

**2022**

*Time : 3 hours*

*Full Marks : 70*

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

*Answer from both the Groups as directed.*

**Section – A**

**(Long-answer Type Questions)**

Answer any **four** questions :  $10 \times 4 = 40$

~~1.~~ Define Operation Research and discuss its scope. 10 — 7

2. A firm produces four products. These products are processed on four different machines. The time required to manufacture on unite of each of

CJ – 174/3

(Turn over)

the four products and the daily capacity of the four machines are given in the table below : 10

Machine	Time per Unit (in minutes)				Machine Capacity minutes/day
	Product-1	Product-2	Product-3	Product-4	
M <sub>1</sub>	0	2	3	4	400
M <sub>2</sub>	2	0	4	1	450
M <sub>3</sub>	3	4	0	2	440
M <sub>4</sub>	4	1	2	0	470

The profit per unit of the product - 1, 2, 3 and 4 is Rs. 2, 4, 3 and 5 respectively. It is assumed that all the products are consumed in the market. Formulate the Linear Programming Model.

f. Solve the linear programming problem graphically : 10

$$\begin{aligned} \text{Max. } Z &= 3x_1 + 5x_2 \\ \text{s. t. } &x_1 + 2x_2 \leq 20 \\ &x_1 + x_2 \leq 15 \\ &x_2 \leq 8 \\ &x_1, x_2 \geq 0 \end{aligned}$$

4

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(2)

Contd.

\* Solve the linear programming problem graphically : 10

$$\begin{aligned} \text{Min. } Z &= 3x_1 + 5x_2 \\ \text{s. t. } &x_1 + 3x_2 \geq 3 \\ &x_1 + x_2 \geq 2 \\ &x_1, x_2 \geq 0 \end{aligned}$$

4

5. Using, Simplex method to solve the linear programming problem : 10

$$\begin{aligned} \text{Max. } Z &= 7x_1 + 5x_2 \\ \text{s. t. } &x_1 + 2x_2 \leq 6 \\ &4x_1 + 3x_2 \leq 12 \\ &x_1, x_2 \geq 0 \end{aligned}$$

6. Determine the initial basic feasible solution to the following transportation problem using North-West Corner method : 10

	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	W <sub>4</sub>	W <sub>5</sub>	Supply
F <sub>1</sub>	3	4	6	8	9	20
F <sub>2</sub>	2	10	1	5	8	30
F <sub>3</sub>	7	11	20	40	3	15
F <sub>4</sub>	2	1	9	14	16	13
Demand	40	6	8	18	6	

4

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(3)

(Turn over)

7. Find the optimal assignment for the assignment problem with the following cost matrix: 10

		Machines			
		1	2	3	4
Jobs	1	5	7	11	6
	2	8	5	9	6
	3	4	7	10	7
	4	10	4	8	3

8. For a certain activity the total float is 12 weeks and the head event slack is 3 weeks. Compute the free float for this activity: 10

**Section - B**

**(Short-answer Type Questions)**

9. Answer all questions: 10×3 = 30

- (a) Describe, briefly the application of operation research.
- (b) What are the limitations of Operation Research?
- (c) Write the following invalid objective function in valid form:

$$\text{Max } Z = \sum_{j=1}^n C_j x_j + c$$

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(4) *Invalid, apply sub time line method.*  
Contd.

(d) Plot the graph for:

$$x - 2y \leq 1$$

$$x + 2y \geq 3$$

$$x, y \geq 0$$

Express the following LPP in standard form:

$$\text{Min. } Z = 4x_1 + 10x_2$$

$$\text{s. t. } x_1 + x_2 \geq 8$$

$$2x_1 + 5x_2 \geq 16$$

$$2x_1 + 3x_2 \geq 14$$

$$x_1, x_2 \geq 0$$

(a) Define assignment Model. 1

(b) Write full form of VAM and MODI in transportation Model. 2

(c) Give an assignment model for 2 machines and 2 jobs. 1

(i) Write three CPM terms. 2

(ii) What is the critical path? 1

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(5) UG - BCA (C - 601)

**2022**

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*Answer from both the Groups as directed.*

**Group – A**

Answer any **four** questions of the following :

10×4 = 40

- ① What is Management ? Discuss the importance of Management.
- ② "Management is an Art or Science or both." Explain this statement. 3  
7  
7
3. Explain the contribution of F. W. Taylor in the field of Management. 6  
6
4. Describe the different types of Organization. 8  
42

5. Define Direction and discuss its principles.

6. Explain the various types of Communication. *Visual*

7. Define Controlling. State the steps in the process of controlling.

8. Discuss the need of Co-ordination.

*✓ orally  
✓ signs  
✓*

### Group – B

9. Answer all questions of the following :  $3 \times 10 = 30$

✓ (a) Define Management.

