Final Test Paper 2 INDIAN INSTITUTE OF MATERIALS MANAGEMENT
Quantitative Techniques & Operations Research GDMM/PGDMM 3 YEARS

Instructions:
1. Answer all 50 questions. Each question carries 2 marks Total: 100 Marks
2. Duration 1 Hour.

*Required

1. Email *

2. Name *

3. Roll Number *

4. 1. Operations Research approach is ____________.

   Mark only one oval.
   ○ multi-disciplinary
   ○ scientific
   ○ intuitive
   ○ collect essential data

5. 2. A feasible solution to a linear programming problem ____________.

   Mark only one oval.
   ○ must satisfy all the constraints of the problem simultaneously
   ○ need not satisfy all of the constraints, only some of them
   ○ must be a corner point of the feasible region.
   ○ must optimize the value of the objective function
6. If any value in XB column of final simplex table is negative, then the solution is __________.

   *Mark only one oval.*

   - Option 1
   - infeasible
   - bounded
   - no solution

7. For any primal problem and its dual __________.

   *Mark only one oval.*

   - optimal value of objective function is same
   - dual will have an optimal solution iff primal does too
   - primal will have an optimal solution iff dual does too
   - both primal and dual cannot be infeasible

8. The difference between total float and head event slack is __________.

   *Mark only one oval.*

   - free float
   - independent float
   - interference float
   - linear float

9. An optimal assignment requires that the maximum number of lines which can be drawn through squares with zero opportunity cost should be equal to the number of __________.

   *Mark only one oval.*

   - rows or columns
   - rows and columns
   - rows-columns-1
   - rows-columns
10. To proceed with the Modified Distribution method algorithm for solving an transportation problem, the number of dummy allocations need to be added are ____________.

*Mark only one oval.*

- [ ] n
- [ ] n-1
- [ ] 2n-1
- [ ] n-2

11. 8. Select the correct statement for EOQ

*Mark only one oval.*

- [ ] EOQ is that quantity at which price paid by the buyer is minimum
- [ ] If annual demand doubles with all other parameters remaining constant, the Economic Order Quantity is doubled
- [ ] Total ordering cost equals holding cost
- [ ] Stock out cost is never permitted

12. 9. Service mechanism in a queuing system is characterized by ____________.

*Mark only one oval.*

- [ ] customers behavior
- [ ] servers behavior
- [ ] customers in the system
- [ ] server in the system

13. 10. The objective of network analysis is to ____________.

*Mark only one oval.*

- [ ] minimize total project duration
- [ ] minimize total project cost
- [ ] minimize production delays, interruption and conflicts
- [ ] maximize total project duration
11. In program evaluation review technique network each activity time assume a beta distribution because____________.

*Mark only one oval.*

- [ ] it is a unimodal distribution that provides information regarding the uncertainty of time estimates of activities
- [ ] it has got finite non-negative error
- [ ] it need not be symmetrical about model value
- [ ] the project is progressing well

12. If there is no non-negative replacement ratio in solving a Linear Programming Problem then the solution is ____________.

*Mark only one oval.*

- [ ] feasible
- [ ] bounded
- [ ] unbounded
- [ ] infinite

13. The calling population is considered to be infinite when ____________.

*Mark only one oval.*

- [ ] all customers arrive at once
- [ ] capacity of the system is infinite
- [ ] service rate is faster than arrival rate
- [ ] arrivals are independent of each other

14. In marking assignments, which of the following should be preferred?

*Mark only one oval.*

- [ ] Only row having single zero
- [ ] Only column having single zero
- [ ] Only row/column having single zero
- [ ] Column having more than one zero
18. A petrol pump has one pump; Vehicles arrive at the petrol pump according to poison input process at average of 12 per hour. The service time follows exponential distribution with a mean of 4 minutes. The pumps are expected to be idle for ____________.

*Mark only one oval.*

- 3/5
- 4/5
- 5/3
- 6/5

19. If the order quantity (size of order) is increased, ____________

*Mark only one oval.*

- Holding costs decrease and ordering costs increase
- Holding costs increase and ordering costs decrease
- The total costs increase and then decrease
- Storage cost as well as stock-out cost increase

20. ____________ is a mathematical technique used to solve the problem of allocating limited resource among the competing activities

*Mark only one oval.*

- Linear Programming problem
- Assignment Problem
- Replacement Problem
- Non linear Programming Problem

21. A mixed strategy game can be solved by ____________.

*Mark only one oval.*

- Simplex method
- Hungarian method
- Graphical method
- Degeneracy
22. The activity cost corresponding to the crash time is called the _____________.  
Mark only one oval.

- [ ] critical time
- [ ] normal time
- [ ] cost slope
- [ ] crash cost

23. A set of feasible solution to a Linear Programming Problem is _____________.  
Mark only one oval.

- [ ] convex
- [ ] polygon
- [ ] triangle
- [ ] bold

24. In an Linear Programming Problem functions to be maximized or minimized are called _____________.  
Mark only one oval.

- [ ] constraints
- [ ] objective function
- [ ] basic solution
- [ ] feasible solution

25. If the primal problem has n constraints and m variables then the number of constraints in the dual problem is _____________.  
Mark only one oval.

- [ ] mn
- [ ] m+n
- [ ] m-n
- [ ] m/n
23. The non basic variables are called _____________.

