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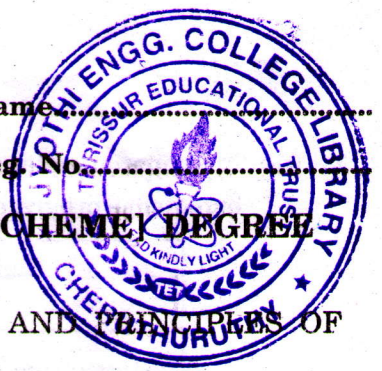
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Name .....

Reg. No. ....

**FIFTH SEMESTER B.TECH. (ENGINEERING) [14 SCHEME] DEGREE EXAMINATION, NOVEMBER 2016**

**CS/IT/ME/AM/MT/PE/PT 14 501—ENGINEERING ECONOMICS AND PRINCIPLES OF MANAGEMENT**



Time : Three Hours

Maximum : 100 Marks

**Section I (Engineering Economics)**

**[Maximum : 50 marks]**

**PART A**

*Answer any four questions.*

1. How is the selling price of a product derived ?
2. State and describe the law of supply.
3. Describe the meaning of the terms, GDP and GNP.
4. The Board of Directors of a company wishes to have a future sum of Rs. 10,00,00,000 for future expansion after 10 years from now. What is the single-payment that the Board of Directors of this company should deposit now in the bank so that the company gets the desired amount after 10 years ? The bank gives 15 % interest rate compounded annually.
5. What is meant by 'effective interest rate' ? How is it computed ? Accompany your answer with an example.

(4 × 5 = 20 marks)

**PART B**

6. (a) (i) The heat equivalent of mechanical energy produced in a diesel engine is 40 kilocalories. The heat equivalent of fuel used to run this diesel engine is 80 kilocalories. What is the technical efficiency of this diesel engine ?

(2 marks)

- (ii) What is meant by 'economic efficiency' ? What are approaches adopted in firms to improve 'economic efficiency' ?

(13 marks)

*Or*

- (b) (i) What is meant by 'inflation'?

(2 marks)

- (ii) Describe the regulatory measures applied in countries to prevent the occurrence of inflation.

(13 marks)

**Turn over**

7. (a) A company is planning to expand its present business activity. It has two alternatives for the expansion programme and the corresponding cash flows are tabulated below :

	<i>Initial investment in</i> Rs.	<i>Yearly income in</i> Rs.
Alternative A	50,00,000	17,00,000
Alternative B	80,00,000	27,00,000

Each alternative has a life of five years and a negligible salvage value. The minimum internal rate of return the company is 12%. Apply 'Internal Rate of Return' method' and determine the best alternative to be chosen by the company.

(15 marks)

Or

- (b) A coal mine is presently transporting coal to a seaport by using trucks. The coal annually transported is 1,00,00,000 ton kilometer (ton-km). The average transport charge is Rs. 300 ton/km. Within the next 20 years, the coal transportation is likely to increase by Rs. 10,00,000 ton-km per year.

It is proposed to lay a railway track to transport coal from the mine to the seaport at a cost of Rs. 2,50,00,00,000. This railway track will reduce the transportation cost to Rs. 100 ton/km. The project will be financed by 10 % bond at par. There would be some side effects of the change-over which are mentioned below :

- (i) The trucks currently being used will not be used in future. As these trucks are very old, they will have no salvage value. The loan amount of Rs. 3,00,00,000, which was used to purchase these trucks are required to be returned to the bank.
- (ii) 300 truck drivers will be out of employment. These truck drivers are required to be paid an amount of Rs. 48,000 per year as compensation.

What is the benefit-cost ratio based on the next 20 years of operation ? Also, check whether laying the railway track is justified.

(15 marks)

[2 × 15 = 30 marks]

## Section II (Principles of Management)

[Maximum : 50 marks]

### PART A

Answer any four questions.

1. Describe the characteristics, advantages and disadvantages of line organisational structure?
2. Distinguish between 'strategic' and 'operational' decisions.

3. An engineer has two bids for EOT crane which needs to be installed in factory. The details of these bids are presented below :

Bid	Engineer's estimated		
	Initial cost in Rs	Service life in years	Annual operations and maintenance cost
Eastern Cranors	45,00,000	15	2,70,000
Western Cranors	54,00,000	15	2,85,000

- Determine the bid that should be accepted, based on the present worth method of comparison, assuming 15 % interest rate, compounded annually.
4. In a company, it is estimated that the fixed cost of manufacturing a safety clip will be Rs. 8,00,000. Variable cost of manufacturing a safety clip will be Rs. 40. The financial value of the estimated sales of safety clips will be Rs. 20,00,000. The price of one safety clip will be Rs. 200. (i) Find the break-even point of manufacturing this safety clip ; (ii) If Rs. 16,00,000 will be the likely sales turnover, calculate the estimated contribution and profit ; (iii) Calculate the turnover required in Rupees to get a profit of Rs. 6,00,000.
5. List the steps to be followed to prepare cost sheet.

(4 × 5 = 20 marks)

PART B

6. (a) Describe briefly the 14 principles of management as listed by Henry Fayol. (15 marks)

Or

- (b) (i) What are the objectives of carrying out 'job evaluation' in firms ? (5 marks)  
(ii) Describe any two job evaluation methods. (10 marks)
7. (a) (i) Briefly describe the product oriented marketing concept. (5 marks)  
(ii) With the aid of a block diagram, explain the modern marketing process. (10 marks)

Or

- (b) The data about the activities of a small project are presented in the table shown below :

Job (i-j)	1-2	1-3	2-4	2-6	3-4	3-5	4-5	5-6
Optimistic time (days)	1	5	3	1	8	2	5	2
Most likely time (days)	4	10	3	4	15	4	5	5
Pessimistic time (days)	7	17	3	7	26	8	5	8

- (i) Draw the PERT network and find the expected project completion time.  
(ii) What is the probability that it would take 5 days more than the expected duration?

(15 marks)

[2 × 15 = 30 marks]