C–0095	Sub. Code 80523

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Second Semester

IT and Logistics

OBJECT ORIENTED PROGRAMMING IN C++

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. Define the term encapsulation.

2. How does a constant defined in C++?

3. What is the purpose of default statement?

4. Write the syntax of creating object for a class.

5. How to pass a parameter to a constructor?

6. What is a conversion function?

7. Draw the flowchart for multiple inheritance.

8. What are the advantages of a derived class?

9. Difference between input stream and output stream.

10. What are the types of exception?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write a C++ program to find factorial of given number using for loop.

Or

(b) Write a note on scope resolution operator.

12. (a) Write in detail about call by reference.

Or

(b) How to implement private member function? Discuss.

13. (a) Discuss about the characteristics of constructor.

Or

(b) Explain how unary operator is overloaded. Give an example.

14. (a) Elucidate single inheritance with an example.

Or

(b) Differentiate between public and private access specifiers.

15. (a) Elaborate stream classes available for console operations.

Or

(b) Discuss about exception handling mechanism.

Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) How while loop differs from do-while loop? Explain with example program.

Or

(b) Describe different styles of function prototyping.

17. (a) Write a C++ program for matrix multiplication.

Or

(b) Illustrate multilevel inheritance with an example program.

18. (a) Write in detail about virtual functions in C++.

Or

(b) Write a C++ program that illustrates the use of multiple catch statements.

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C–0096	Sub. Code
	80524

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Second Semester

IT and Logistics

MATHEMATICS – II

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. State any one property of limits.

2. What is successive differentiation?

3. Why do we use integration?

4. What do you mean by reduction formula in integration?

5. How do you find the general solution of a non–homogeneous differential equation?

6. What is the order of the differential equation given by

$$\frac{dy}{dx} + 4y = \sin x ?$$

7. Define partial differential equation.

8. How do you solve a Lagrange differential equation?

9. What is Fourier series formula?

10. How do you use the Fourier series formula?

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Find y_2 for the function $y = \log x + a^x$.

Or

(b) Find the partial derivative with respect to y of $f(x, y) = \sin(xy) + 3xy$.

12. (a) Evaluate $\int x^4 \cos x \, dx$.

Or

(b) Evaluate $\int_0^1 \frac{e^x}{e^x + 1} \, dx$.

13. (a) Solve $(D^2 - 3D + 2)\, y = x + \sin 3x$.

Or

(b) Solve $(D^2 - 4D + 13)\, y = e^{2x} \cos 3x$.

14. (a) Eliminate the arbitrary function f from $f(x^2 + y^2 + z^2, z^2 - 2xy) = 0$.

Or

(b) Solve $pq + p + q = 0$.

15. (a) Find a Fourier series to represent x^2 in the interval $(-l, l)$.

Or

(b) Find the Fourier series for $f(x)$ if

$f(x) = x - 1, \; -\pi < x < 0$

$x + 1, \; 0 < x < \pi$.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Find the maxima or minima values of the function $f(x, y) = 2(x^2 - y^2) - x^4 + y^4$.

Or

(b) Using the formula evaluate $\int_0^{\pi/2} \sin^9 x \, dx$.

17. (a) Solve $(x^3 D^3 + 3x^2 D^2 + x D + 1)\ y = \sin(\log x)$.

Or

(b) Solve $(y - z)P + (z - x)\ q = x - y$.

18. (a) Solve the equation $z^2 (p^2 + q^2) = x^2 + y^2$.

Or

(b) Find the half–range sine series for the function

$f(x) = x$; $0 < x \leq \frac{\pi}{2}$

$= \pi - x$; $\pi/2 \leq x < \pi$ in the interval $(0, \pi)$.

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C–0097	Sub. Code
	80532

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

IT and Logistics

PRINCIPLES OF INFORMATION TECHNOLOGY

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. What do you mean by Communication System?

2. What is Telnet?

3. Mention the uses of a MODEM.

4. List out any four storage media.

5. What is Browser? Give two examples.

6. What is meant by Latency?

7. What is primary key? Give an example.

8. What are the advantages of ActiveX control?

9. Define the term MIS.

10. What is XML? Mention its use.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Bring out the evolution of computers in various generations.

