Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL

V SEMESTER B.TECH. (COMMON TO ALL)

END SEMESTER EXAMINATIONS- DEC 2021(PROCTORED ONLINE EXAMINATION)

SUBJECT: ENGINEERING ECONOMICS AND FINANCIAL MANAGEMENT [HUM 3051]

REVISED CREDIT SYSTEM

Time: 75 minutes MAX. MARKS: 20

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitably assumed.
- Interest factor table is provided in the last page **(else use formulae).**

1A. Selected Financial information related to ABC Pvt. Ltd. are presented below: **(04)**

In Rupees (Rs.)	2021	2022
Sales	69,000	43,000
Cost of Goods Sold	57,000	32,500
Debtors	7,200	3,000
Inventories	11,400	5,500
Cash	1,500	800
Other Current Assets	4,000	2,700
Current Liabilities	16,000	11,000

You are required to compute the Current ratio, Quick ratio, Average debt collection period and Inventory Turnover ratio for the year 2022. At the beginning of year 2021, the company had debtors of Rs. 2,500 and inventories of Rs. 3,000.

1B. ABC Ltd. expects the cost of a machine to produce a specific part to be Rs. 40,00,000. After 5-year useful life, the machine is expected to have a salvage value of Rs.8,00,000. The annual maintenance costs are believed to be Rs. 14,00,000. How many parts must the company sell per year to break even at 12% annual interest rate, if the variable cost of producing the part is Rs. 150 per unit and if the part can be sold for Rs. 400 per unit? What will be the breakeven sales, if the selling price of the part is reduced to Rs. 300 per unit to counter act with the competitor? **(03)**

1C.	How much money was deposited 35 years ago, at an interest rate of 6% per year, if it is sufficient to provide a perpetual income of $10,000 per year starting from year 35 (First payment made at the end of year 35)?	**(03)**
2A.	Macintosh Printing, Inc., purchased a $20,000 printing machine two years ago. The company expected this machine to have a seven-year life and a salvage value of $5,000. The company spent $5,000 last year on repairs, and current operating costs are running at the rate of $8,000 per year. Furthermore, the anticipated salvage value of the machine has been reduced to $2,500 at the end of the its remaining useful life. In addition, the company has found that the machine has a current market value of $10,000. A sales person offers a new printing machine for $18,000 with a useful life of 5 years. This new printer has no salvage value. The maintenance expenses of the new printer is $6,000 annually. The company's MARR is 12% a. Using Insider's point of view, analyze if the replacement needs to be made. b. If the useful life of the new machine is 6 years, conduct replacement analysis? Has the decision changed from the previous scenario?	**(04)**
2B.	A company is planning expansion of its facility after five years. It anticipates that $500,000 would be needed five years hence to purchase land and construct factory building and $250,000 in the following year to purchase necessary machines. To meet these expenses, the company is planning to set aside an equal amount every quarter from its profits for the next five years. Determine the amount the company must save, if the interest rates during the first three years is 12 % per year compounded quarterly, 12 % per year compounded monthly during the next two years and 12 % per year compounded semi-annually during the last one year.	**(03)**
2C	A high-technology facilities manager, presented three different plans for running a small weapons production facility. Plan X would entail renewable one-year contract with one-million-dollar payments at the beginning of each year. Plan Y would be a two-year contract with four $600,000 payments, the first of which would be made now and the other three at 6-month intervals. Plan Z would be a three-year contract with a $1.5 million payment now and another $0.5 million payment two years from now. Assuming that the manager could renew any of the plans under the same conditions, which plan is better on the basis of a Present Worth analysis at an interest rate of 6% per year, compounded semi-annually?	**(03)**