

This question paper contains 2 printed pages]

## NEPWT—1001—2024

### FACULTY OF SCIENCE AND TECHNOLOGY

#### M.Sc. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(NEP-2020)

#### RESEARCH METHODOLOGY

(Tuesday, 10-12-2024)

Time : 10.00 a.m. to 1.00 p.m.

Time—3 Hours

Maximum Marks—60

N.B. :— (i) Question No. 1 is compulsory.

(ii) Of the remaining solve any *three* questions.

(iii) Calculator and log table is allowed.

1. Attempt any *three* of the following : 15

- (a) Motivation in research
- (b) Need for research designing
- (c) ANOCOVA
- (d) Statistical measure in research.

2. (a) What do you mean by research ? Describe the different steps involved in a research process. 8

(b) Discuss the observation method as a technique of data collection. 7

P.T.O.

3. (a) Calculate the mean, median and mode of the following data : 8

3, 6, 3, 7, 4, 3, 9

- (b) Draw the flow diagram for hypothesis testing. 7

4. (a) What is Sampling ? Explain steps in sample design. 8

- (b) Calculate the chi-square value of the following data : 7

Fully Agree	Not Sure	Not Agree	Total
102	108	75	285

5. (a) Define case study. Give their characteristics. 8

- (b) Explain dependent and independent variables. 7

6. Write short notes on : 15

- (a) Fundamental type of research

- (b) Parametric test

- (c) Secondary data sources.

Total No. of Printed Pages:02

**SUBJECT CODE NO:- WT-190**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**EXAMINATION WINTER 2024**  
**M.SC (COMPUTER SCIENCE) (FIRST YEAR) (SEM –I)**  
**MATHEMATICAL FOUNDATION FOR COMPUTER SCIENCE-CS-103**  
**(NEW CBCS PATTERN)**

**[Time: 3:00 Hours]****[Max.Marks:75]**

“Please check whether you have got the right question paper.”

N.B.

- 1) All questions are Compulsory.
- 2) Draw well labelled diagram whenever necessary to illustrate your answers.
- 3) Assume suitable data, if required.

**Q.1 Attempt the following questions.****15**

A. Explain the following terms

- i) Set
- ii) Power set
- ii) Partitions of set

**OR**B. a) If  $A = \{1,2,5,7,8\}$ ,  $B = \{2,3,5,6,7,9\}$  and  $C = \{0,1,2,3,4,7\}$  then show that.**08**

- i)  $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ .
- ii)  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ .

b) Explain laws of logic.

**07****Q.2 Attempt the following questions.****15**

A. Construct the truth table for the following statement pattern

- i)  $(\sim p \rightarrow q) \vee r$
- ii)  $(q \vee r) \wedge (p \vee q)$
- iii)  $(p \vee q) \rightarrow (r \wedge p)$

**OR**

B. a) Using truth table show that following two statement patterns are equivalent.

**08**

$$P \vee (q \wedge r); (P \vee q) \wedge (P \vee r)$$

b) Describe types of binary relations.

**07**

**Q.3 Attempt the following questions.****15**

A. Explain the following terms

- i) Equivalence relations
- ii) Partial ordered relation
- iii) Hasse diagram

**OR**B. a) If  $f(x) = x^2 + 3$  and  $g(x) = 3x - 2$  then find**08**

i)  $(f \circ g)(x)$

ii)  $(g \circ g)(4)$

b) A card is drawn from a standard deck of 52 playing cards. Find the probability that the

**07**

card is either i) a heart or a king.

ii) a spade or a club.

