# Bachelor of Mechanical Engineering Examination, 2018 (Old)

(Part Time, 5th Year, 2nd Semester)

## Engineering Economics and Costing

Time: Three Hours | Full Marks: 100

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

1. Write short notes on any four of the following: **5 x 4**
**(a)** Price elasticity of demand and its limitations, **(b)** Features of oligopoly, **(c)** Price control, **(d)** Pricing under perfect competition in the very short run, **(e)** Cobb-Douglas production function, **(f)** Price skimming.

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. At which stage will you recommend to produce and why? Under which conditions postponements of this law occur? **2 + 4 + 9 + 3 + 2**

3. **(a)** Enumerate steps of budgetary control. **10**
**(b)** For the production of 10,000 units of Durga Company, the following is the budgeted expenses:

| | Rs. per unit |
|---|---|
| Direct materials | 30 |
| Direct labour | 15 |
| Variable overhead | 12.50 |
| Fixed overhead | 7.50 |
| Variable expenses (direct) | 2.50 |
| Selling expenses (10% fixed) | 7.50 |
| Administration expenses (Rs. 25,000 fixed for all levels of production) | 2.50 |
| Distribution expenses (20% fixed) | 2.50 |
| Total cost of sales per unit | 80.00 |

Develop a flexible budget for 8,000 units of production and compare with that of 10,000 units of production. **8 +2**

4. Compare the following two mutually exclusive projects on the basis of NPV & ARR. Cash flows and salvage values are in crore of rupees. Use the straight line depreciation method. The minimum required return is 10%, while the minimum required ARR is 12%. **10 + 10**

**Project Shiva:**

| Year | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Cash Outflow | -220 | | | |
| Cash Inflow | | 91 | 130 | 105 |
| Salvage Value | | | | 10 |

**Project Shakti:**

| Year | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Cash Outflow | -198 | | | |
| Cash Inflow | | 87 | 110 | 84 |
| Salvage Value | | | | 18 |

[ Turn over

**5.**. Prepare a cost sheet from the following extracts of Rabi Co.:

**PTO**

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**

**6.**. From the following balances extracted from the books of Agni Co., **prepare a trading account, a profit and loss account** for the year ending 31st December, 2017, and a **balance sheet** as on 31st December, 2017. **6 + 6 + 8**

| | Rs. | | Rs. |
|---|---|---|---|
| Stock on 1st January, 2017 | 11,000 | Returns outwards | 500 |
| Bills receivables | 4,500 | Trade expenses | 200 |
| Purchases | 39,000 | Office fixtures | 1,000 |
| Wages | 2,800 | Cash in hand | 500 |
| Insurance | 700 | Cash at bank | 4,750 |
| Sundry debtors | 30,000 | Rent and taxes | 1,100 |
| Carriage inwards | 800 | Carriage outwards | 1,450 |
| Commission (Dr.) | 800 | Sales | 60,000 |
| Interest on capital | 700 | Bills payable | 3,000 |
| Stationary | 450 | Creditors | 19,650 |
| Returns inwards | 1,300 | Capital | 17,900 |

The stock on 31st December, 2017 was valued at Rs.25,000.

**7.** **(a)** Explain various types of mergers. What is the difference between acquisitions and takeovers? **4 + 2**
**(b)** Summarise primary role of commercial banks. **8**
**(c)** Describe current ratio and inventory turnover ratio. **3 + 3**