**20ME706/HS**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **January, 2024** | **Mechanical Engineering** | | |
| **Seventh Semester** | **Engineering Economics and Financial Analysis** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsory.*** | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | **(4X14=56 Marks)** |
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|  |  |  | CO | BL | M |
| 1 | a) | Define Science and Engineering. | CO1 | L1 | 1M |
|  | b) | What is Technology? | CO1 | L1 | 1M |
|  | c) | Mr. A gives Rs 1000/- today to Mr B which is returned back after one year. Draw the cash flow diagram from A’s point of view. | CO1 | L3 | 1M |
|  | d) | What is time value of money? | CO1 | L1 | 1M |
|  | e) | Write the formula for calculating depreciation using Straight line method with notations. | CO2 | L2 | 1M |
|  | f) | What is costing? | CO2 | L1 | 1M |
|  | g) | Write the formula to calculate the breakeven point. | CO2 | L2 | 1M |
|  | h) | What is Break–Even Point? | CO2 | L1 | 1M |
|  | i) | What is a financial management? | CO3 | L1 | 1M |
|  | j) | List out the main components of a balance sheet. | CO3 | L2 | 1M |
|  | k) | Define capital budgeting. | CO3 | L1 | 1M |
|  | l) | What is dangler? | CO4 | L1 | 1M |
|  | m) | Expand PERT and CPM. | CO4 | L1 | 1M |
|  | n) | What are the stages in Project Life Cycle? | CO4 | L1 | 1M |
| **Unit-I** | | | | | |
| 2 |  | Explain the factors of production in detail. | CO1 | L2 | 14M |
| **(OR)** | | | | | |
| 3 |  | 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. | CO1 | L4 | 14M |
| **Unit-II** | | | | | |
| 4 |  | A company has purchased an equipment whose first cost is Rs. 1,00,000 with an estimated life of eight years. The estimated salvage value of the equipment at the end of its lifetime is Rs. 20,000. Determine the depreciation charge and book value at the end of various years using the straight line method of depreciation. | CO2 | L3 | 14M |
| **(OR)** | | | | | |
| 5 | a) | Explain the unit costing method. | CO2 | L2 | 7M |
|  | b) | Selling price of a product is Rs 15 per unit. The variable cost per unit is Rs 7. The fixed costs are Rs 9,000. Determine the breakeven point in units and rupees. | CO2 | L3 | 7M |
| **Unit-III** | | | | | |
| 6 |  | Illustrate a sample Profit and loss account along with sample balance sheet and explain as how to read it to make decisions. | CO3 | L2 | 14M |
| **(OR)** | | | | | |
| 7 | a) | How to estimate the working capital requirement? Explain | CO3 | L2 | 7M |
|  | b) | Describe the capital budgeting process. | CO3 | L2 | 7M |
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| **Unit-IV** | | | | | |
| 8 |  | A small project consisting of eight activities has the following characteristics:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Time - estimates (in weeks) | | | | | | Activity | Preceding activity | Most optimistic time (a) | Most likely time (m) | Most pessimistic time (b) | | A | None | 2 | 4 | 12 | | B | None | 10 | 12 | 26 | | C | A | 8 | 9 | 10 | | D | A | 10 | 15 | 20 | | E | A | 7 | 7.5 | 11 | | F | B,C | 9 | 9 | 9 | | G | D | 3 | 3.5 | 7 | | H | E,F,G | 5 | 5 | 5 |   (i) Draw the PERT network for the project.  (ii) Determine the critical path.  (iii) If a 30- week deadline is imposed, what is the probability that the project will be finished within the time limit? | CO4 | L3 | 14M |
| **(OR)** | | | | | |
| 9 |  | Draw the network diagram and determine the critical path for the following project:   |  |  |  | | --- | --- | --- | | **Activity** | **Event** | **Time estimate** | | 1 – 2 | A | 4 | | 1 – 3 | B | 1 | | 2 – 4 | C | 1 | | 3 – 4 | D | 1 | | 3 – 5 | E | 6 | | 4 – 9 | F | 5 | | 5 – 6 | G | 4 | | 5 – 7 | H | 8 | | 6 – 8 | I | 1 | | 7 – 8 | J | 2 | | 8 – 10 | K | 5 | | 9 – 10 | L | 7 |   Find Earliest Starting time, Earliest finishing time, Latest starting time, latest finishing time, and the total float for each activity. | CO4 | L3 | 14M |