**Q.4 Attempt the following questions.****15**

A. Explain the following terms

- i) Permutation
- ii) Probability
- iii) Recurrence relation

**OR**

B. a) Explain isomorphism of graphs

**08**b) Prove that the fourth root of unity  $1, -1, i, -i$  form an abelian multiplicative group.**07****Q.5 Write short note on any three of the following.****15**

- a) Graphs
- b) Path and circuit
- c) Abelian group
- d) Normal sub group
- e) Homomorphism and automorphism of group

Total No. of Printed Pages:02

**SUBJECT CODE NO:- NEPWT-355**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**EXAMINATION WINTER 2024**  
**M.SC(FIRST YEAR) (SEM –I)**  
**DATA SCIENCE**

**PROGRAMMING, DATA STRUCTURES AND ALGORITHMS IN PYTHON**

**[Time: 3:00 Hours]**

**[Max.Marks:80]**

“Please check whether you have got the right question paper.”

N.B.

- 1) Question 1 is compulsory
- 2) Solve any three questions from Q2 to Q6.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if required.

**Q.1 Attempt any Four of the following.**

**20**

- a) Explain the different data types in Python with examples.
- b) Describe the process of setting up the Python environment and basic syntax.
- c) What are control structures? Explain the importance of conditional statements and loops in Python.
- d) Discuss the concept of list comprehensions and provide examples.
- e) Explain the difference between lists and tuples in Python.
- f) Describe how functions are defined and called in Python, including scope and recursion.

**Q.2 Attempt the following.**

**20**

- a) Explain the concept of file handling in Python, including reading from and writing to files.
- b) What is the difference between a stack and a queue? Illustrate their implementations using Python lists.
- c) Describe the properties and uses of sets in Python, with examples.
- d) What are dictionaries in Python? Explain key-value pairs and provide examples of dictionary operations.

**Q.3 Attempt the following.**

**20**

- a) Define a linked list. Explain the structure and operations of singly and doubly linked lists.

- b) What are binary trees? Describe the concept of a binary search tree (BST) with examples.
- c) Explain the significance of algorithms in programming, including their definition and properties.
- d) Write a note on the complexity analysis of algorithms, including the importance of time and space complexity.

**Q.4 Attempt the following.****20**

- a) Describe the Big O notation and its use in complexity analysis with examples.
- b) Compare and contrast linear search and binary search algorithms with examples.
- c) Explain the bubble sort and insertion sort algorithms in Python.
- d) What is divide-and-conquer? Provide an example of a problem solved using this approach.

**Q.5 Attempt the following.****20**

- a) Explain min-heaps and max-heaps, including their applications and operations.
- b) What is a hash table? Discuss hash functions and collision resolution techniques.
- c) Describe graph representations using adjacency matrices and adjacency lists.
- d) What are traversal algorithms? Explain the BFS and DFS algorithms for graph traversal.

**Q.6 Write a note on the following****20**

- a) Principles of greedy algorithms with an example.
- b) Classic dynamic programming problems.
- c) Describe backtracking and provide an example, such as the N-Queens problem.
- d) Implement Dijkstra's algorithm in Python and explain its use in finding the shortest path.

Total No. of Printed Pages:02

**SUBJECT CODE NO:- NEPWT-356**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**EXAMINATION WINTER 2024**  
**M.SC(FIRST YEAR) (SEM –I)**  
**COMPUTER APPLICATION**  
**JAVA PROGRAMMING**

**[Time: 3:00 Hours]**

**[Max.Marks:80]**

“Please check whether you have got the right question paper.”

N.B.

- 1) All Question Carry equal Marks
- 2) Question 1 is Compulsory
- 3) Attempt any three questions from question no.2 to question no. 6

**Q.1 Attempt any THREE of the following**

**20**

- a) Define the final keyword in Java. Explain its usage in variables, methods, and classes.
- b) What is polymorphism? Explain method overloading and method overriding in Java.
- c) Describe the difference between this and super keywords.
- d) Define the final keyword in Java. Explain its usage in variables, methods, and classes.

**Q.2 Answer the following questions.**

**20**

- a) What is encapsulation? How is it implemented in Java?
- b) Describe the different types of access modifiers in Java.

**Q.3 Answer the following questions.**

**20**

- a) Explain try-catch blocks in Java and describe the role of the finally block with an example.
- b) What is the difference between Array List and Hash Map in Java?

