Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April/May – 2017**

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| **Code :** | **14 ME2054** | **Duration :** | **3hrs** |
| **Sub. Name :** | **PRINCIPLES OF RESOURCES AND QUALITY MANAGEMENT** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Define optimization. | CO1 | 1 |
| b. | What is the limitation of graphical method in solving LPP? | CO1 | 1 |
| c. | Differentiate slack and surplus variable. | CO1 | 2 |
| d. | List any one advantage and limitation of LPP. | CO1 | 2 |
| e. | Solve by using Graphical Method  Maximize Z = 3X1+2X2  Subjected to  X1-X2 ≥ 1  X1+X2 ≥ 3  With non-negative restrictions X1, X2 ≥ 0 | CO1 | 14 |
| (OR) | | | | |
| 2. | a. | Name the three methods to arrive initial solution for transportation problem. | CO1 | 1 |
| b. | How to balance a transportation table? | CO1 | 1 |
| c. | What is the application of transportation problem? | CO1 | 2 |
| d. | How to resolve degeneracy in transportation problem? | CO1 | 2 |
| e. | There are three factories located at places P,Q and R. .These factories supply products to whole sale agents located at places S, T and W. The weekly capacities of factories P,Q and R are 76,82 and 72 units respectively. Weekly requirements of agents S, T and W are 72,102 and 41 units respectively. the unit transportation cost in rupees from P to S, T and W are5,8 and 8 respectively, from Q to S,T and W are16,25 and 15 respectively and R to S,T and W are 9,16 and 25 respectively. use least cost method to arrive initial solution and also Find the optimum transportation schedule. | CO1 | 14 |
| 3. | a. | Define loop network. | CO2 | 1 |
|  | b. | Why skip numbering is adopted in network? | CO2 | 1 |
|  | c. | Draw network and also find the critical path and duration for the following project.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Activities | 1-2 | 1-3 | 1-4 | 2-4 | 3-4 | | Duration  (Days) | 2 | 4 | 4 | 3 | 5 | | CO2 | 2 |
|  | d. | How to arrive variance and SD of a project? | CO2 | 2 |

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|  | e. | A project consists of following activities.   |  |  |  |  | | --- | --- | --- | --- | | Activities | Least time(DAYS) | Greatest  time(DAYS) | Most likely  Time(DAYS) | | 1-2 | 3 | 15 | 6 | | 1-3 | 2 | 14 | 5 | | 1-4 | 6 | 30 | 12 | | 2-5 | 2 | 8 | 5 | | 2-6 | 5 | 17 | 11 | | 3-6 | 3 | 15 | 6 | | 4-7 | 3 | 27 | 9 | | 5-7 | 1 | 7 | 4 | | 6-7 | 2 | 8 | 5 |   Find  i) Project length, Project Variance.  ii) Probability factor of completing the project within 27 days. iii) Due date if probability of success is 90%. | CO2 | 14 |
| (OR) | | | | |
| 4. | a. | Differentate direct cost and indirect cost. | CO2 | 1 |
|  | b. | Describe normal duration and crash duration. | CO2 | 1 |
|  | c. | Define activity and Event. | CO2 | 2 |
|  | d. | Draw a netwok with dummy activity and dangling. | CO2 | 2 |
|  | e. | Normal duration and normal cost crash cost and crash duration of the activities of a project are given below.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Activities | Normal Cost  (Rupees) | Normal  Duration(Days) | Crash  Cost  (Rupees) | Crash  Duration  (Days) | | 1-2 | 360 | 3 | 440 | 1 | | 2-3 | 240 | 4 | 320 | 2 | | 2-4 | 100 | 7 | 140 | 3 | | 3-4 | 80 | 5 | 140 | 2 |   Indirect cost is Rs 45/day. Find the optimal schedule by Critical Path Method. | CO2 | 14 |
| 5. | a. | Give one example for a) Finite queue size ii) Infinite population size. | CO2 | 1 |
|  | b. | How to describe scheduled arrival. | CO2 | 1 |
|  | c. | Write notes on FCFS, LCFS and SIRO in queuing. | CO2 | 2 |
|  | d. | Differentate series and parallel service channels. | CO2 | 2 |
|  | e. | In a medium scale industry ,a tool and cutter grinder operator finds that the time spent on each tool has an exponential distribution with mean of 25 minutes, if he grind the tools the order in which they come in and arrival of tools is approximately Poisson with an average rate of 11 per 8 hours day,  i) What is the operators expected idle time each day. (4)  ii) Average number of tools in the system. (4)  iii) Average waiting time of a tool in a queue. (6) | CO2 | 14 |
| (OR) | | | | |
| 6. | a. | Solve the following game by saddle point  Player B   |  |  | | --- | --- | | -3 | 3 | | -2 | 4 | | 2 | 3 |     Player A | CO2 | 1 |
|  | b. | Define ‘Zero sum game’. | CO2 | 1 |
|  | c. | Solve the following game by arithmetic method  Player B   |  |  | | --- | --- | | 2 | 3 | | 4 | 2 |   Player A | CO2 | 2 |
|  | d. | Differentiate pure strategy and mixed strategy. | CO2 | 2 |
|  | e. | Solve the following game whose pay off matrix is given below by concept of dominance  **Player A**   |  |  |  |  | | --- | --- | --- | --- | | 3 | 2 | 4 | 0 | | 2 | 4 | 2 | 4 | | 4 | 2 | 4 | 0 | | 0 | 4 | 0 | 8 |   **Player B** | CO2 | 14 |
| 7. | a. | Six sigma enables \_\_\_\_\_\_\_\_ ppm defects only in a company. | CO3 | 1 |
|  | b. | Write the classifications of quality costs. | CO3 | 1 |
|  | c. | List the three gaps used in Benchmarking. | CO3 | 2 |
|  | d. | Write the uses of histogram and barchart. | CO3 | 2 |
|  | e. | Discuss the Quality Function of Deployment (QFD) process with suitable diagrams. | CO3 | 14 |
| (OR) | | | | |
| 8. | a. | Define Total Quality Management. | CO3 | 1 |
|  | b. | Name the three types of gaps in bench marking. | CO3 | 1 |
|  | c. | What is the use of quality function deployment? | CO3 | 2 |
|  | d. | List the 5 S technique in tools management. | CO3 | 2 |
|  | e. | Explain the 14 principles of Deming on TQM implementation. | CO3 | 14 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Is ISO certifiacate compulsory in India? | CO3 | 1 |
|  | b. | Define Environment. | CO3 | 1 |
|  | c. | Draw the documentation pyramid of ISO certification procedure. | CO3 | 2 |
|  | d. | Write a noe on quality audit. | CO3 | 2 |
|  | e. | Explain the ISO quality management implementation procedure. | CO3 | 14 |

ALL THE BEST