✓ (b) What is Management Skills ?

✓ (c) What is Social Responsibility ?

✓ (d) What is meant by Business Ethics ?

✓ (e) Explain the concept of Planning.

✓ (f) Define Delegation.

✓ (g) What is Staffing ?

✓ (h) Define Delegation of Authority.

~~(i) Explain the term 'Motivation'.~~

✓ (j) Define Leadership.



*deviation*

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**Group – A**

Answer any four questions of the following :

10×4 = 40

1. Explain the different sources of Business Finance.
2. Pass journal entries for the following transactions :

**Amount in Rs.**

(a) May 1 Mr. A commenced  
business with cash 1,20,000

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(Turn over)

10 marks

	Amount in Rs.
(b) May 5 Purchased goods for cash	30,000
(c) May 8 Goods sold to Mr. B	16,000
(d) May 10 Paid for stationery	1,100
(e) May 15 Paid salary to Prakash	12,000

8  
7  
6  
5  
4  
3  
2  
1  
38

3. What do you understand by Financial Management? Describe its importance, also explain the function of a financial manager.

7  
6  
5  
4  
3  
2  
1  
34

4. Prepare a Balance Sheet from the following information:

	Amount in Rs.
Capital	68,000
Sundry Creditors	30,000
Plant and Machinery	20,000
Furniture	3,000
Sundry Debtors	38,000
Cash in hand	2,000
Drawings	5,000
Motor Car	18,500
Prepaid Rent	3,000
Cash at Bank	10,000

18,500  
34

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(2)

Contd.

	Amount in Rs.
Closing Stock	8,000
Net Profit	14,000
Land and Building	10,500
General Reserve	6,000

5. Give the format of Trial Balance with imaginary figures.

6. What is Accounting? Distinguish between Book Keeping and Accounting.

7. From the following information prepare Cash Book:

	Amount in Rs.
Opening Cash Balance	1,00,000
Cash Sales	10,00,000
Rent paid in cash	10,000
Amount deposited into fixed deposit	4,00,000
Cash paid to supplier	3,00,000
Cash Received from Debtor	4,50,000
Salary paid through Cheque	1,40,000

CJ - 175/3

(3)

(Turn over)

	Amount in Rs.
Received payment from a debtor in full settlement of 35,000	33,000
Payment made to supplier in full and final settlement of Rs. 1,00,000	98,000

8. Explain the rules for debit and credit with proper examples.

### Group – B

Answer all the questions : 3×10 = 30

9. What do you mean by Financial Accounting ?
10. What is Financial Management ?
11. What is Dividend ? *20% of*
12. What is Operating Activities ?
13. What is Fund Flow Statement ?
14. What is Provision ?
15. What do you mean by non-current liabilities ?
16. What do you understand by Business Entity Concept ? *condition*
17. What do you mean by General Reserve ?
18. What do you understand by Double Entry System ?

*credit → what comes  
income exp.*



CJ – 175/3 (200)      (4) UG — BCA (C – 603)



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UG — BCA  
(E — 606 A)

2022

*Time : 3 hours*

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*Answer from both the Groups as directed.*

**Group – A**

Answer any **four** questions of the following :

10×4 = 40

- ① What is MIS ? What is the need of MIS ? List important characteristics of MIS.
- 2 What do you mean by Decision Making ? Why is it difficult ? Explain Simon's model of decision making.

CJ – 149/2

( Turn over )

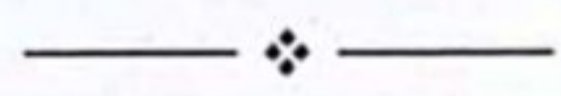
- 3. Define data and Information. What are the important characteristics of information? *- search reports - information*
- 4. What are different levels of management activities? List types of information systems which are served at different levels of management activities.
- 5. What do you mean by Decision Support System? Briefly explain active, passive and cooperative DSS. Give some application areas of DSS.
- 6. What are the different techniques for development of MIS? Discuss.
- 7. Discuss the evolution of CRM in present day. How it is strategically important for the success of a firm. Can there be any substitute of CRM for the business in recent days?
- 8. What are the various pitfalls in MIS development?

CJ - 149/2 (2) Contd.