Or

(b) Differentiate between digital and analog signals.

12. (a) Explain briefly about the features of a word processing software.

Or

(b) Write short notes on Desktop accessories.

13. (a) List out and explain the various factors affecting the transmission of data.

Or

(b) What is Internet? Explain the various applications of internet.

14. (a) Discuss on the various types of DBMS.

Or

(b) What are the criteria for rating secondary storage devices? Explain.

15. (a) Discuss on the key features of object oriented programming.

Or

(b) Explain the steps involved in programming.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Discuss briefly on the developments in computer and communication technology.

Or

(b) Write short notes on the following :

(i) Groupware

(ii) EDI

(iii) Virtual Office

17. (a) Discus briefly on Intellectual Property Rights.

Or

(b) Bring out the differences between File Management System and Database Management System.

18. (a) Explain the various phases involved in the process of system analysis and design.

Or

(b) Elaborate on the five generations of programming Languages.

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C–0098	Sub. Code
	80533

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

IT and Logistics

PROGRAMMING IN JAVA

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. List out operators in Java.

2. Write down the syntax of else if ladder statement.

3. Differentiate between static and abstract class.

4. Define the term Class.

5. What is the use of packages in Java?

6. What is the difference between sleep and wait methods?

7. What happens when applet is loaded?

8. What are the types of streams available in Java?

9. Define : Layout manager.

10. Differentiate between MenuItem and CheckboxMenuItem.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain single dimensional array in Java.

Or

(b) Write a Java program to reverse the given number.

12. (a) What is a constructor? How it is differed from methods? Give an example.

Or

(b) Briefly explain method overriding In Java with an example.

13. (a) How to provide access protection in packages? Explain.

Or

(b) Write a Java program that demonstrates multithreading.

14. (a) Explain the lifecycle methods of an Applet.

Or

(b) Discuss about Vector class.

15. (a) How to create List component in AWT? Explain?

Or

(b) Write in detail about CardLayout class.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain the features of Java.

Or

(b) List down string handling functions. Explain any six of them.

17. (a) Discuss in detail about exception handling methods.

Or

(b) Write a Java applet program to display name and course of a student.

18. (a) Elaborate in detail about FileInputStream class.

Or

(b) How to handle Frame in AWT? Discuss about fundamentals of windows.

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C–0099	Sub. Code
	80535

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

IT and Logistics

STATISTICAL AND NUMERICAL METHODS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions.

1. What is mean by primary data?

2. Define Harmonic mean.

3. Define positive correlation.

4. Write down the formula for rank correlation coefficient.

5. Define Null Hypothesis.

6. State F - distribution.

7. State Newton-Raphson iterative formula.

8. Solve by Gauss Elimination method :

$$11x + 3y = 17$$
$$2x + 7y = 16$$

9. State Trapezoidal rule.

10. Write the order of error in Simpson's rule.

Part B $(5 \times 5 = 25)$

Answer **all** the questions.

11. (a) Find the G.M. for the following distribution :

Marks :	0-10	10-20	20-30	30-40
No. of students :	5	8	3	4

Or

(b) Find the standard deviation of the following height of 100 male students.

Height in inches :	60-62	63-65	66-68	69-71	72-74
No. of students	5	18	42	27	8

12. (a) Find the rank correlation coefficient between the height in cm. and weight in kg of soldiers in Indian Army.

X :	165	167	166	170	169	172
Y :	61	60	63.5	63	61.5	64

Or

(b) The two lines of regression are $8x - 10y + 66 = 0$ and $40x - 18y - 214 = 0$. The variance of x is 9. Find :

(i) the mean value of x and y.

(ii) correlation coefficient between x and y.

13. (a) A random sample of 10 boys has the following I.Q's : 70, 120,110, 101, 88, 95, 98, 107, 100. Do these data support the assumptions of a population means I.Q of 100? Find a reasonable range in which most of the mean I.Q values of samples of 10 boys lie.

