

CH/D.TECH/CH/IT/10C10/1010/CI10/CI10/1010/PW10/1010/HM10/PT/1010/
CV10(O)/ODD/HOM-8/HU-501/2010-20



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TECHNOLOGY, WEST BENGAL**

Paper Code : HU-501

PVID : 05009 (To be mentioned in the main answer script)

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 : $10 \times 1 = 10$

- i) The project is accepted
 - a) if the profitability index is equal to one
 - b) if the funds are unlimited
 - c) if the profitability index is greater than one
 - d) both (b) and (c).
- ii) A person deposits a sum of Rs. 20,000 at the interest rate of 18% compounded for annually 10 years. Find the maturity value after 10 years. Use single payment compound amount formula
 - a) 2,04,680
 - b) 1,04,680
 - c) 1,08,740
 - d) none of these.

- iii) To compute the updated cost of a boiler of the same capacity in a power plant, we use
- a) per unit model b) segmenting model
 - c) cost index model d) none of these.
- iv) Model which refers possibility for management to conduct sensitivity analysis can be categorized under
- a) investment planning models
 - b) financial planning models
 - c) cost planning models
 - d) revenues forecast models.
- v) Accounts payable, accruals and notes payables are listed on balance sheet as
- a) accrued liabilities
 - b) current liabilities
 - c) accumulated liabilities
 - d) non-current liabilities:
- vi) In Double Entry system of Book Keeping every business transaction affects
- a) two accounts
 - b) two sides of same account
 - c) the same account on two different dates
 - d) all of these.

vii) Sunk cost is

- a) Original investment + depreciation – repairing expenses
- b) Original investment – depreciation + repairing expenses
- c) Original investment + depreciation + repairing expenses <http://www.makaut.com>
- d) Original investment – depreciation – repairing expenses.

viii) 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.

ix) If you throw a die and get Re. 1 if it is showing 1, and get Rs. 2 if it is showing 2 and get Rs. 3 if it is showing 3, etc. what is the amount of money I can expect if I throw it 100 times ?

- a) 350
- b) 300
- c) 450
- d) 700.

- x) With limited finance and a number of project proposals at hand, select that package of projects which has
- a) The maximum net present value
 - b) Internal rate of return is greater than cost of capital
 - c) Profitability index is greater than unity
 - d) Any of these.
- xi) Amount of money by which total revenues exceed breakeven revenues is classified as
- a) margin of safety
 - b) margin of profit
 - c) margin of loss
 - d) margin of income.

GROUP - B

(Short Answer Type Questions)

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

2. Godrej Association has the following details :

Fixed cost = Rs. 20,00,000

Variable cost per unit = Rs. 100

Selling price per unit = Rs. 200

Find out :

- i) The Break even point in Quantity.
- ii) The Break even point in sales (Rs.).

3. a) What is Learning curve ?
- b) A mechanical Engineering department has a student team that is designing a formula car for national competition. - The time required for the team to assemble the first car is 100 hours. Their improvement (or learning rate) is 0.8, which means that as output is doubled, their time to assemble a car is reduced by 20%. Now determine the time it will take to assemble the 10th car. 2 + 3
4. Make a difference between 'technical efficiency' and 'economical efficiency'.
5. a) Distinguish between Depreciation and Deterioration.
- b) A company purchased a machine on 1st April 2012 for Rs. 2,60,000; Shipping and forwarding charges Rs. 10,000; Import duty Rs. 12,000; Installation charges Rs. 10,000; Depreciation is to be charged under diminishing balance method at 1st year 10% p.a, 2nd year 20% p.a, 3rd year 30% p.a. now calculate the amount of depreciation per year. 2 + 3
6. A person wishes to have a future sum of Rs. 1,00,000 for his son's education after 10 years from now. What is the single payment that he should deposit now so that he gets the desired amount after 10 years ? The bank gives 15% interest rate compounded annually.

GROUP - C

(Long Answer Type Questions)

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

7. a) What is Merit Rating ?
b) What are the Advantages of Merit Rating ?

Draw a stores ledger account recording the following transactions that took place in October 2011, under Simple Average price method : $2 + 5 + 8$

1 st October	Purchase 500 pieces vide note no. 34 @ Rs. 3.00 each
3 rd October	Purchase 200 pieces vide note no. 35 @ Rs. 2.00 each
6 th October	Issue 400 pieces vide S.R. no. 58
10 th October	Purchase 200 pieces vide note no. 36 @ Rs. 4.00 each
12 th October	Issue 300 pieces vide S.R. no. 68
15 th October	Purchase 500 pieces vide note no. 34 @ Rs. 3.00 each
17 th October	Issue 320 pieces vide S.R. no. 78

8. Write short notes on any *three* of the following : 3×5
- a) Monte Carlo Simulation
b) Sensitivity analysis
c) Consumer's price index
d) Corporate social responsibility
e) Economic life of an asset.

9. a) Discuss the meaning of Estimation. What are the advantages in engineering economic analysis. Discuss its limitations.
- b) A box contains 40 envelopes, of which 25 are ordinary (not meant for air mail) and 15 are unstamped, while the number of unstamped ordinary envelopes is 10. What is the probability that an envelope chosen from the box is a stamped airmail envelope? <http://www.makaut.com>
- c) An urn containing 10 white and 5 black balls, 4 balls are drawn, all of which are found to be white. What is the probability that the next ball drawn also will be white? $6 + 4 + 5$
10. a) The following information has been obtained from the records of FCI, from 1st Jan to 30th June 2009:

	1 st Jan 2009 (Rs.)	30 th June 2009 (Rs.)
Cost of raw materials	30,000	25,000
Cost of work in progress	12,000	15,000
Cost of finished goods	60,000	55,000
Purchase of raw materials	4,50,000	
Wage paid	2,30,000	
Factory over head	92,000	
Adm. over head	30,000	
Selling and distribution over head	20,000	
Sales	9,00,000	

Find out materials consumed prime cost, factory cost and total cost.

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- b) A company is considering two mutually exclusive projects X and Y. Project X cost Rs. 30,000 and project Y Rs. 36,000. You have been given below the net present value probability distribution for each project :

Project X		Project Y	
Estimated NPV (Rs.)	Probability	Estimated NPV (Rs.)	Probability
3,000	0.1	3,000	0.2
6,000	0.4	6,000	0.3
12,000	0.4	12,000	0.3
15,000	0.1	15,000	0.2

- Compute the expected net present value of project X and Y.
- Which project do you consider more risky and why ?
- Compute the probability index of each project.

7 + 8

11. The following table gives the aptitude test scores and productivity indices of 10 workers selected at random :

Aptitude scores	60	62	65	70	72	48	53	73	65	82
Productivity index	68	60	62	80	85	40	52	62	60	81

- Estimate the productivity index of the worker whose test score is 92.
- Estimate the test score of the worker whose productivity index is 75.

7 + 8