<b>Total</b>	<b>Rs.16,104.24</b>	<b>Rs.10,000.00</b>	<b>Rs.6,104.24</b>	<b>0</b>

<b>Example of loan amortization: equal principal plan.</b>				
<b>Year</b>	<b>Loan amount Rs.10,000, annual rate 12% 8 annual payments</b>			
	<b>Annual payment</b>	<b>Principal payment</b>	<b>Interest</b>	<b>Unpaid balance</b>
<b>Rs.10,000.00</b>				
1	2,450.00	1,250.00	1,200.00	8,750.00
2	2,300.00	1,250.00	1,050.00	7,500.00
3	2,150.00	1,250.00	900.00	6,250.00
4	2,000.00	1,250.00	750.00	5,000.00
5	1,850.00	1,250.00	600.00	3,750.00
6	1,700.00	1,250.00	450.00	2,500.00
7	1,550.00	1,250.00	300.00	1,250.00
8	1,400.00	1,250.00	150.00	0
<b>Total</b>	<b>Rs.15,400.00</b>	<b>Rs.10,000.00</b>	<b>Rs.5,400.00</b>	<b>0</b>





## Exercise No. 14

### Objective: Preparation of bankable projects/ farm Credit proposals and appraisal

**Economics of scheme with 10 bee hives:** Unit cost, average cash flow and repayment schedule has been worked. The economics have been worked out for a 10 bee boxes model. The economics relates to *Apis mellifera* species of honey bee. The scheme has been found economically viable and details of the same is given below.

#### Economics of 10 bee hives model

##### I. Unit Cost

A	Fixed Cost	Qty	Amount (Rs)
1	Cost of 10 Boxes with Super Queen @ Rs. 2500	10	25000
2	Cost of Frames @ Rs. 250	80	20000
3	Gloves, nets, drums, tray, knife, honey machine & other equipments		5000
	<b>Sub- Total</b>		<b>50000</b>
B	Variable Cost		
1	Sugar @ 2 kg per hives and @ Rs 35/ kg		700
2	Medicine @ Rs. 30 per hive		300
3	Cloth to cover boxes (@2 m per box and Rs. 25 per m)		500
4	Transport for migration		6000
5	Honorarium to master bee keeper		5000
6	Other		1000
	<b>Sub Total</b>		<b>13500</b>
	<b>Grand Total</b>		<b>63500</b>