**Q.4 Answer the following questions.**

**20**

- a) Describe how a query is executed in JDBC. Explain each step with an example.
- b) Explain the different types of JDBC drivers.

**Q.5 Answer the following questions (20 Marks)****20**

- a) Describe the GET and POST methods in servlets and their use cases with examples.
- b) What are JSP directives? Explain any two types with examples.

**Q.6 Answer the following questions.****20**

- a) Explain the concept of inheritance in Java and discuss the role of the super keyword.
- b) What is polymorphism? Differentiate between compile-time and run-time polymorphism in Java.



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**NEPWT—322—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (CS) (First Year) (First Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**COMPUTER SCIENCE**

**SCMPSE-401-A**

**(Data Analysis using Power BI)**

**(Thursday, 19-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—3 Hours*

*Maximum Marks—60*

**N.B. :—** (i) All questions carry equal marks.

(ii) Q. No. 1 is compulsory.

(iii) Attempt any *three* questions from Q. No. 2 to Q. No. 6.

1. Solve the following questions :

15

(a) Why use power BI ?

(b) What is a data model ? Explain the creating table relation.

(c) Explain the Merging Data.

P.T.O.

2. Solve the following questions :

- (a) Explain the implementing data from relational database. 8
- (b) Explain in detail cleansing and filtering data. 7

3. Solve the following questions :

- (a) Explain the making a user-friendly model. 8
- (b) Explain in detail power BI Cloud Architecture. 7

4. Solve the following questions :

- (a) Explain the math and statistical functions. 8
- (b) Explain the Sharing Dashboard. 7

5. Solve the following questions :

- (a) Advantages of Dashboards 8
- (b) Explain in detail publishing reports to the power BI service. 7

6. Solve the following questions :

- (a) What is DAX ? Explain the implementing DAX operators. 8
- (b) Explain in detail discovering and importing data. 7

This question paper contains 3 printed pages]

**NEPWT—323—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (C.S.) (First Year) (First Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**(CBCS/Revised Pattern)**

**COMPUTER SCIENCE**

**Paper-SCMPSE-401**

**(Statistical Method)**

**(Thursday, 19-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—Three Hours*

*Maximum Marks—60*

*Note :—* (i) Question No. 1 will be compulsory.

(ii) Solve any *three* questions from Q. No. 2 to Q. No. 6.

(iii) Use of non-programmable calculator is allowed.

1. Explain the following terms : 15

- (a) Frequency distribution
- (b) Limitations of Statistics
- (c) Sample space.

2. Solve the following :

(a) Calculate mean and median of the following data : 8

Class	Frequency
0—25	20
25—50	25
50—75	35
75—100	28
100—125	22

P.T.O.

- (b) Calculate range and standard deviation of the following data : 7

Variable (X)	Frequency (f)
5	11
10	14
15	18
20	16
25	12

3. Solve the following :

- (a) Define mode and calculate mode of the following data : 8

Class Interval	Frequency
0—40	25
40—80	37
80—120	55
120—160	46
160—200	32

- (b) Calculate correlation coefficient of the following data : 7

Price	Demand
21	33
25	28
29	25
31	23
34	18

4. Solve the following :

(a) If two unbiased dice are rolled, find the probability that the total score is : 8

(i) Even number or less than 5.

(ii) Greater than 9 or perfect square.

(b) Calculate variance of the following data : 7

Wages	No. of Workers
10—20	5
20—30	9
30—40	16
40—50	13
50—60	12
60—70	8

5. Attempt the following :

(a) Explain frequency polygon in brief. 8

(b) Explain collection of data. 7

6. Write short notes on the following :

(a) Scope of Statistics in Economics 8

(b) Simple bar diagram. 7

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## **NEPWT—324—2024**

### **FACULTY OF SCIENCE AND TECHNOLOGY**

#### **M.Sc. (First Year) (First Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

#### **COMPUTER SCIENCE**

**Paper SCMPSE-401**

**(Web Technology)**

**(Thursday, 19-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—3 Hours*

*Maximum Marks—60*

*N.B. :— (i) All questions carry equal marks.*

*(ii) Question No. 1 is compulsory.*

*(iii) Attempt any three questions from question 2 to question 6.*

1. Solve the following questions : 15

(A) What is webpage ? Explain it in detail.

