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O.M.R. Serial No. | | | | | | | |

Question Booklet Number

B.Com. (Hons.) (SEM.-IV) EXAMINATION, 2025-26

COMMERCE

(Operations Research)

[CODE : BCH-403]

Paper Code							
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Question Booklet Series
A

Time : 1 : 30 Hours **Max. Marks : 75**

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.
4. Four alternative answers are mentioned for each question as - A, B, C & D in the booklet. The candidate has to choose the correct / answer and mark the same in the OMR Answer-Sheet as per the direction :

(Remaining instructions on last page)

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, उसे तुरन्त बदल लें।
4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर- A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छाँटना है। उत्तर को OMR उत्तर-पत्रक में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

(शेष निर्देश अन्तिम पृष्ठ पर)

1. Operations Research originated during :

(A) World War I

(B) World War II

(C) Industrial Revolution

(D) Cold War

2. Operations Research was first applied in :

(A) Agriculture

(B) Military Operations

(C) Banking

(D) Education

3. The term 'Operations Research' was first used in :

(A) USA

(B) Germany

(C) UK

(D) India

4. Operations Research is mainly concerned with :

(A) Intuition-based decisions

(B) Scientific decision-making

(C) Political decisions

(D) Emotional judgments

5. The nature of OR is :

(A) Artistic

(B) Scientific and Quantitative

(C) Religious

(D) Historical

6. Which is not a feature of OR?

(A) Systems approach

(B) Team work

(C) Guesswork

(D) Mathematical modeling

7. The first phase of OR Methodology is :

(A) Solution

(B) Model construction

(C) Problem definition

(D) Implementation

8. Model in OR refers to :

(A) Physical object

(B) Simplified representation of reality

(C) Human model

(D) Machine

9. Mathematical models are also known as :

(A) Iconic models

(B) Symbolic models

(C) Physical models

(D) Static models

10. Iconic models are :

(A) Mathematical

(B) Physical replicas

(C) Verbal models

(D) Graphical

11. Deterministic models assume :

(A) Uncertainty

(B) Risk

(C) Certainty

(D) Probability

12. Probabilistic models deal with :

(A) Certainty

(B) Risk and Uncertainty

(C) Fixed values

(D) Static conditions

13. OR techniques include :

(A) Linear programming

(B) Astrology

(C) Politics

(D) Guessing

14. Scope of OR in business includes :

(A) Production planning

(B) Astrology

(C) Superstition

(D) Fashion

15. OR uses interdisciplinary approach involving :

(A) Only managers

(B) Team of experts

(C) Only accountants

(D) Politicians

16. Feasible solution means :

(A) Violates constraints

(B) Satisfies all constraints

(C) Ignores objective

(D) No solution

17. Objective function represents :

(A) Constraints

(B) Goal to maximize or minimize

(C) Decision variables

(D) Slack variables

18. Constraints represent :

(A) Goals

(B) Limitations

(C) Profits

(D) Costs

19. OR Methodology ends with :

(A) Model formulation

(B) Implementation

(C) Problem identification

(D) Data collection

20. OR techniques are mainly quantitative in nature :

(A) True

(B) False

(C) Partially

(D) None of the above

21. The systems approach in Operations Research means :

(A) Studying each part separately

(B) Studying the organization as a whole system

(C) Ignoring interrelationships

(D) Focusing only on profits

22. Which of the following is a phase of Operations Research?

(A) Gossiping

(B) Model validation

(C) Advertising

(D) Recruitment

23. A model that uses physical representation is called :

(A) Symbolic model

(B) Mathematical model

(C) Iconic model

(D) Probabilistic model

24. Which of the following is a commercial application of OR?

(A) Inventory control

(B) Astrology prediction

(C) Political campaign

(D) Weather forecasting

25. Sensitivity analysis in OR helps to :

(A) Ignore changes

(B) Study effect of parameter changes

(C) Increase cost

(D) Eliminate constraints

26. LPP stands for :

(A) Linear Programming Problem

(B) Logical Planning Process

(C) Linear Process Plan

(D) None of the above

27. LPP deals with optimization of :

(A) Single objective

(B) Multiple unrelated objectives

(C) No objective

(D) Random objective

28. Graphical method is applicable when variables are :

(A) Two

(B) Three

(C) Four

(D) Five

29. Standard form of LPP requires :

(A) $\leq$ constraints

(B) $\geq$ constraints

(C) Equality constraints