**Group - B**

Answer all questions of the following : 3×10 = 30

- 9. Differentiate between Internal data and External data.
- 10. List important points for the failure of MIS.
- 11. Distinguish between Structured and Unstructured decision.
- 12. What is the role of managers in an organization?
- 13. What is the need of maintenance MIS?
- 14. Explain the term Information Age.
- 15. What is the importance of Computer in MIS?
- 16. What do you mean by Copyright Protection?
- 17. What is SCM? *supply chain management*
- 18. What do you mean by strategic information?



CJ - 149/2 (200) (3) UG - BCA (E - 606 A)

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2022

Time : 3 hours

Full Marks : 70

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*Answer from both the Groups as directed.*

**Group — A**

Answer any **four** questions of the following :

10×4 = 40

- ① Explain the various types of network security mechanism.
- ② What do you mean by Cryptography ? Differentiate between Symmetric key and Asymmetric key cryptography.

CJ — 148/2

( Turn over )

3. Draw the block diagram of DES algorithm.  
Explain briefly

4. What is Digital Signature ? Explain the working of digital signature with a neat diagram.

5. What is the need of authentication ? Explain various authentication functions.

6. Briefly explain the architecture of SSL.

7. What are the types of Firewall ? Explain each of them in detail.

8. Write short notes on any two of the following :

(a) Virus

(b) Kerberos

(c) Worms

(d) Cryptoanalysis

#### Group – B

9. Answer all questions :  $3 \times 10 = 30$

(a) Define Pretty Good Privacy (PGP) protocol.

(b) Differentiate between monoalphabetic and polyalphabetic cipher.

CJ – 148/2

( 2 )

Contd.

(c) Explain the term Integrity.

(d) Define Block Cipher.

(e) Compare Substitution and Transposition technique.

(f) Define Secure Electronic Transaction (SET) protocol.

(g) Describe how a virus is moved on the internet.

(h) What is Transport Layer Security (TLS) ?

(i) Differentiate between Active and Passive attack.

(j) Define Intruders.



CJ – 148/2 (200)

( 3 ) UG — BCA (C – 604)

the three products and the daily capacity of the machines are given in the table below :

Machine	Time per unit (in minutes)			Machine capacity Minutes/day
	Product - 1	Product - 2	Product - 3	
M <sub>1</sub>	40	30	20	100
M <sub>2</sub>	25	25	40	150

The profit per unit of the product - 1, 2, 3 is Rs. 2, 4, 3, respectively. It is assumed that all the products are consumed in the market. Formulate the Linear Programming Model. 10

3. Solve the linear programming problem graphically : 10

$$\begin{aligned} \text{Max. } Z &= 5x_1 + 3x_2 \\ \text{s. t. } \quad 3x_1 + 5x_2 &\leq 15 \\ \quad \quad 5x_1 + 2x_2 &\leq 10 \\ \quad \quad x_1, x_2 &\geq 0. \end{aligned}$$

LN - 155/3

(2)

Contd.

4. Solve the linear programming problem graphically : 10

$$\begin{aligned} \text{Min. } Z &= 3x_1 + 4x_2 \\ \text{s. t. } \quad x_1 - x_2 &\geq 0 \\ \quad \quad -x_1 + 2x_2 &\leq 2 \\ \quad \quad x_1, x_2 &\geq 0. \end{aligned}$$

5. Using, Simplex Method to solve the linear programming problem : 10

$$\begin{aligned} \text{Max. } Z &= x_1 + 2x_2 + 3x_3 \\ \text{s. t. } \quad 4x_1 + 2x_2 + x_3 &\leq 4 \\ \quad \quad x_1 + 2x_2 + 3x_3 &\geq 8 \\ \quad \quad x_1, x_2, x_3 &\geq 0. \end{aligned}$$

6. Determine the initial basic feasible solution to the following transportation problem using Vogel's approximation method : 10

LN - 155/3

(3)

(Turn over)

	$W_1$	$W_2$	$W_3$	$W_4$	Supply
$F_1$	7	2	5	5	30
$F_2$	4	4	6	5	15
$F_3$	5	3	3	2	10
$F_4$	4	-1	4	2	20
Demand	20	25	15	15	