(B) Explain the concept of web protocols.

(C) Explain structure of HTML document in detail.

2. Solve the following questions :

(A) Explain <FONT> and <MARQUEE> tag in detail. 8

(B) Explain anchor tag with all its attributes. 7

P.T.O.

3. Solve the following questions :

(A) Explain <IMG> tag with all its attributes. 8

(B) Write a sample html code to display the following table : 7

UG			PG		
BCS		Total	MSC		Total
Male	Female		Male	Female	
85	75	160	25	15	40

4. Solve the following questions :

(A) Explain <FORM> tag in detail. 8

(B) What is CSS ? Explain use of it in HTML. 7

5. Solve the following questions :

(A) Write sample HTML code to display the following table : 8

UG	BCS	Male	80
		Female	75
	TOTAL		160
PG	MSC	Male	25
		Female	15
	TOTAL		40

(B) Explain GET and POST methods in detail. 7

6. Solve the following questions :

(A) Explain procedure to publish website in detail. 8

(B) Explain concept of JavaScript with an example. 7

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**NEPWT—53—2024**

**FACULTY OF SCIENCE & TECHNOLOGY**

**M.Sc. (First Year) (First Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**COMPUTER SCIENCE**

**SCMPSC-401**

**(Computer Architecture and Microprocessor)**

**(Thursday, 12-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—3 Hours*

*Maximum Marks—80*

*N.B. :—* (1) Question paper consist of **6** questions each of **20** marks.

(2) Question No. **1** is compulsory.

(3) Solve any *three* questions from Q. No. **2** to Q. No. **6**.

(4) Draw well labelled diagrams.

1. Attempt the following questions : 20

(a) Explain system modelling.

(b) Explain data representation.

(c) Discuss CICS and RISC.

(d) Explain features of 8085.

2. Attempt the following questions : 20

(a) Draw and explain architecture of 8085 microprocessor.

(b) Explain fixed point arithmetic addition and subtraction with algorithm.

P.T.O.



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3. Attempt the following questions : 20
- (a) Explain CPU organization in detail.
  - (b) What is memory ? Explain virtual memory.
4. Attempt the following questions : 20
- (a) Explain architecture of 8085.
  - (b) Explain addressing mode 8086 microprocessor.
5. Attempt the following questions : 20
- (a) Explain flag register used in 8086.
  - (b) Describe micro programmed control unit.
6. Attempt the following questions : 20
- (a) Discuss branching and installation processing.
  - (b) What is interrupt ? Explain its types.

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**NEPWT—119—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (CS) (First Year) (First Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

COMPUTER SCIENCE

Paper SCMPSC-402

(Python Programming)

**(Saturday, 14-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—Three Hours*

*Maximum Marks—80*

*Note :—* (i) Question paper will consist of 6 questions, each of **20** marks.

(ii) Question No. **1** will be compulsory.

(iii) Solve any *three* of remaining *five* questions from Q. No. **2** to Q. No. **6**.

(iv) Draw well labeled whenever necessary.

1. Write all the following questions (**5** marks each) : 20

(a) Explain features of python.

(b) Explain packages in detail.

(c) Describe Tkinter module in detail.

(d) Explain database connection in MySQL.

P.T.O.

2. Attempt the following questions (10 marks each) : 20
- (a) What is inheritance ? Explain any *three* inheritance.
  - (b) Explain list in detail.
3. Attempt the following questions (10 marks each) :
- (a) Explain the concept of GUI in Python.
  - (b) Explain looping statement in Python.
4. Attempt the following questions (10 marks each) : 20
- (a) What is Exception ? Discuss exception handling in Python.
  - (b) Explain polymorphism in detail.
5. Attempt the following questions (10 marks each) : 20
- (a) What is String ? Discuss any *four* string operations in python with suitable example.
  - (b) Explain set and tuple in Python.
6. Attempt the following questions (10 marks each) : 20
- (a) Explain passing query to MySQL.
  - (b) Python program to check prime number.