(D) No constraints

30. Simplex method is used when variables are :

(A) Two only

(B) More than two

(C) One

(D) None of the above

31. Slack variable is added to :

(A) $\geq$ constraint

(B) $\leq$ constraint

(C) Objective

(D) None of the above

32. Surplus variable is subtracted from :

(A) $\geq$ constraint

(B) $\leq$ constraint

(C) Objective

(D) None of the above

33. Feasible region in LPP is :

(A) Infeasible area

(B) Intersection of constraints

(C) Outside area

(D) None of the above

34. Optimal solution lies at :

(A) Any point

(B) Corner point

(C) Midpoint

(D) Origin

35. Economic interpretation of simplex solution gives :

(A) Shadow prices

(B) Political values

(C) Personal values

(D) Random values

36. An infeasible solution occurs when :

(A) Constraints are satisfied

(B) No common feasible region exists

(C) Objective function is maximized

(D) Solution is optimal

37. An unbounded solution means :

(A) No feasible region

(B) Objective function increases indefinitely

(C) Unique solution

(D) Multiple solution

38. Artificial variables are introduced in :

(A) Graphical method

(B) Big M method

(C) MODI method

(D) Assignment method

39. Degeneracy in LPP occurs when :

(A) More basic variables than constraints

(B) A basic variable takes zero value

(C) No feasible solution

(D) Infinite solution

40. In maximization problem, optimality is reached when :

(A) All $Cj - Zj \geq 0$

(B) All $Cj - Zj \leq 0$

(C) All values positive

(D) All values negative

41. In minimization problem, optimality is reached when :

(A) All $Cj - Zj \geq 0$

(B) All $Cj - Zj \leq 0$

(C) All values zero

(D) None of the above

42. The feasible region in graphical method is :

(A) Shaded area satisfying constraints

(B) Entire graph

(C) Outside area

(D) Origin only

43. Linear Programming assumes :

(A) Non-linearity

(B) Certainty and Proportionality

(C) Randomness

(D) Circularity

44. The objective function in LPP must be :

(A) Linear

(B) Quadratic

(C) Exponential

(D) Logarithmic

45. A redundant constraint is one which :

(A) Affects solution

(B) Does not affect feasible region

(C) Makes solution infeasible

(D) Maximizes profit

46. Dual of LPP provides information about :

(A) Slack variables

(B) Shadow prices

(C) Transportation cost

(D) Assignment

47. Shadow price represents :

(A) Market value

(B) Marginal value of resource

(C) Total cost

(D) Fixed cost

48. Big M method is used when :

(A) Only $\leq$ constraints exist

(B) Artificial variables are required

(C) Graphical solution is applied

(D) No constraints exist

49. The corner point theorem states that :

(A) Optimal solution lies outside region

(B) Optimal solution lies at extreme point

(C) No solution exists

(D) Infinite solutions

50. Linear Programming is widely used in :

(A) Production planning

(B) Superstition

(C) Political science

(D) Music

51. Transportation model aims to :

(A) Maximize distance

(B) Minimize transportation cost

(C) Increase supply

(D) Increase demand

52. Balanced transportation problem means :

(A) Supply = Demand

(B) Supply > Demand

(C) Demand > Supply

(D) None of the above

53. North-West Corner method gives :

(A) Optimal solution

(B) Initial feasible solution

(C) Infeasible solution

(D) No solution

54. Vogel's Approximation Method (VAM) gives:

(A) Poor solution

(B) Better initial solution

(C) No solution

(D) Random solution

55. MODI method is used for :

(A) Initial solution

(B) Optimality test

(C) Graphical solution

(D) Assignment

56. Stepping stone method is used for :

(A) Feasibility

(B) Optimality testing

(C) Modeling

(D) None of the above

57. Assignment problem is special case of :

(A) LPP

(B) Transportation problem

(C) Game theory

(D) Decision theory

58. Hungarian method is used for :

(A) Transportation

(B) Assignment

(C) LPP

(D) Inventory

59. In assignment problem, number of jobs must equal :

(A) Workers

(B) Machines

(C) Tasks

(D) All of the above

60. If total supply exceeds total demand, the problem is :

(A) Balanced

(B) Unbalanced

(C) Optimal

(D) Degenerate

61. To balance an unbalanced TP, we add :

(A) Extra constraint

(B) Dummy row or column

(C) Artificial variable

(D) Slack variable

62. Degeneracy in TP occurs when allocations are less than :

(A) $m + n - 1$

(B) $m \times n$

(C) $m - n$

(D) $n - m$

63. Opportunity cost in MODI method is represented by :

(A) Cij

(B) Δ ij

(C) Ui

(D) Vj

64. Optimal solution in TP exists when :

(A) All $\Delta ij \geq 0$ (minimization)