Or

(b) In one sample of 8 observations, the sum of the squares of deviations of the sample values from the sample mean 84.4 and in the other sample of 10 observations it was 102.6. Test whether this difference significant at 5% level, given that the 5 percent point of F for $n_1 = 7$ and $n_2 = 9$ degrees of freedom is 3.29.

14. (a) Find the positive root of $x - \cos x = 0$ by bisection method.

Or

(b) Find the inverse of the matrix $\begin{bmatrix} 1 & 2 & -1 \\ 4 & 1 & 0 \\ 2 & -1 & 3 \end{bmatrix}$ by Gauss Jordan method.

15. (a) Valuate $\int_0^x \frac{dx}{1+x^2}$ by :

(i) Trapezoidal rule

(ii) Simpson's 1/3 rule.

Or

(b) Given $\frac{dy}{dx} = x^3 + y,\ y(0) = 2$, compute y (0.2) by Runge-Kutta 2nd order method.

Part C $(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Calculate the mode for the following distribution :

Marks :	0-9	10-19	20-29	30-39	40-49
No. of students :	6	29	87	181	247
Marks :	50-59	60-69	70-79	80-89	90-99
No. of students :	263	133	43	9	2

Or

(b) Calculate the correlation coefficient for the following heights (in inches) :

X :	65	66	67	67	68	69	70	72
Y :	67	68	65	68	72	72	69	71

17. (a) Two groups of 100 people each were taken for testing the use of a vaccine, 5% contracted the disease out of inoculated persons, while 25 contracted the disease in the other group. Test the efficiency of the vaccine using χ^2.

Or

(b) Using Gauss Jordan method, find the inverse of $A = \begin{pmatrix} 2 & 0 & 1 \\ 3 & 2 & 5 \\ 1 & -1 & 0 \end{pmatrix}$.

18. (a) Solve the following system by Gauss-Seidel method :

$$10x - 5y - 2z = 3$$
$$4x - 10y + 3z = 3$$
$$x = 6y + 10z = -3$$

Or

(b) Using 4th order Runge-Kutta method, Compute y (0.2) and y (0.4) form $y' = \frac{y^2 - x^2}{y^2 + x^2}$, $y(0) = 1$.

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C–0100	Sub. Code
	80537

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Third Semester

IT and Logistics

CONSTITUTION OF INDIA

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Citizenship Act
2. Rajya Sabha M.P.
3. Drafting Committee
4. President
5. Vice president
6. The prime minister
7. Supreme court judge
8. Proclamation of emergency
9. Supreme court – bench
10. Question Hours

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Point out the Fundamental Rights.

Or

(b) Explain the directive principles of state policy.

12. (a) Discuss the prime minister office.

Or

(b) List out the qualification required to become the vice president of India.

13. (a) Explain the communication between the President and Cabinet.

Or

(b) Narrate the duties of the Prime Minister.

14. (a) Write a brief note on Annual Budget.

Or

(b) What is the powers and function of Lok Sabha?

15. (a) Estimate the supreme court judge.

Or

(b) Capital punishment – Discuss.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Analyse the salient features of the Indian Constitution.

Or

(b) List out the powers of Indian president.

17. (a) Describe the powers and duties of the state chief minister.

Or

(b) Examine the powers of chief justice of supreme court.

18. (a) Write an essay about the Judicial systems in India.

Or

(b) Highlight the financial relations between the union and the states.

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C–0101	Sub. Code 80551

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Fifth Semester

IT and Logistics

FUNDAMENTALS OF LOGISTICS

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What is material handling?

2. What is packing?

3. Define logistics costing.

4. What is decentralized logistics?

5. Define Inventory.

6. Define integrated logistics.

7. What is LIS?

8. Define warehousing.

9. Define supply chain management.

10. What is transportation?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) What are the needs for integrated activity centers in logistics?

Or

(b) What are the steps in financial gap analysis in integrated logistics?

12. (a) Differentiate Global logistics and Global supply chain.

Or

(b) Write a detailed note on strategic logistics planning.

13. (a) What are the steps involved in documentation in transportation of logistics?

Or

(b) What are the barriers of global logistics?