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## NEPWT—186—2024

### FACULTY OF SCIENCE AND TECHNOLOGY

#### M.Sc. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

COMPUTER SCIENCE

Paper-SCMPSC-403

(Advanced Java)

(Tuesday, 17-12-2024)

Time : 10.00 a.m. to 1.00 p.m.

Time—Three Hours

Maximum Marks—80

- Note :—
- (i) All questions carry equal marks.
  - (ii) Question No. 1 will be compulsory.
  - (iii) Attempt any *three* questions from (Q. No. 2 to Q. No. 6).
  - (iv) Assume suitable data if necessary.

1. Attempt the following : 20
- (a) Explain ArrayList class.
  - (b) What is thread ? Explain in brief.
  - (c) What is callable statement ?
  - (d) Explain role of Java.Sql package in JDBC.

P.T.O.

2. Attempt the following questions : 20
- (a) Explain thread life cycle with example.
  - (b) Explain vector class in detail.
3. Attempt the following questions : 20
- (a) Write a program to describe concept of linked list.
  - (b) What is collection in Java ?
4. Attempt the following questions : 20
- (a) Explain the role of request parameters in handling form data.
  - (b) Write a program using servlet to display student name.
5. Attempt the following questions : 20
- (a) Write a program in JAVA to describe concept of thread priorities.
  - (b) Explain in detail concept of cookies and sessions.
6. Attempt the following questions : 20
- (a) Explain purpose of `<%=` and `%>` in JSP.
  - (b) Write a program to describe database connectivity.

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**NEPWT—281—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**(NEP 2020)**

**COMPUTER SCIENCE**

**Paper SEMPSE-451-A**

**(Data Structure)**

**(Wednesday, 18-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—3 Hours*

*Maximum Marks—60*

*Note :—* (i) All questions carry equal marks.

(ii) Question No. 1 is compulsory.

(iii) Attempt any *three* questions from question No. 2 to question No. 6.

1. Answer all the following questions :

15

(a) Explain complexity of algorithm.

(b) Explain stack.

(c) Explain concept of binary tree.

P.T.O.

2. Solve the following questions :

- (a) Explain array and their types. 7
- (b) What is string ? Explain string library functions. 8

3. Solve the following questions :

- (a) Explain concept of multistack with their implementation. 7
- (b) Explain queue and different operation of queue. 8

4. Solve the following questions :

- (a) Explain linked list with memory representation. 7
- (b) Explain types of linked list with example. 8

5. Solve the following questions :

- (a) Explain binary tree. 7
- (b) Explain tree traversal and threaded binary tree. 8

6. Solve the following questions :

- (a) Explain graph. 7
- (b) Explain types of sorting. 8

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**NEPWT—282—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**(NEP 2020 Pattern)**

**COMPUTER SCIENCE**

**Paper SCMPSE-451-B**

**(Software Testing)**

**(Wednesday, 18-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—Three Hours*

*Maximum Marks—60*

*Note :—* (i) All questions carry equal marks.

(ii) Question No. 1 is compulsory.

(iii) Attempt any *three* questions from question No. 2 to question No. 6.

1. Solve the following questions : 15

(a) Explain concept of cost of quality.

(b) Explain internal view of testing in detail.

(c) Explain concept of validation testing.

2. Solve the following questions :

(a) Explain advantages of automation testing in detail. 8

(b) Explain concept of dynamic testing. 7

P.T.O.