Unit cost (A+B)/ Total Cost

Rs 63,500.00 Margin 10%

Rs 6400.00

Bank Loan

Rs 57,100.00

##### Cash Flow Statement

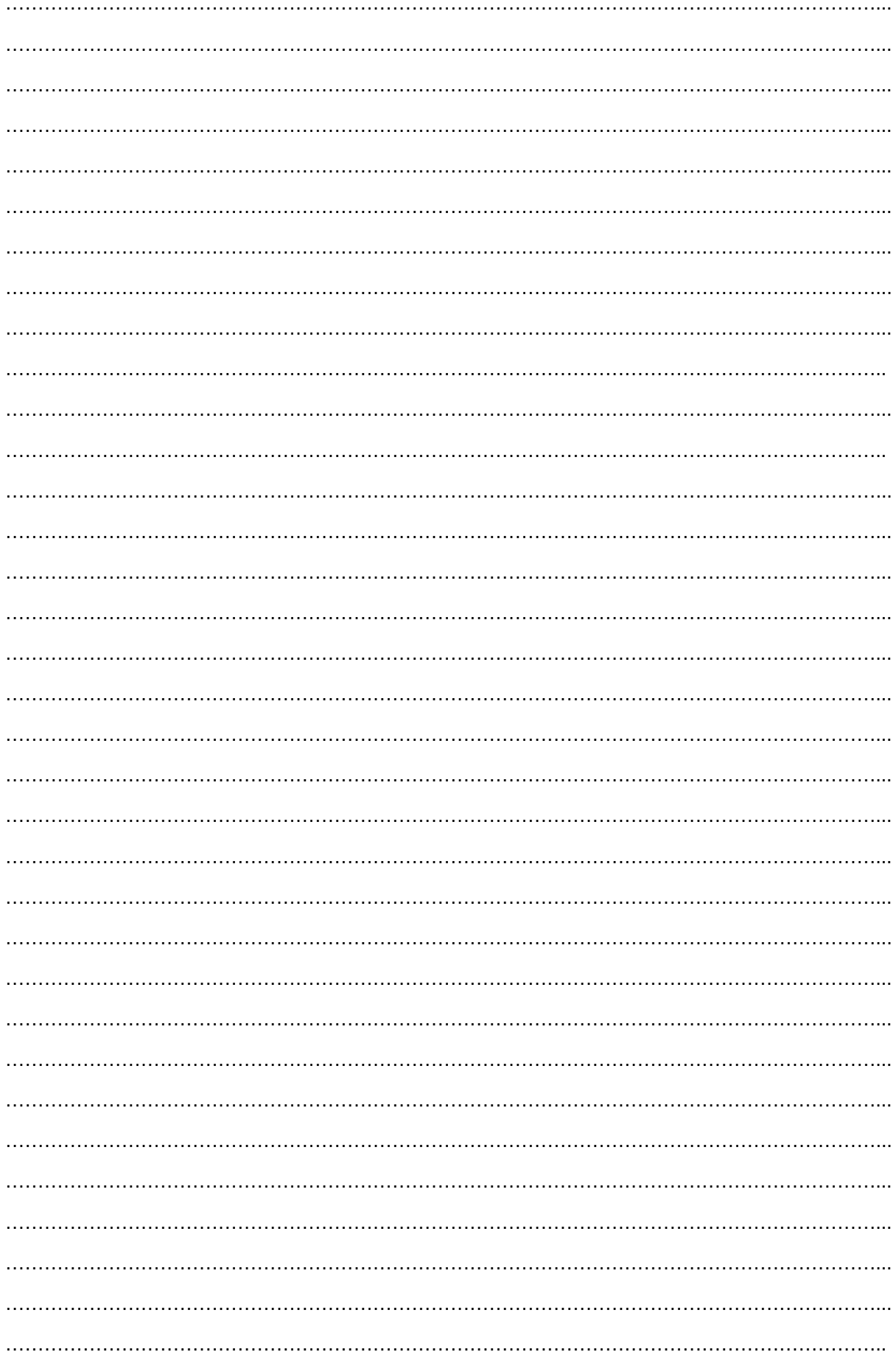
Sl. No	Particulars	I Year	II Year	III Year	IV Year	V Year	VI Year
1	Honey collection per hive (kg)	10	30	35	40	40	40
2	Wax produced per hive (kg)	0.3	0.3	0.3	0.3	0.3	0.3
3	Income from sale of honey @ Rs. 100 per kg from 10 hives	10000	30000	35000	40000	40000	40000
4	Wax @ 400 per kg from 10 hives	12000	1200	1200	1200	1200	1200
5	Sale of extra colony	0	5000	5000	5000	5000	5000
6	Gross Income	11200	36200	41200	46200	46200	46200
7	Recurring expenses (first year capitalized)	-13500	- 13500	13500	-13500	13500	-13500
8	Gross profit	-2300	22700	27700	32700	32700	32700
9	Depreciation (@ 10% SLM)	8333	8333	8333	8333	8333	8333
10	Interest @12%	0	13704	6612	5532	3852	1992
11	Net Income	-10633	663	12755	18835	20515	22375

##### Repayment Schedule:

Year	Loan O/S at beginning of year	Interest @ 12%	Repayment of interest	Repayment of principal	Total Repayment	Gross profit	Loan O/S at end of year
1	57100	0	0	0	0	-2300	57100
2	57100	13704	13704	2000	15704	22700	55100
3	55100	6612	6612	9000	15612	27700	46100
4	46100	5532	5532	14000	19532	32700	32100











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