*Mark only one oval.*

- shadow cost
- opportunity cost
- slack variable
- surplus variable

24. Key element is also known as _____________.

*Mark only one oval.*

- slack
- surplus
- artificial
- pivot

25. The solution to a transportation problem with m-sources and n-destinations is feasible if the numbers of allocations are _____________.

*Mark only one oval.*

- m+n
- mn
- m-n
- m+n-1

26. The allocation cells in the transportation table will be called ____________ cell

*Mark only one oval.*

- occupied
- unoccupied
- no
- finite
30. 27. To resolve degeneracy at the initial solution, a very small quantity is allocated in ___________ cell.

*Mark only one oval.*

- occupied
- unoccupied
- no
- finite

31. 28. The assignment algorithm was developed by ___________ method.

*Mark only one oval.*

- HUNGARIAN
- VOGELS
- MODI
- TRAVELING SALES MAN

32. 29. An assignment problem is a particular case of ___________.

*Mark only one oval.*

- transportation Problem
- assignment Problem
- travelling salesman problem
- replacement Problem

33. 30. The coefficient of slack/surplus variables in the objective function are always assumed to be ___________.

*Mark only one oval.*

- 0
- 1
- M
- -M
34. Using ________ method, we can never have an unbounded solution.

*Mark only one oval.*

- Simplex
- Dual simplex
- Big M
- Modi

35. The customers of high priority are given service over the low priority customers is ________.

*Mark only one oval.*

- Pre-emptive
- FIFO
- LIFO
- SIRO

36. A queuing system is said to be a ________ when its operating characteristic are independent upon time.

*Mark only one oval.*

- pure birth model
- pure death model
- transient state
- steady state

37. An activity which does not consume neither any resource nor time is known as ________.

*Mark only one oval.*

- predecessor activity
- successor activity
- dummy activity
- activity
35. The difference between total and free float is ____________.

*Mark only one oval.*

- total
- free
- independent
- interference

36. The number of time estimates involved in Program Evaluation Review Technique problem is ____________.

*Mark only one oval.*

- 1
- 2
- 3
- 4

37. The assignment problem is always a ____________ matrix.

*Mark only one oval.*

- circle
- square
- rectangle
- triangle

38. The slack variables indicate ____________.

*Mark only one oval.*

- excess resource available
- shortage of resource
- nil resource
- idle resource
42. If the net evaluation corresponding to any non-basic variable is zero, it is an indication of the existence of an ____________. 

Mark only one oval.
- initial basic feasible solution
- optimum basic feasible solution
- optimum solution
- alternate optimum solution

43. Mathematical model of linear programming problem is important because ____________.

Mark only one oval.
- it helps in converting the verbal description and numerical data into mathematical expression
- decision makers prefer to work with formal models
- it captures the relevant relationship among decision factors
- it enables the use of algebraic technique

44. While solving a linear programming problem infeasibility may be removed by ____________.

Mark only one oval.
- adding another constraint
- adding another variable
- removing a constraint
- removing a variable

45. The right hand side constant of a constraint in a primal problem appears in the corresponding dual as ____________.

Mark only one oval.
- a coefficient in the objective function
- a right hand side constant of a function
- an input output coefficient a left hand side constraint
- coefficient variable
46. During iteration while moving from one solution to the next, degeneracy may occur when ____________

Mark only one oval.

○ the closed path indicates a diagonal move
○ two or more occupied cells are on the closed path but neither of them represents a corner of the path.
○ two or more occupied cells on the closed path with minus sign are tied for lowest circled value.
○ the closed path indicates a rectangle move.

47. Maximization assignment problem is transformed into a minimization problem by ____________.

Mark only one oval.

○ adding each entry in a column from the maximum value in that column
○ subtracting each entry in a column from the maximum value in that column
○ subtracting each entry in the table from the maximum value in that table
○ adding each entry in the table from the maximum value in that table

48. Priority queue discipline may be classified as ____________.

Mark only one oval.

○ pre-emptive or non-pre-emptive
○ limited
○ unlimited
○ finite

49. Replace an item when ____________.

Mark only one oval.

○ average cost upto date is equal to the current maintenance cost
○ average cost upto date is greater than the current maintenance cost
○ average cost upto date is less than the current maintenance cost.
○ next year running cost in more than average cost of nth year
50. 47. In time cost trade off function analysis _________.

*Mark only one oval.*

- □ cost decreases linearly as time increases
- □ cost increases linearly as time decreases
- □ cost at normal time is zero
- □ cost increases linearly as time increases

51. 48. The transportation problem deals with the transportation of _________.

*Mark only one oval.*

- □ a single product from a source to several destinations
- □ a single product from several sources to several destinations
- □ a single product from several sources to a destination
- □ a multi-product from several sources to several destinations

52. 49. The minimum number of lines covering all zeros in a reduced cost matrix of order n can be _________.

*Mark only one oval.*

- □ at the most n
- □ at the least n
- □ n-1
- □ n+1

53. 50. For a 2.5% increase in order quantity (under fundamental EOQ problem) the total relevant cost would _________.

*Mark only one oval.*

- □ increase by 2.5%.
- □ decrease by 2.5%.
- □ increase by 0.25%.
- □ decrease by 0.25%.