3. Solve the following questions :

- (a) Explain the concept of bug with an example. 8
- (b) Explain defect life cycle in detail. 7

4. Solve the following questions :

- (a) What are the different skills required for automation ? 8
- (b) Explain test cases template in detail. 7

5. Solve the following questions :

- (a) Explain strategic approach for software testing. 8
- (b) What is black box testing ? Explain it in detail. 7

6. Solve the following questions :

- (a) Explain various web driver commands used in selenium. 8
- (b) Explain various web elements used in selenium. 7

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**NEPWT—283—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

COMPUTER SCIENCE

Paper SCMPSE-451-C

(PHP and MySQL)

**(Wednesday, 18-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—3 Hours*

*Maximum Marks—60*

*Note :—* (i) All questions carry equal marks.

(ii) Question No. 1 is compulsory.

(iii) Attempt any *three* questions from question No. 2 to question No. 6.

1. Solve the following questions : 15

(a) Explain history and features of PHP.

(b) Explain the concept of array used in PHP.

(c) Explain the concept of class and object.

2. Solve the following questions :

(a) Explain any *two* string manipulation functions used in PHP. 8

(b) Explain the concept of function in PHP. 7

P.T.O.

3. Solve the following questions :

- (a) What do you mean by session and cookies ? 8
- (b) Explain procedure to connect with MySQL database. 7

4. Solve the following questions :

- (a) Explain the concept of inheritance used in PHP. 8
- (b) Write a sample PHP code to describe concept of class and object. 7

5. Solve the following questions :

- (a) Explain concept of function overloading in detail. 8
- (b) Explain any *two* MySQL commands in detail. 7

6. Solve the following questions :

- (a) Explain switch statement used in PHP. 8
- (b) Write a sample PHP code to describe concept of destructor. 7

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**NEPWT—35—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (NEP) (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**COMPUTER SCIENCE**

**Paper SCMPSC-451**

**(Mobile Application Development with Kotlin)**

**(Wednesday, 11-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—Three Hours*

*Maximum Marks—80*

*Note :—* (i) All questions carry equal marks.

(ii) Question No. 1 is compulsory.

(iii) Attempt any *three* questions from Q. No. 2 to Q. No. 6.

(iv) Assume suitable data if necessary.

1. Attempt the following questions :

20

(a) Discuss the concept of abstract class.

(b) Explain data types in Kotlin.

(c) Discuss features of Kotlin.

(d) Explain ArrayList.

P.T.O.

2. Attempt the following questions : 20
- (a) Discuss program structure in Kotlin with example.
  - (b) Discuss inline function with suitable example.
3. Attempt the following questions : 20
- (a) Discuss Alert Dialog in detail.
  - (b) Explain Android Architecture in detail.
4. Attempt the following questions : 20
- (a) Explain what is activity. Explain activity life cycle.
  - (b) Discuss RadioButton and CheckBox with suitable example.
5. Attempt the following questions : 20
- (a) Discuss various control statements used in Kotlin.
  - (b) What is interface ? How do you create and implement interface in Kotlin ?  
Explain with example.
6. Attempt the following questions : 20
- (a) What is intent ? Explain types of intent with example.
  - (b) Discuss exception handling mechanism in Kotlin.

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## **NEPWT—101—2024**

### **FACULTY OF SCIENCE AND TECHNOLOGY**

#### **M.Sc. (NEP) (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**COMPUTER SCIENCE**

**Paper SCMPSC-452**

**(Cloud Computing)**

**(Friday, 13-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—Three Hours*

*Maximum Marks—80*

*Note :—* (i) Q. No. 1 is compulsory.

(ii) Attempt any *three* questions from Q. No. 2 to Q. No. 6.

(iii) Draw well labelled diagrams wherever necessary.

1. Answer the following questions (5 marks each) :

20

(a) Explain benefits of cloud computing.

(b) What is grid computing ?

(c) What is virtualization ? Explain.

(d) Explain in brief concept of public and private IP.

P.T.O.

