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

**Karunya University**

**(Karunya Institute of Technology and Sciences)**

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

**End Semester Examination – Nov/ Dec - 2016**

**Subject Title : PRINCIPLES OF RESOURCE AND QUALITY MANAGEMENT Time : 3 hours**

**Subject Code:11ME207/ 12ME242/ ME243 Maximum Marks: 100**

#### **Answer ALL questions**

**PART – A (10 x 1 = 10 MARKS)**

1. List the various methods to arrive at an initial solution in transportation problem.

2. What is meant by feasible solution?

3. Draw a network for the following activities and find the critical path.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Activities | 1-2 | 1-3 | 1-4 | 2-4 | 3-4 |
| Duration(days) | 3 | 4 | 6 | 5 | 2 |

4. How expected time and variance can be calculated from the three time estimates?

5. Solve the following game by saddle point.

Player B

|  |  |
| --- | --- |
| −3 | 3 |
| −2 | 4 |
| 2 | 3 |

Player A

6. What is meant by ‘A’ class items in the inventory management?

7. List out the three types of gaps in bench marking.

8. Define QFD?

9. Name some IT tools used for quality management.

10. Mention any two elements of a quality system.

**PART – B (5 x 3 = 15 MARKS)**

11. Classify the types of simplex problems.

12. Write brief notes on dummy activity, critical path and economical network.

13. List out the various types and functions of inventory.

14. List the 5 S technique in tools management.

15. Mention the benefits of ISO registration.

**PART – C (5 x 15 = 75 MARKS)**

16. In a manufacturing firm, there are 5 Jobs and 5 machines. The associated cost of allocating a job to the machines is given in the table. Determine the optimal assignment of jobs so that the total cost of allocating all the jobs is minimized.

Machines

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 11 | 17 | 8 | 16 | 20 |
| 9 | 7 | 12 | 6 | 15 |
| 13 | 16 | 15 | 12 | 16 |
| 21 | 24 | 17 | 28 | 26 |
| 14 | 10 | 12 | 11 | 15 |

Jobs

[P.T.O.]

(OR)

17. Solve the following linear programming problem.

Maximize Z = 2X1  + 3X2 + X3

Subjected to 4X1  + 3X2 + X3 = 6

2X1+ 3X2 + X3 = 4

With restrictions X1, X2, X3 ≥ 0

18. Solve the following transportation problem. Cell entries represent the unit of shipping.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | I | II | III | IV | V |
| A | 12 | 4 | 9 | 5 | 9 |
| B | 8 | 1 | 6 | 6 | 7 |
| C | 1 | 12 | 4 | 7 | 7 |
| D | 10 | 15 | 6 | 9 | 1 |

The availability at the sources I, II, III, IV and V are 40, 20, 50, 30 and 40 respectively. The requirement at destinations A, B, C and D are 55, 45, 30 and 50 respectively. Find the initial solution by Vogell’s approximation method and optimal allocation using MODI method.

(OR)

19. Find the sequence that minimizes the total elapsed time required to complete the following jobs.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Jobs | 1 | 2 | 3 | 4 | 5 |
| M/c A(hrs) | 5 | 7 | 6 | 9 | 5 |
| M/c B(hrs) | 2 | 1 | 4 | 5 | 3 |
| M/c C(hrs) | 3 | 7 | 5 | 6 | 7 |

20. Draw a graph and conduct ABC analysis for the following 10 items in an inventory

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Items | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Annual  Usage(units) | 200 | 3000 | 25 | 1100 | 60 | 250 | 140 | 850 | 550 | 80 |
| Unit Cost(`) | 11 | 14 | 9 | 6 | 5 | 90 | 6 | 6 | 15 | 9 |

(OR)

21. 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

22. What is benchmarking? Discuss in detail about benchmarking and also the reasons to benchmark and its procedure.

(OR)

23. Explain Deming’s 14 principles of quality in detail.

24. Explain the process of documentation in detail and discuss how documentation helps for quality auditing.

(OR)

25. Describe the role of following IT tools in Quality Management:

a. Video conferencing, b. Virtual teaming and c. e- governance.