14. (a) Write a brief note on inventory planning models.

Or

(b) What are the needs of inventory management in supply chain?

15. (a) Explain customer retention procurement

Or

(b) What are the roles of logistics in Organization?

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) What are the critical issues in logistics outsourcing? Explain.

Or

(b) What are the improvements in inventory management?

17. (a) What are the strategic issues in global logistics?

Or

(b) Explain the types of communication with suitable examples.

18. (a) What are the requirements for an effective logistics strategy?

Or

(b) What are the needs and principles of LIS?

———————

C–0102	Sub. Code
	80552

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Fifth Semester

IT and Logistics

INTRODUCTION TO SHIPPING

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Who are the participants in the shipping markets?

2. What is Port State Control (PSC)?

3. How is load line calculated on a ship?

4. What are cellular ships?

5. What are VLCC and ULCC?

6. What is a freight conference?

7. What does a shipping agent do?

8. Why geography is important in maritime?

9. How is exchange rate calculated?

10. Why is English Law used in contracts?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) How the ship is registered in India?

Or

(b) Briefly discuss about the special purpose ships.

12. (a) What is a Barge? Elaborate the different types of Barge.

Or

(b) What is ship chartering? How does it work? Why is it important?

13. (a) Define and comment on any two of the following abbreviations and their role within the liner industry :

(i) ICD

(ii) ISM Code

(iii) UNCTAD

Or

(b) Explain the advantages of containerization in shipping.

14. (a) Briefly discuss the role and function of intermediaries in shipping business.

Or

(b) Briefly discuss the opportunities and challenges in the port sector in India.

15. (a) What is arbitration in shipping? What are the functions of the Indian maritime arbitration committee?

Or

(b) What is protection and indemnity association? Bring out the importance of P & I Club in Shipping.

Part C $(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Write a note on any three types of ships :

(i) Container ship

(ii) Bulk carrier

(iii) Tanker ship

(iv) Passenger ship.

Or

(b) Discuss the advantages and disadvantages of appointing a charterer's nominated agent from the point of view of both the owner and charterer.

17. (a) What are the different types of tankers and describe each?

Or

(b) What is a Bill of Lading? Explain the BoL process.

18. (a) Discuss remedies for the breach of contract.

Or

(b) Write a note on :

(i) Hague Visby Rules

(ii) Hamburg rules

———————

C–0103	Sub. Code 80553

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Fifth Semester

IT and Logistics

CUSTOMS PROCEDURE

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What is settlement commission under custom Act?

2. What is the quantum of pre-deposit?

3. Define Central Excise.

4. Define Custom duties.

5. What is export?

6. Write a note on DGDRI.

7. What is special economic zone scheme?

8. What is duty drawback scheme?

9. Define warehouse licensing.

10. Define warehouse bond.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain Exportation of Goods.

Or

(b) Describe Levy of an exemption from custom duties.

12. (a) Explain Prevention of illegal import of Goods.

Or

(b) Discuss Claim of Refund of Duty.

13. (a) Write a Brief note on Aircraft in India.

Or

(b) Explain Clearance of goods for Exportation.

14. (a) Describe Clearance of goods for exportation.

Or

(b) Explain Warehousing in detail.

15. (a) Discuss Tran shipment of certain goods without payment in detail.

Or

(b) Explain Regulation of drawback and its importance.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain Appointing of public warehouses.

Or

(b) Describe Delivery of export manifest.

17. (a) Explain the powers of central Government notify goods.

Or

(b) Explain the detection of illegal imports of goods.

18. (a) Explain the Provision relating to clearance of goods for home consumption.

Or

(b) Explain the powers to board conveyances.

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C–0104	Sub. Code 80554

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Fifth Semester

IT and Logistics

WAREHOUSING AND INVENTORY MANAGEMENT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define Warehousing.

2. List out the benefits of ideal warehouse.

3. Mention the need for warehousing.

4. What is warehouse operation?

5. What is Centralized warehousing?

6. What is storage system in warehouse?

7. What is the role of inventory in supply chain?

8. What is EOQ?

9. What is inventory control?

10. What is Bar coding?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Discuss various concepts of Warehouses.

Or

(b) What are the functions of a Warehouse?