2. Attempt the following questions (**10** marks each) : 20
- (a) Explain in detail PasS and SaaS cloud model.
  - (b) Explain applications of cloud computing in different areas.
3. Attempt the following questions (**10** marks each) : 20
- (a) Explain architectural styles of cloud applications.
  - (b) Explain compute and data intensive programming model.
4. Attempt the following questions (**10** marks each) : 20
- (a) Explain types of virtualization techniques.
  - (b) Explain the concept of hypervisor.
5. Attempt the following questions (10 marks each) : 20
- (a) Describe the concept of resource bundling.
  - (b) What is application scaling ? Explain.
6. Attempt the following questions (**10** marks each) : 20
- (a) Explain virtualization system security issues and vulnerabilities.
  - (b) Explain in detail AWS management console.

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**NEPWT—168—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (CS) (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

COMPUTER SCIENCE

Paper SCMPSC-453

(NOSQL With MongoDB)

**(Monday, 16-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—Three Hours*

*Maximum Marks—80*

*Note :—* (i) All questions carry equal marks.

(ii) Question No. 1 is compulsory.

(iii) Solve any *three* questions from remaining five questions  
(Q. No. 2 to Q. No. 6).

1. Answer the following questions :

20

(a) Explain aggregate data model

(b) What is view ? Explain materialized views.

(c) Explain basic map-reduce concept.

(d) What is consistency in graph database ?

P.T.O.



2. Answer the following questions : 20
- (a) Explain the value of relational database.
  - (b) Explain key value and document data models.
3. Answer the following questions : 20
- (a) Explain sharding in detail.
  - (b) What is quorums ? Explain read and write quorums in detail.
4. Answer the following questions : 20
- (a) What is key-value data store ?
  - (b) Explain relationship among data.
5. Answer the following questions : 20
- (a) Explain the features, advantages and disadvantages of document data model.
  - (b) Explain the suitable use cases of document data model.
6. Answer the following questions : 20
- (a) Explain the Apache HBASE configuration files
  - (b) Explain the use suitable cases of graph data model.

This question paper contains 2 printed pages]

**NEPWT—281—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**(NEP 2020)**

**COMPUTER SCIENCE**

**Paper SEMPSE-451-A**

**(Data Structure)**

**(Wednesday, 18-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—3 Hours*

*Maximum Marks—60*

*Note :—* (i) All questions carry equal marks.

(ii) Question No. 1 is compulsory.

(iii) Attempt any *three* questions from question No. 2 to question No. 6.

1. Answer all the following questions :

15

(a) Explain complexity of algorithm.

(b) Explain stack.

(c) Explain concept of binary tree.

P.T.O.

2. Solve the following questions :

- (a) Explain array and their types. 7
- (b) What is string ? Explain string library functions. 8

3. Solve the following questions :

- (a) Explain concept of multistack with their implementation. 7
- (b) Explain queue and different operation of queue. 8

4. Solve the following questions :

- (a) Explain linked list with memory representation. 7
- (b) Explain types of linked list with example. 8

5. Solve the following questions :

- (a) Explain binary tree. 7
- (b) Explain tree traversal and threaded binary tree. 8

6. Solve the following questions :

- (a) Explain graph. 7
- (b) Explain types of sorting. 8

This question paper contains 2 printed pages]

**NEPWT—282—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**(NEP 2020 Pattern)**

**COMPUTER SCIENCE**

**Paper SCMPSE-451-B**

**(Software Testing)**

**(Wednesday, 18-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—Three Hours*

*Maximum Marks—60*

*Note :—* (i) All questions carry equal marks.

(ii) Question No. 1 is compulsory.

(iii) Attempt any *three* questions from question No. 2 to question No. 6.

1. Solve the following questions : 15

(a) Explain concept of cost of quality.

(b) Explain internal view of testing in detail.

(c) Explain concept of validation testing.

2. Solve the following questions :

(a) Explain advantages of automation testing in detail. 8

(b) Explain concept of dynamic testing. 7

P.T.O.

