

**CS/B.TECH/CSE/IT/ECE/EE/EIE/CE/CHE/EEE/CVE/P  
WE/BME/FT/ICE/ODD SEM/SEM-5/HU-501/2016-17**



**MAULANA ABUL KALAM AZAD UNIVERSITY OF  
TECHNOLOGY, WEST BENGAL**  
**Paper Code : HU-501**  
**ECONOMICS FOR ENGINEERS**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own  
words as far as practicable.*

**GROUP - A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10
  - i) Accounting Equation is
    - a) Capital = Assets–Liabilities
    - b) Liabilities = Capital–Assets
    - c) Assets = Capital–Liabilities
    - d) None of these.
  - ii) A person if deposits Rs. 50,000 in a bank at an interest of 10% compounded annually, then the future value at the end of 5 years will be
    - a) 80.525
    - b) 70.525
    - c) 85.525
    - d) 90.525.

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- iii) If in a power sizing model the power sizing index is greater than 1, then
  - a) Per unit price increases with increase in quantity
  - b) Per unit price decreases with increase in quantity
  - c) Per unit price remains constant with increase in quantity
  - d) Per unit price remains constant with decrease in quantity.
- iv) If A and B are two independent events then it can be expressed as
  - a)  $P(A \cup B)$
  - b)  $P(A \times B)$
  - c)  $P(A) \times P(B)$
  - d) None of these.
- v) Which are the determinants of economic life of an asset ?
  - a) Capital recovery cost
  - b) Average operating and maintenance cost
  - c) Sum of capital recovery cost
  - d) All of these.
- vi) What is the relation between the slopes of Total Cost (TC) and Total Revenue (TR) curves ?
  - a) Slope of  $TR >$  Slope of  $TC$
  - b) Slope of  $TR <$  Slope of  $TC$
  - c) Slope of  $TR =$  Slope of  $TC$
  - d) No fixed relation.
- vii) A portion of the learning curve is
  - a) Parallel to y axis
  - b) Parallel to x axis
  - c) Cuts the x axis
  - d) Cuts the y axis.

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viii) If the inflation rate is 6% per year and the market interest rate is known to be 15% per year, what is the implied real interest rate in this inflationary economy?

- a) 11.45%                      b) 9.00%  
c) 8.49%                      d) 8%.

ix) Sunk cost is

- a) Original investment + depreciation – repairing expenses  
b) Original investment – depreciation + repairing expenses  
c) Original investment + depreciation + repairing expenses  
d) Original investment – depreciation – repairing expenses.

x) Which of the following is **not** applicable to bottom-up approach to cost estimation?

- a) The project under consideration is considered at the highest aggregate level  
b) The project under consideration is split into smaller parts and their respective components are identified  
c) Cost estimates are made for each component of each small part and added up  
d) Cost estimates are made for each part of the project and are added up to arrive at the total.

xi) A deposit of Rs. 1,10,000 was made for 31 days. The net interest after deducting 20% withholding tax is Rs. 890.36. Find the rate of return annually.

- a) 12.25                      b) 12.75  
c) 11.75                      d) 11.95.

xii) If Index Number for a certain period is equal to 100, then

- a) Price are increasing  
b) Prices are decreasing  
c) Prices remain constant  
d) Change in prices cannot be predicted.

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### GROUP – B

#### ( Short Answer Type Questions )

Answer any *three* of the following.  $3 \times 5 = 15$

2. An aqueduct is needed to bring water into the city. It can be built at a reduced size now for Rs. 3 lakh and enlarged 25 years later at Rs. 3.5 lakh. The other option is to construct the full size aqueduct now for Rs. 4 lakh. Use present worth to find the better choice.

