Bachelor of Mechanical Engineering Examination, 2017

(4^{th} Year, 2^{nd} Semester, OLD)

Engineering Economics and Costing

Time: Three Hours Full Marks: 100

1. Fill in the blanks **1 x 16 = 16**

(a) ________ is known as the 'Bankers' Bank'.
(b) The decision rule of benefit-cost ratio is that accept the project, if this ratio is > ______ .
(c) A _____ centre is the segment of activity of a business which is responsible for both revenues and expenses, and discloses the profit of a particular segment of activity.
(d) ______ Cost Variance = (Standard cost of materials for actual output) less (Actual cost of materials used).
(e) If α and β are the output elasticities of capital and labour, respectively, and if $\alpha + \beta = 1$, the production function has a ______ returns to scale.
(f) Maximum number of partners in case of non-banking business is _______.
(g) An improvement in technology leads to a ________ shift of the supply curve.
(h) Marginal Rate of Technical Substitution is also known as a _____ Isoquant.
(i) (Current Assets / Current Liabilities) = __________ Ratio.
(j) ______ of money $\equiv$ PQ / M, where, M is the money supply, P is the overall price level, and Q is total real output.
(k) The maximum number of membership for a private limited company is ________.
(l) P = 40 - 0.2Qd and P = 10 + 0.10Qs , where P = price, Qd = Quantity demanded, Qs = quantity supplied. The equilibrium market quantity Q* = ________.
(m) ________ is the discount rate at which NPV becomes zero.
(n) An effective price ceiling is ______ the market equilibrium price.
(o) Unit of account is one of the functions of ______..
(p) A combination of firms involved in unrelated lines of business activities is called a ___________ merger.

2. Answer any three questions. **10 x 3 = 30**

(a) Write short notes on any two of the following: **5 + 5**
(i) Limitations of law of demand; **(ii)** Marginal Rate of Technical Substitution; **(iii)** Inflation and deflation, **(iv)** Factors of Production

(b) (i) What are the advantages and disadvantages of joint-stock companies?
(ii) Where do you think such companies are most suitable for?
(iii) Briefly explain various types of merger. **4 + 2 + 4**

(c) Define 'Zero Base Budgeting'. What are the features and advantages of 'Zero Base Budgeting'? **2 + 4 + 4**

(d) Define 'Public-Private Partnership' (PPP). What are the drivers of PPP? Describe common forms of PPP models in India. **2 + 3 + 5**

(e) List the steps involved in budgetary control. **10**

[Turn over

(f) Prepare a flexible budget for production for Hari Co. of 13,000 units from the following information: **10**

The expenses budgeted for production of 10,000 units in a factory are furnished below:

		Per unit in Rs
Material cost		65
Labour cost		25
Variable factory over head		20
Fixed factory over head	(Rs. 3,00,000)	30
Variable expenses(Direct)		14
Selling expenses (30% fixed)		20
Distribution overhead (10% fixed)		10
CEO's salary (Rs. 60,000)		6
Other administration expenses (Rs,150,000)		15

3. Answer any three questions. **18 x 3 = 54**

(a) 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. **2 + 4 + 12**

(b) From the following list of transactions prepare appropriate journal entries, ledger entries and the relevant month- end trail balance of Indra Explosives Ltd.: **3 x 4 + 6**

(i) As on 01/04/2016, Indra Explosives Ltd. had Rs.180 trillion in capital and Rs. 180 trillion in cash account. No other account did exist.
(ii) Purchased building properties (Fixed Assets) for Rs. 600 billion on credit on 10 / 04 / 2016
(iii) Purchased furniture from M/S Vishwakarma Furniture of Rs.60 billion in cash on 20 / 04 / 2016.
(iv) Purchased inventories on 24/ 04 / 2016 for trading of Rs.12 trillion by demand draft made on the same day.

(c) 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, 2016, and a **balance sheet** as on 31st December, 2016. **6 + 6 + 6**

	Rs.		Rs.
Stock on 1st January, 2016	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	Tent 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, 2016 was valued at Rs.25,000.

(d) 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%. **9 + 9**

Project A:

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

Project B:

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

(e) Explain in detail the following:
(i) Current Ratio, (ii) Quick Ratio, (iii) Return on Equity, and (iv) Limitations of Ratio Analysis **4.5 x 4**

(f) Prepare a cost sheet from the following extracts of Rabi Co.:

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. **16 + 2**