7. Find the optimal assignment for the assignment problem with the following cost matrix : 10

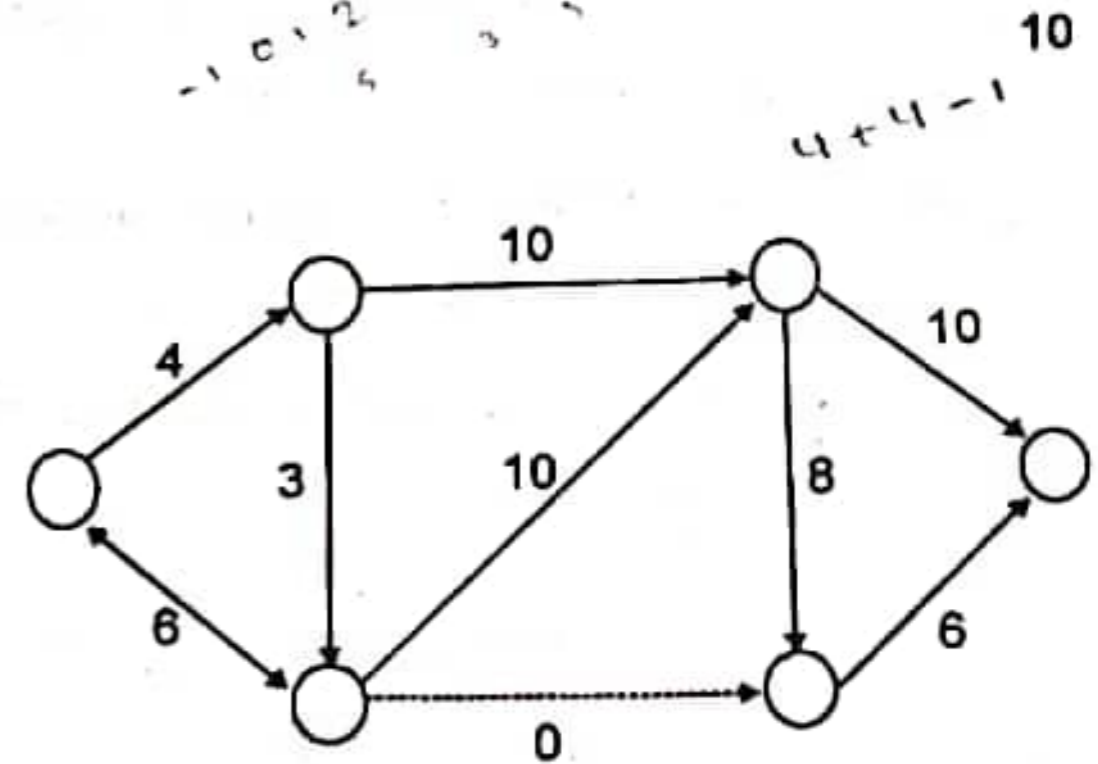
Jobs	Machine			
	1	2	3	4
1	2	3	4	5
2	4	5	6	7
3	7	8	9	8
4	3	5	8	4

LN - 155/3

(4)

Contd.

8. For the network shown below the scheduled completion time is 32 days. Determine the slack times for the events and identify the critical path :



Group - B

(Short-answer Type Questions)

9. Answer all questions : 3×10 = 30

(a) Discuss the role of computers in Operation Research.

LN - 155/3

(5)

(Turn over)

(b) Describe the objectives of Operation Research.

(c) Write down the general form of objective function in LPP.

(d) Define the slack and surplus variable in linear programming problem.

(e) Express the following LPP in standard form :

$$\text{Max. } Z = 4x_1 + 10x_2$$

$$\text{s. t. } 2x_1 + x_2 \leq 10$$

$$2x_1 + 5x_2 \leq 20$$

$$2x_1 + 3x_2 \leq 18$$

$$x_1, x_2 \geq 0.$$

(f) What are the dummy row and dummy column in assignment problem ?

(g) Name the four methods to find the basic feasible solution of a transportation problem.

LN - 155/3

(6)

Contd.

(h) Give an assignment model for m machines and n jobs.

(i) How CPM differs from PERT.

(j) Define Float and give its types.



mathematics

LN - 155/3 (150)

(7) UG - BCA (C - 601)

**2021**

*Time : 3 hours*

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*Answer from both the Groups as directed.*

**network security**

**Group – A**

Answer any **four** questions of the following :

10×4 = 40

1. Define network security ? Explain various network security services.
2. What is Cryptography ? Differentiate between Symmetric key cryptography and Asymmetric key cryptography.



3. What is Cryptanalysis ? Explain RSA algorithm in cryptography.

4. What is digital signature ? Explain how it is created by sender and verified by receiver.

5. What is Kerberos ? Explain the roles of the different servers in Kerberos Protocol.

6. Define Transport Layer Security (TLS) Protocol. How does TLS work ?

7. What do you mean by Firewall ? Explain how firewall can be used to protect the network.

8. What is a computer virus ? Explain the different phases of computer virus that it goes through in its lifetime.

#### Group – B

9. Answer all the questions :  $3 \times 10 = 30$

(a) Describe active and passive attacks.

(b) Describe data integrity.