12. (a) What are the characteristics of ideal Warehouse?

Or

(b) What are the major Warehouse operations activities?

13. (a) Is Amazon centralized or decentralized warehouse? Justify.

Or

(b) What is the difference between centralized and decentralized distribution approach?

14. (a) What are the disadvantages of a decentralized Warehouse?

Or

(b) What are the different types of storage system?

15. (a) List the functions of inventory.

Or

(b) Discuss the importance of Bar coding.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Classify the different types of Warehouses with an example.

Or

(b) Discuss the factors influencing the location of a Warehouse.

17. (a) Explain Mobile Shelving and Multi-tier Racking storage system.

Or

(b) Explain Static Shelving and Palletized storage system.

18. (a) What is ABC analysis? How do you conduct ABC inventory analysis?

Or

(b) What is RFID? Explain the principle and benefits of RFID.

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C–0105	Sub. Code 80555

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Fifth Semester

IT and Logistics

TRANSPORTATION AND DISTRIBUTION MANAGEMENT

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What are Distribution Strategies?

2. What are the five primary activities in the value chain?

3. What is MRP system?

4. What is Inbound and Outbound Logistics?

5. What is value analysis?

6. What is transportation?

7. What is Pipe line transport?

8. What is JIT?

9. What is demand forecasting?

10. What is the Bullwhip Effect?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) What are the basic costs in transportation? Explain.

Or

(b) Explain various types of distribution channels.

12. (a) Explain the factors that influence distribution network decisions.

Or

(b) Discuss about any two types of intermodal movements.

13. (a) What are the market related factors that influence transport costs?

Or

(b) Highlight the need for demand forecasting.

14. (a) Distinguish between water and air transport.

Or

(b) What factors influence transportation decisions?

15. (a) What are the different types of transportation costs?

Or

(b) What are the advantages of transport software?

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Describe the components of distribution management.

Or

(b) Examine the need for inventory control and management.

17. (a) Indian Oil Company wish to supply LP gas to its customers for cooking purpose at cheaper rate by minimizing its transport costs? What is best means of transport?

Or

(b) How does IT plays a crucial role in effective and value added SCM? Give suitable examples.

18. (a) Describe the four modes of transportation, identifying the most significant characteristics of each. What is the basic concept behind Inter-modal movement?

Or

(b) What are the different models of inventory used by warehouses for managing stock?

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C–0106	Sub. Code 80556

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

Fifth Semester

IT and Logistics

LINER TRADE

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Explain: Tramp Trade.

2. Bring out the meaning of Ro-Ro ship.

3. Describe IMO special goods.

4. Define Port and Terminal Management.

5. Explain the term inter-modalism in Trade.

6. Expand the term: ICDS.

7. What is the purpose of Bill of Lading?

8. Explain Paperless Trading.

9. Explain the process of fund transfer from one country to another.

10. Explain ISPS Code in Shipping.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) Discuss in detail the multifarious services offered by liners.

Or

(b) Delineate the Basic Design of Contain vessels.

12. (a) Discuss the role of ship officers.

Or

(b) What is independent ship management? Discuss in detail the advantages and disadvantages of independent ship management?

13. (a) Explain the advantages and disadvantages of Inter-modalism.

Or

(b) Discuss in detail the approaches followed in container control.

14. (a) Explain the types of bill of lading. Also list out the sections found in a bill of lading.

Or

(b) Explain the various international conventions that govern the common carriage of goods by sea.

15. (a) Discuss different methods of payments in International trade.

Or

(b) Explain the most common forms of maritime law with examples.

Part C

$(3 \times 10 = 30)$

Answer **all** the questions.

16. (a) Explain the types of container ships used in shipping industry.

Or

(b) Describe intermodalism and list the conditions around which intermodalism is to be organized. Discuss the components involved in intermodal transport.

17. (a) Describe the documentation procedure involved in liner trade.

Or

(b) Explain different shipboard/cargo handling equipments in liner trade.

18. (a) Exemplify the role of a ship management company in shipping business.

