Bachelor of Mechanical Engineering Examination, 2019

(Part Time, 4th Year, 2nd Semester)

Engineering Economics and Costing

Time: Three Hours Full Marks: 100

Answer any five questions. Only first five answered questions shall be examined; the rest shall be ignored.

1. Write short notes on any four of the following: **4 x 5**

(a) least cost combination of inputs, **(b)** law of returns, **(c)** production possibility frontier, **(d)** assumptions of monopolistic competition, **(e)** market skimming pricing, **(f)** features of perfect competition.

2. Define 'Law of Variable Proportions'. What assumptions are related to this law? With the help of a graphical presentation explain various stages of this law. Which stage is beneficial for production and why? **2 + 3 + 11 + 4**

3. Enumerate primary functions of commercial banks. State advantages of cooperative societies. Describe types of joint ventures in India. Explain forms of PPP. **5 + 3 + 6 + 6**

4. The expense for budgeted production of 10,000 units in a factory are furnished below. Prepare a flexible budget for 60% capacity and compare it with 130% capacity. **8 + 8 + 4**

Particulars	**Per Unit Cost (Rs.)**
Material	70
Labour	25
Variable overheads	20
Fixed overheads (Rs. 1,00,000)	10
Variable expenses (direct)	5
Selling expenses (10% fixed)	13
Distribution expenses (20% fixed)	7
Administration expenses (Rs. 50,000)	5
Total cost per unit	155

5. From the following extracts of trial balance taken from the books of Lakshmi Co. on March 31, 2019 prepare a trading account, P&L account, and a year-end balance sheet. All amounts are in Rupees. **8 + 6 + 6**

Cash	13,000	Sundry debtors	10,000
Bills receivable	8,500	Opening stock	45,000
Building	50,000	Furniture & fittings	10,000
Investment (Temporary)	5,000	Plant & machinery	15,500
Bills payable	9,000	Sundry creditors	20,000
Lakshmi's capital	78,200	Lakshmi's drawings	1,000
Sales	100,000	Sales discount	400
Purchases	30,000	Freight inward	1,000
Purchase discount	500	Sales salary expenses	5,000

Advertising expenses	4,000	Misc. Sales exp.	500
Office salary exp.	8,000	Misc. General exp.	1,000
Interest income	1,000	Interest expenses	800

Note: closing stock was R,s. 50,000/- on March 31, 2019

6. Prepare a cost sheet from the following extracts of Mahakal Rudraksha Traders (figures are in Rs. '000):

Material used in manufacturing Rs 5,500
Material used in packing material Rs 1,000
Material used in selling the product Rs 150
Material used in the factory Rs 175
Material used in the office Rs 125
Labour required in production Rs 1,000
Labour required for supervision in factory Rs 200
Expenses direct factory Rs 500
Expenses indirect factory Rs 100
Expenses office Rs 125
Depreciation of office building Rs 75
Depreciation on factory plant Rs 175
Selling expenses Rs 350
Freight on material Rs 500
Advertising Rs 125

Assuming that all products manufactured and sold, what should be the selling price to obtain a profit of 20% on selling price. **18 + 2**

7. From the following list of transactions prepare appropriate journal entries, ledger entries and the relevant month- end trail balance of Basanti Co. **5 + 10 + 5**

(i) Basanti co. started a business with Rs.50 lakh in capital on 01/01/2018,
(ii) On 10/01/2018, purchased fixed assets of Rs. 10 Lakh on bank loan.
(iii) On 15/01/2018, purchased inventories from Vishwakarma Ltd. Of Rs. 10 lakh, payable in net 45 days,
(iv) On 31/01/2018, paid salaries of Rs. 1 lakh by NEFT,
(v) On 31/01/2018,sold finished goods of Rs. 15 lakh in cash to Shiva Ltd.

8. A mechanical device with an economical life of 5 years will cost Rs. 50,000 for purchase by Shiva Shakti Ltd. Maintenance will cost Rs. 2,000 per year starting from the 1st year. The device will generate revenues of Rs. 15,000 each year. There will be an up gradation cost of Rs 10,000 for the device at the end of 3rd year. Salvage value will be Rs 20,000.

a) If the required rate of return is 10% p.a., should the device be purchased based on IRR? Show in details IRR calculation on trial & error method. **9**

b) If the required rate of return is 10% p.a., should the machine be purchased on the basis of profitability index? **6**

c) The management desires a discounted payback period of 4 years. Does this device qualify for purchase at 10% p.a. discount rate? **5**