LN – 158/2

(2)

Contd.

(c) What is Intrusion Detection System (IDS).

(d) List any five famous computer viruses.

(e) What is Secure Electronic Transaction (SET) ?

(f) What is Secure Socket Layer (SSL) ?

(g) What is an X.509 certificate ?

(h) What is IP Spoofing ?

(i) What is a Trojan horse ?

(j) Differentiate between Substitution Cipher and Transposition Cipher.

network security

LN – 158/2 (150)

(3) UG – BCA (C – 604)

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*Answer from both the Groups as directed.*

**MIS**

**Group – A**

Answer any **four** questions of the following :

10×4 = 40

1. What is MIS ? State its objectives ? Draw the neat diagram of concept of MIS.
2. What are the various levels of management activities in MIS ? Explain the function of each level in an organization.
3. What are the characteristics of an Information System ? Explain briefly all the major types of Information System.

LN – 159/2

( Turn over )

4. Define the term DSS. Discuss its different characteristics and various components of DSS.
5. What are the various techniques involved in development of MIS ? Discuss the advantages and disadvantages of each of them.
6. What is Supply Chain Management ? Explain the important components and elements of SCM ?
7. Define ESS. How ESS is supportive of MIS in any organization ? Explain.
8. What are the various pitfalls of a Management Information System ? State the Ethical and Social Issues in MIS.

**Group – B**

9. Answer all questions : 3×10 = 30
- (a) Explain the use of information for competitive advantage.
  - (b) What is an ERP system used for ?
  - (c) How Information Technology is related with MIS ? Explain.

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( 2 )

Contd.

- (d) What are knowledge workers ?
- (e) Explain the challenges involved in implementation of MIS.
- (f) How do decision making in group is performed ?
- (g) How structured decisions differ from unstructured decisions ?
- (h) What do you mean by active, passive and cooperative DSS ?
- (i) What are Customer Relationship Management Systems ?
- (j) Define EIS and write its three important characteristics.

MIS



LN – 159/2 (150)

( 3 ) UG — BCA (E – 606) A

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*Answer from both the Groups as directed.*

**Group – A**

Answer any four questions of the following :

10×4 = 40

1. Describe Financial Management. Explain its objectives and scope.

2. Pass journal entries for the following transactions :

(a) Business started with cash ₹ 5,00,000

*↑  
Capital*

LN – 157/3

(Turn over)

(b) Purchased goods from Ram in cash <sup>to cash</sup>  
₹ 1,00,000

(c) Sold goods to Mohan <sup>sales to Mohan</sup> ₹ 4,00,000

(d) Cash received from Mohan <sup>cash to Mohan</sup> ₹ 1,00,000

(e) Salaries paid ₹ 50,000 <sup>Salaries to cash</sup>

3. Explain cash flow statement. Describe Operating, Investing and Financing Activities with examples.

4. Prepare Trial Balance from the following information :

	₹
Land and Building A	60,00,000
Capital A	60,00,000
Stock A	10,00,000
Debtors A	5,00,000
Bank L	20,00,000
Creditors L	2,00,000
Cash in hand A	3,00,000

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(2)

Contd.

	₹
Drawings L	2,00,000
Investment A	4,00,000
Furniture A	3,00,000
Purchase A	38,00,000
Sales L	50,00,000
Salaries L	5,00,000
Carriage L	1,00,000
Interest on Bank Loan L	2,00,000
Commission Received A	1,00,000

5. Explain the advantages and limitations of Financial Accounting.

6. Give the format of Balance Sheet, with imaginary figures.

7. Explain Fund Flow Statement. Distinguish it from cash flow statement.

LN - 157/3

(3)

(Turn over)

8. Prepare Trading A/c from the following information :

	₹
Purchase	10,00,000
Wages	1,00,000
Carriage Inward	80,000
Sales	20,00,000
Selling Expenses	10,000
Sales Return	1,00,000
Purchase Return	50,000
Opening stock	1,00,000
Closing stock	2,00,000
Loding Charges	20,000

Group – B

Answer all questions :

3×10 = 30

9. Write short answer of the following :

(a) What is Book-keeping ?

(b) What is Ledger ?

(c) What do you mean by Current Assets ?

(d) What do you mean by Liabilities ?

(e) What do you mean by Going Concern ?

(f) What do you mean by Money Measurement ?

(g) What is Balance Sheet ?

(h) Describe cash and cash equivalent ?

(i) What is Trading Account ?

(j) What do you mean by Matching Principle ?



financial management

LN – 157/3

(4)

Contd.

LN – 157/3 (150)

(5) UG – BCA (C – 603)