Or

(b) What are INCO terms? What is the purpose of INCO terms? Define and explain the INCO terms.

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C–1221	Sub. Code
	80513

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023.

First Semester

IT and Logistics

PROGRAMMING IN C

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** the questions.

1. C is strongly associated with ———————.
   (a) Shell (b) GNU
   (c) UNIX (d) LINUX

2. Single Line Comments starts with ——————— forward slashes.
   (a) / (b) //
   (c) \ (d) \\

3. There are two sorts of characters _____ used in C.
   (a) Non- Control Characters, Printable Characters
   (b) Control Characters, Non-Printable Characters
   (c) Non- Control Characters, Non-Printable Characters
   (d) Control Characters, Printable Characters

4. Choose another name of Conditional Operator.
   (a) Ternary Operator
   (b) Expression Operator
   (c) Sequential Operator
   (d) Control Operator

5. Syntax of functions can be divided into _____aspects.

(a) 3 (b) 2

(c) 4 (d) 1

6. Pre-defined functions is also referred to as_____.

(a) User-defined Functions

(b) Compiler Library Functions

(c) Primary Functions

(d) Standard Library Functions

7. The disadvantages of arrays are that they are _____ allocated.

(a) Logically (b) Statically

(c) Sequentially (d) Generally

8. Declaring a String in C is _____.

(a) char name [size];

(b) char name_string[size];

(c) char char_string[size];

(d) char name_char[size];

9. A struct may be assigned to another struct. A compiler might use ————————.

(a) memstr( ) (b) memcat( )

(c) memlen( ) (d) memcpy( )

10. A pointer is defined as _____ data type.

(a) Initiative (b) Declarative

(c) Primitive (d) Moderative

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write short notes with example.

    (i) Identifier

    (ii) Keywords

    Or

    (b) What is the use of prinf( ) and scanf( ) functions? Explain Format Specifiers.

12. (a) Discuss if, if else Statement with example.

    Or

    (b) Differentiate Switch, Break and Continue Statement.

13. (a) Describe function with arguments and without arguments.

    Or

    (b) Explain Call by value and Call by Reference.

14. (a) Enlighten the concept of Single dimensional array with example.

    Or

    (b) How string is declared and initiality with an example, describe string input/output functions.

15. (a) What are pointers and their uses? Discuss in detail.

    Or

    (b) Explicate the various file accessing policies available in language C with appropriate programs.

Part C

$(5 \times 8 = 40)$

Answer **all** questions.

16. (a) Explain in detail about Operators and Expressions with example.

Or

(b) Describe Enum with suitable example.

17. (a) What are Loops? How can we create an infinite loop in C? With example.

Or

(b) Explain nested for loop with general syntax and example.

18. (a) Briefly discuss about Storage Classes with example.

Or

(b) Explain different classification of user defined functions based on parameter passing and return type with examples.

19. (a) Elucidate the multidimensional array. Write the program of matrix multiplication using multidimensional array.

Or

(b) Explain the following string handling functions:

(i) strcmp( ) (ii) strlen( )

(iii) getchar( ) (iv) strrev( )

(v) strcut( )

20. (a) What are structure variables? Explain how to declare and initialize structure variable.

Or

(b) How will you create a text file in C. Explain.

C–1222

Sub. Code
80515

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023

First Semester

IT and Logistics

MATHEMATICS – I

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** questions.