(B) Some Δ ij negative

(C) All allocations zero

(D) None of the above

65. In profit maximization TP, we convert it into :

(A) Cost minimization problem

(B) Assignment problem

(C) Game theory

(D) Decision tree

66. Assignment problem matrix is :

(A) Rectangular

(B) Square

(C) Triangular

(D) Circular

67. Hungarian method is also called :

(A) Matrix reduction method

(B) Graphical method

(C) Big M method

(D) MODI method

68. Multiple optimal solutions in assignment occur when :

(A) More than one zero opportunity cost

(B) Only one zero

(C) No zero

(D) All values positive

69. If jobs exceed workers, we add :

(A) Slack

(B) Dummy worker

(C) Artificial variable

(D) Surplus

70. Transportation model is used mainly for :

(A) Scheduling

(B) Allocation of goods

(C) Strategy making

(D) Forecasting

71. Initial feasible solution does not guarantee :

(A) Feasibility

(B) Optimality

(C) Allocation

(D) Balance

72. VAM is preferred because it :

(A) Gives poor solution

(B) Provides near optimal initial solution

(C) Is simplest

(D) Avoids allocation

73. MODI method is also known as :

(A) U-V method

(B) North-West method

(C) Graphical method

(D) Big M method

74. Stepping stone method evaluates :

(A) Basic cells

(B) Empty cells

(C) All cells

(D) None of the above

75. Assignment problem minimizes :

(A) Profit

(B) Cost or time

(C) Demand

(D) Supply

76. Decision theory deals with :

(A) Optimization under uncertainty

(B) Deterministic models

(C) Transport models

(D) Assignment

77. Decision under certainty means :

(A) Known outcomes

(B) Unknown outcomes

(C) Random events

(D) Risk

78. Decision under risk involves :

(A) No probabilities

(B) Known probabilities

(C) No data

(D) Guess

79. Decision under uncertainty means :

(A) Known probabilities

(B) Unknown probabilities

(C) Fixed outcome

(D) None of the above

80. Decision tree helps in :

(A) Graphical analysis of decisions

(B) Transportation

(C) Assignment

(D) LPP

81. Game theory studies :

(A) Competition between players

(B) Cooperation

(C) Random events

(D) Inventory

82. Two-person zero sum game means :

(A) Both gain

(B) One's gain = other's loss

(C) Both lose

(D) None of the above

83. Saddle point indicates :

(A) Pure strategy solution

(B) Mixed strategy

(C) No solution

(D) None of the above

84. Rule of dominance is applied to :

(A) Eliminate inferior strategies

(B) Add strategies

(C) Multiply payoff

(D) None of the above

85. Mixed strategy is used when :

(A) Saddle point exists

(B) No saddle point

(C) Deterministic

(D) Balanced

86. Maximin criterion is used in :

(A) Certainty

(B) Risk

(C) Uncertainty

(D) Deterministic case

87. Minimax regret criterion is also called :

(A) Laplace criterion

(B) Savage criterion

(C) Hurwicz criterion

(D) Wald criterion

88. Laplace criterion assumes :

(A) Equal probabilities

(B) Known probabilities

(C) No probabilities

(D) Maximum regret

89. Hurwicz criterion combines :

(A) Optimism and Pessimism

(B) Risk and Certainty

(C) Cost and Demand

(D) Profit and Loss

90. Expected Monetary Value (EMV) is used in :

(A) Certainty

(B) Risk

(C) Uncertainty

(D) None of the above

91. Payoff matrix shows :

(A) Costs only

(B) Gains or losses for strategies

(C) Constraints

(D) Variables

92. In two-person zero sum game :

(A) Total payoff constant

(B) Total payoff variable

(C) Both win

(D) Both lose

93. Saddle point occurs when :

(A) Maximin = Minimax

(B) Maximin $\neq$ Minimax

(C) No strategy

(D) Mixed strategy

94. Pure strategy means :

(A) Random choice

(B) Fixed strategy

(C) Mixed strategy

(D) No strategy

95. Mixed strategy involves :

(A) Single action

(B) Probability distribution over strategies

(C) Deterministic choice

(D) No choice

96. Rule of dominance helps to :

(A) Increase matrix size

(B) Eliminate dominated strategies

(C) Add strategies

(D) Multiply payoff

97. Game without saddle point requires :

(A) Pure strategy

(B) Mixed strategy

(C) No strategy

(D) Deterministic solution

98. Value of game indicates :

(A) Strategy count

(B) Expected gain or loss

(C) Constraints

(D) Matrix size

99. Decision tree consists of :

(A) Nodes and Branches

(B) Matrices only

(C) Variables only

(D) Equations only

100. Game theory mainly deals with :

(A) Cooperation only

(B) Competitive situations

(C) Transportation

(D) Assignment

Rough Work

Example :

Question :

Q.1 Ⓐ ● Ⓒ Ⓓ

Q.2 Ⓐ Ⓑ ● Ⓓ

Q.3 Ⓐ ● Ⓒ Ⓓ

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.

6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.

7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.

8. After the completion of the examination, candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.

9. There will be no negative marking.

10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.

11. To bring and use of log-book, calculator, pager & cellular phone in examination hall is prohibited.

12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

उदाहरण :

प्रश्न :

प्रश्न 1 Ⓐ ● Ⓒ Ⓓ

प्रश्न 2 Ⓐ Ⓑ ● Ⓓ

प्रश्न 3 Ⓐ ● Ⓒ Ⓓ

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।

6. सभी उत्तर केवल ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।

7. ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।

8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।

9. निगेटिव मार्किंग नहीं है।

10. कोई भी रफ कार्य, प्रश्न-पुस्तिका में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।

11. परीक्षा-कक्ष में लॉग-बुक, कैल्कुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।

12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्णः प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।