[ Given  $i = 6\%$  and  $(P/F, 6\% 25) = 0.2330$  ]

3. Define time value of money. Discuss its importance.

4. Define Break-even point. Represent the elements diagrammatically, and derive the BEP and BEP sales algebraically.  $2 + 1 + 2$

5. a) What is Estimation?

b) An Electricity company wants to replace its Machinery which was erected in the year 1982 at a cost of Rs. 15,00,000 with a capacity of 300 MW. This consists of material, labour and overhead in the ratio of 5 : 3 : 2. The present cost index of material, labour and overheads are 250, 300 and 240 respectively. The company wants to increase double of its present capacity. You are required to determine the present cost of Machinery to be replaced with double capacity by using cost indexes and power-sizing model. The power sizing factor is 0.90.  $2 + 3$

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6. Discuss the causes of inflation.

**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. a) Define Decision Tree. Explain the different steps of making Decision Tree.

b) From the following information prepare a statement of cost for the month of July 2015. Rs.

Opening stock of Raw Material	18,000
Opening stock of Finished Goods	5,000
Closing Stock of Raw Material	10,000
Closing Stock of Finished Goods	6,000
Purchase of Raw Material	90,000
Direct Wages	18,000
Factory supervision	5,000
Depreciation on Plant and Machinery	12,000
Office Salary	14,000
Salesman's Salaries	6,000
Sales	1,70,000

8. a) Differentiate between Risk and Return. Explain the role of sensitivity analysis in this context.

b) ABC Ltd. is considering an investment proposal whose initial outlay is Rs. 100,000. Project life will be 4 years. Other estimates are :

Annual sales volume :	10,000 units.
Fixed cost per annum :	Rs. 26,000
Contribution per unit :	Rs. 6
Cost of capital :	8%

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Present value of Re 1 payable or receivable annually at the end of 4 years at 8% : 3.3121.

(i) Find Net Present Value of the project

(ii) By how much can each factor change before ABC Ltd. becomes indifferent to the project ?

(iii) Comment on the sensitivity of the factors based on your answers in (ii).

$$2 + 4 + (4 + 3 + 2)$$

9. a) Define Ledger and Balance Sheet and elaborate their role in accounting scenario.

b) The following trial balance was extracted from the books of ABC.Inc as on 30th September, 2016.

	Dr (Rs.)	Cr (Rs.)
Stock on 1st October, 2015	17,940	
Debtors and creditors	38,480	20,540
Capital account on 1st October, 2015		53,300
Drawings	15,600	
Bills receivable	10,010	
Bad debts written off	2,470	
Provision for bad and doubtful debts		2,080
Bills payable		6,110
Wages and salaries	24,960	
Purchases and sales	85,540	1,38,710
Cash at bank	7,540	
Cash in hand	520	
Rent rates and insurance	4,290	
Sales and purchase returns	5,330	3,640
Fixtures and fittings	7,150	
General expenses	2,600	
Discounts	6,760	4,810
	2,29,190	2,29,190

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Prepare the Trading and Profit and Loss Account for the year ended 30th September, 2016 together with a balance sheet as at that date after taking into consideration the following adjustments :

- (i) Stock on 30th September, 2016 was valued at Rs. 18,460
- (ii) Increased the provision for bad and doubtful debts to Rs. 2,730
- (iii) Rent and rates prepaid at 30th September, 2016 were Rs. 260
- (iv) Charge depreciation on fixtures and fittings at 10%
- (v) Wages and salaries accrued at 30th September, 2016 were Rs. 390.

2 + 2 + 11

10. a) Describe different areas of management decision.
- b) Dimpy Co., a radio manufacturing company finds that the existing cost of a component, Z 200, is Rs. 6.25. The same component is available in the market at Rs. 5.75 each, with an assurance of continued supply.

The breakup of the existing cost of the component is :

	Rs.
Materials	2.75 each
Labour	1.75 each
Other Variables	0.50 each
Depreciation and other Fixed cost	1.25 each
	<u>6.25</u>

- (i) Should the company make or buy ? Present the case, when the firm cannot utilize the capacity elsewhere, profitably and when the capacity can be utilized, profitably.
- (ii) What would be your decision, if the supplier has offered the component at Rs. 4.50 each ?

5 + 10

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11. Write short notes on any *three* of the following : 3 × 5

- a) Cost push vs Demand pull inflation
- b) NPV vs IRR
- c) Current asset and fixed asset
- d) Conditional probability
- e) Segmenting Model.