1. If $\tan\theta - \cot\theta = 0$ what will be the value of $\sin\theta + \cos\theta$?

   (a) $\sqrt{2}$ (b) 1

   (c) $1/\sqrt{2}$ (d) $1/2$

2. What is the value of $\cos\theta$, if $0^\circ < \theta < 90^\circ$

   (a) $\sqrt{\cdot 49}$ (b) $\sqrt{\cdot 51}$

   (c) 0.3 (d) 0.51

3. If set $A = \{1,3,5,7\}$, set $B = \{1,4,7\}$, find the value of $A - B$?

   (a) {1, 3, 5} (b) {3, 5, 7}

   (c) {3, 5} (d) {4}

4. If $A = \{x, y, z\}$, then the number of subsets in power set of A is

   (a) 6 (b) 7

   (c) 9 (d) 8

5. Value of k, of which $A = \begin{bmatrix} k & 8 \\ 4 & 2k \end{bmatrix}$ is a singular matrix is

(a) 4 (b) -4

(c) ± 4 (d) 0

6. If $A = \begin{pmatrix} 4 & x+2 \\ 2x-3 & x+1 \end{pmatrix}$ is symmetric, then what is X equal to?

(a) 2 (b) 3

(c) -1 (d) 5

7. If $(x-1)$ and $(x+3)$ are two factors of $x^3 + ax + b$ then remaining factor is ————————.

(a) $x+2$ (b) $x-2$

(c) $x-3$ (d) $x+1$

8. If one root of $5x^2 + 13x + k = 0$ is reciprocal of the other then k is equal to ————————.

(a) 0 (b) 3

(c) 2 (d) 5

9. If $y = 2^x$, then $\frac{dy}{dx}$

(a) $x\left(2^{x-1}\right)$ (b) $\frac{2^x}{\log^2}$

(c) $2^x \log_2$ (d) none of these

10. if $x \in R$, then minimum and maximum limit of $\frac{x^2 - 2x + 9}{x^2 + 2x + 9}$ are

(a) $\frac{1}{4}, 2$ (b) 1, 2

(c) $\frac{1}{2}, 2$ (d) $\frac{3}{2}, 2$

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Write the expansion of $\sin 6\theta$ in terms of $\sin\theta$.

Or

(b) Prove that $\sin 5\theta = 16\sin^5\theta - 20\sin^3\theta + 5\sin\theta$.

12. (a) If $A = \{2,3,4\}$ $B = \{1,2\}$ $C = \{4,5,6\}$. Find $A+B, B+C,$ $C+A,$ $A+B+C$ and $(A+B)+(B+C)$.

Or

(b) Show that $A \cap (B-C) = (A \cap B) - (A \cap C)$.

13. (a) if $A\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$, $B = \begin{bmatrix}1 & 7\\ 2 & 3\\ 5 & 9\end{bmatrix}$. Find AB and BA.

Or

(b) Show that $A = \begin{bmatrix} i & 3+2i & -2-1 \\ -3+2i & 0 & 3-4i \\ 2-i & -3-4i & -2i \end{bmatrix}$, prove is a skew symmetric matrix.

14. (a) Solve $20x^3 - 30x^2 + 12x - 1 = 0$ given that ½ is a roof.

Or

(b) from an equation whose roots are three times those of equation $x^3 - x^2 + x + 1 = 0$.

15. (a) If $y = e^{a\sin^{-1}x}$, prove that $(1-x^2)y_2 - xy_1 = a^2y$.

Or

(b) Find n^{th} differential coefficient of $\frac{1}{(1+x)^2}$.

Part C (5 × 8 = 40)

Answer **all** questions.

16. (a) Prove that $\frac{\cos 5\theta}{\cos\theta} = 5 - 20\cos^2\theta + 16\cos^4\theta$.

Or

(b) Prove that
$\cos 8\theta - 1 - 32\sin^2\theta + 160\sin^4\theta - 256\sin^6\theta + 128\sin^8\theta$

17. (a) Let R and S are equivalence relations on X, show that $R \cap S$ also equivalence.

Or

(b) Let $S = \{\langle x, x^2\rangle \mid x \in N\}$ and $T = \{\langle x, 2x\rangle \mid x \in N\}$, where $N = \{0,1,2,\ldots\}$. Find the range of S and T, find $S \cup T$ and $S \cap T$?

18. (a) If $A = \begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$ show that $A^1 = A$.

Or

(b) Verify Cayley Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 2 & 0 \\ 2 & -1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$, and find A^{-1}.

19. (a) Solve the equation $60x^4 - 736x^3 + 1433x^2 - 736x + 60 = 0$ using standard reciprocol equation.

Or

(b) If α, β, γ are the roots of $x^3 + 3x^2 + 2x + 1 = 0$, find $\Sigma\alpha^3$ and $\Sigma\alpha^{-2}$.

