

National Institute of Technology Kurukshetra

B. Tech (Semester-I), Theory Examination, Nov 2017

Subject: Economics for Engineers (HSIR-12)

Time: 3Hrs

Maximum Marks: 50

Total Number of questions: 6

Number of Page/s: 2

Attempt any five questions from the following:

The candidates, before starting to write solutions, should check the question paper for any discrepancy & ensure that they have been delivered the question paper of right code and subject title.

Q1. Define Demand forecasting and also explain in detail its various techniques. **10**

Q2. Define monopolistic competition. How price and output are determined under monopolistic competition market. **10**

Q3. Explain the long-run production behavior of a firm. State and discuss the condition of optimum inputs combination to the firm in long-run. **10**

Q4. Attempt the following questions

- a. The HVAC engineer for a company that constructed one of the world's tallest buildings (Burj Dubai in the United Arab Emirates) requested that \$500,000 be spent on software and hardware to improve the efficiency of the environmental control systems. This is expected to save \$10,000 per year for 10 years in energy costs and \$700,000 at the end of 10 years in equipment refurbishment costs. Find the rate of return. **5**

- b. Decide the best option using the present worth analysis of equal-service machines with the costs shown below, if the MARR is 10% per year. Revenues for all three alternatives are expected to be the same. **5**

	Electric Powered	Gas Powered	Solar Powered
First cost, \$	2500	3500	6000
Annual operating cost, \$/year	900	700	50
Salvage value, \$	200	350	100
Life, years	5	5	5

Q5. Attempt the following questions

- c. Recalibration of sensitive measuring devices costs \$8000 per year. If the machine will be recalibrated for each of 6 years starting 3 years after purchase, calculate the 8-year equivalent uniform series at 16% per year. **5**

- d. Abbott Mining Systems wants to determine whether it should buy now or buy later for upgrading a piece of equipment used in deep mining operations. If the company selects plan N, the equipment will be purchased now for \$200,000. However, if the company selects plan L, the purchase will be deferred for 3 years when the cost is expected to rise rapidly to \$340,000. Abbott is ambitious; it expects a real MARR of 12% per year. The inflation rate in the country has averaged 6.75% per year. From only an economic perspective, determine whether the company should purchase now or later (a) when inflation is not considered and (b) when inflation is considered. 5

Q6. Define fiscal policy. Discuss in detail the objectives of fiscal policy with reference to India. 10

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