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BTECH
(SEM VIII) THEORY EXAMINATION 2021-22
INDUSTRIAL OPTIMIZATION TECHNIQUES

Time: 3 Hours**Total Marks: 70****Note: 1. Attempt all Sections. If require any missing data; then choose suitably.****SECTION A****1. Attempt all questions in brief.****2 x 7 = 14**

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| a. | Why is optimization required? |
| b. | What do you mean by mathematical formulation of a problem? |
| c. | Explain CPM. |
| d. | Define dynamic programming. |
| e. | Define queueing modal. |
| f. | What do you mean by simulation? Explain. |
| g. | Explain the term network logic. |

SECTION B**2. Attempt any three of the following:****7 x 3 = 21**

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| a. | What do you understand by the formulation of design problems as a mathematical programming problem? Elaborate with suitable example. |
| b. | Define sequencing. What is the relevance in engineering? Discuss the concept of 2 jobs through m machines sequencing. |
| c. | What is Principle of dominance? Discuss in detail with suitable example. |
| d. | Discuss Monte Carlo simulation and its application in engineering. |
| e. | Write a note on the individual and group replacement policies and their application to engineering. |

SECTION C**3. Attempt any one part of the following:****7 x 1 = 7**

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| (a) | Discuss the following methods and their application in engineering with suitable example: (i) Simplex method. (ii) Duplex Method. |
| (b) | Write a note on the historical development of optimization. |

4. Attempt any one part of the following:**7 x 1 = 7**

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| (a) | Discuss in detail the mathematical formulation and the optimal solution of the transportation modal. |
| (b) | What is travelling salesman problem? Explain. Also discuss its application in engineering with a proper example. |

5. Attempt any one part of the following:**7 x 1 = 7**

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| (a) | What do you understand by the forward and backward computation in PERT? Elaborate it using a proper example. |
| (b) | Discuss the single server model and explain its application to engineering with an example. |

6. Attempt any one part of the following:**7 x 1 = 7**

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| (a) | Write note on the following: (i) Capital budgeting problem, (ii) Cargo-loading problem. |
| (b) | Describe the various types of simulation with suitable examples. |

7. Attempt any one part of the following:**7 x 1 = 7**

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| (a) | Discuss the deterministic and probabilistic inventory models and their applications in engineering with suitable examples. |
| (b) | Write a note on the equipment renewal problem. |