20. (a) Find the maxima and minima of $x^4 + y^4 - 2x^2 + 4xy + 2y^2$.

Or

(b) If $z = f(x, y)$ and $u = e^x \cos y$, $v = e^x \sin y$. Then prove that $\frac{\partial f}{\partial x} = u\frac{\partial f}{\partial u} + v\frac{\partial f}{\partial v}$.

C–1223	Sub. Code
	80156

B.Sc. (IT & Logistics) DEGREE EXAMINATION, NOVEMBER 2023.

First Semester

PROBLEM SOLVING TECHNIQUES

(2023 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

Answer **all** the questions.

1. An algorithm can be defined as ————————.

   (a) A complete, unambiguous, infinite number of logical steps for solving a specific problem.

   (b) A complete, unambiguous, finite number of logical steps for solving a specific problem.

   (c) A complete, ambiguous, infinite number of logical steps for solving a specific problem.

   (d) A complete, ambiguous, finite number of logical steps for solving a specific problem.

2. C language was designed at Bell laboratories in the early ———————— by Dennis Ritchie.

   (a) 1960's (b) 1980's

   (c) 1970's (d) 1990's

3. Which of the following operators can be applied on structure variable?

   (a) = = (b) =

   (c) Both (d) None

4. Structures are better than unions since memory is shared in a union which results in a

(a) Byte of ambiguity (b) Ambiguity

(c) Unambiguity (d) Bit of Ambiguity

5. A derived data type that can hold a memory location or the address of other C variables is called a ————————

(a) Union (b) Pointer

(c) Structure (d) Array

6. A stream is an idealized data flow that is mapped to the ————————.

(a) Actual Input or Output

(b) Address Input or Output

(c) Default Input or Output

(d) Pointer Input or Output

7. ———————— that wilt enable us to compute some of the more intricate probabilities.

(a) Comparison Techniques

(b) Computation Techniques

(c) Function Techniques

(d) Counting Techniques

8. A simple sorting method called insertion sort produces the final sorted array (or list) one item at a ———————— by comparisons.

(a) Sort (b) List

(c) Leap (d) Time

9. An algorithm that is comparatively simple to use to create a list of the first few prime numbers is the ————————.

(a) Leonhard Euler

(b) Sieve of Eratosthenes

(c) Srinivasa Ramanujan

(d) René Descartes

10. When an array is reversed in place, the first array element becomes the last and the last array element becomes the first. This is accomplished by using the of Array instances.

(a) Compute ( ) method

(b) Order ( ) method

(c) Reverse( ) method

(d) Sort ( ) method

Part B

$(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Explicate the Problem Solving using Top-Down design.

Or

(b) Discuss Prototypes and Functions.

12. (a) Describe the following :

(i) Arrays of Structure

(ii) Array as Structure element

Or

(b) Write short notes on :

(i) Macro substitution

(ii) Stringizing (#) Operator

13. (a) Explain function returning is used pointer. Explain.

Or

(b) Delineate the role of ASCII and Binary Files.

14. (a) How exchanging the values of two variables? Elucidate.

Or

(b) How will you find the smallest divisor-of an Integer?

15. (a) Enlighten the concept of raising a number to a Large Power.

Or

(b) Examine Array Order Reversal.

Part C (5 × 8 = 40)

Answer **all** questions.

16. (a) Define recursion. How will you find factorial on N using recursion?

Or

(b) Describe the data types and explain its types with example.

17. (a) Enlighten the basic concept of Pre-Processor.

Or

(b) (i) State the role of Anonymous Structures and Unions.

(ii) Delineate the #pragma directive.

18. (a) (i) How functions taking variable number of arguments? Explain.

(ii) What is Const Pointer?

Or

(b) Elucidate the concept of Streams. Discuss about formatted I/O.

19. (a) Define Algorithm. What are the characteristics of Good Algorithm?

Or

(b) Elaborate Sorting by Insertion method.

20. (a) Summarize how to generate Prime factors of an Integer.

Or

(b) Explain the way of computing the n^{th} Fibonacci number. Give example.

———————