3. Solve the following questions :

- (a) Explain the concept of bug with an example. 8
- (b) Explain defect life cycle in detail. 7

4. Solve the following questions :

- (a) What are the different skills required for automation ? 8
- (b) Explain test cases template in detail. 7

5. Solve the following questions :

- (a) Explain strategic approach for software testing. 8
- (b) What is black box testing ? Explain it in detail. 7

6. Solve the following questions :

- (a) Explain various web driver commands used in selenium. 8
- (b) Explain various web elements used in selenium. 7

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**NEPWT—283—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

COMPUTER SCIENCE

Paper SCMPSE-451-C

(PHP and MySQL)

**(Wednesday, 18-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—3 Hours*

*Maximum Marks—60*

*Note :—* (i) All questions carry equal marks.

(ii) Question No. 1 is compulsory.

(iii) Attempt any *three* questions from question No. 2 to question No. 6.

1. Solve the following questions : 15

(a) Explain history and features of PHP.

(b) Explain the concept of array used in PHP.

(c) Explain the concept of class and object.

2. Solve the following questions :

(a) Explain any *two* string manipulation functions used in PHP. 8

(b) Explain the concept of function in PHP. 7

P.T.O.

3. Solve the following questions :

(a) What do you mean by session and cookies ? 8

(b) Explain procedure to connect with MySQL database. 7

4. Solve the following questions :

(a) Explain the concept of inheritance used in PHP. 8

(b) Write a sample PHP code to describe concept of class and object. 7

5. Solve the following questions :

(a) Explain concept of function overloading in detail. 8

(b) Explain any *two* MySQL commands in detail. 7

6. Solve the following questions :

(a) Explain switch statement used in PHP. 8

(b) Write a sample PHP code to describe concept of destructor. 7

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**NEPWT—35—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (NEP) (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**COMPUTER SCIENCE**

**Paper SCMPSC-451**

**(Mobile Application Development with Kotlin)**

**(Wednesday, 11-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—Three Hours*

*Maximum Marks—80*

*Note :—* (i) All questions carry equal marks.

(ii) Question No. 1 is compulsory.

(iii) Attempt any *three* questions from Q. No. 2 to Q. No. 6.

(iv) Assume suitable data if necessary.

1. Attempt the following questions :

20

(a) Discuss the concept of abstract class.

(b) Explain data types in Kotlin.

(c) Discuss features of Kotlin.

(d) Explain ArrayList.

P.T.O.



2. Attempt the following questions : 20
- (a) Discuss program structure in Kotlin with example.
  - (b) Discuss inline function with suitable example.
3. Attempt the following questions : 20
- (a) Discuss Alert Dialog in detail.
  - (b) Explain Android Architecture in detail.
4. Attempt the following questions : 20
- (a) Explain what is activity. Explain activity life cycle.
  - (b) Discuss RadioButton and CheckBox with suitable example.
5. Attempt the following questions : 20
- (a) Discuss various control statements used in Kotlin.
  - (b) What is interface ? How do you create and implement interface in Kotlin ?  
Explain with example.
6. Attempt the following questions : 20
- (a) What is intent ? Explain types of intent with example.
  - (b) Discuss exception handling mechanism in Kotlin.

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**NEPWT—101—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (NEP) (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

**COMPUTER SCIENCE**

**Paper SCMPSC-452**

**(Cloud Computing)**

**(Friday, 13-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—Three Hours*

*Maximum Marks—80*

*Note :—* (i) Q. No. 1 is compulsory.

(ii) Attempt any *three* questions from Q. No. 2 to Q. No. 6.

(iii) Draw well labelled diagrams wherever necessary.

1. Answer the following questions (5 marks each) :

20

(a) Explain benefits of cloud computing.

(b) What is grid computing ?

(c) What is virtualization ? Explain.

(d) Explain in brief concept of public and private IP.

P.T.O.

2. Attempt the following questions (**10** marks each) : 20
- (a) Explain in detail PasS and SaaS cloud model.
  - (b) Explain applications of cloud computing in different areas.
3. Attempt the following questions (**10** marks each) : 20
- (a) Explain architectural styles of cloud applications.
  - (b) Explain compute and data intensive programming model.
4. Attempt the following questions (**10** marks each) : 20
- (a) Explain types of virtualization techniques.
  - (b) Explain the concept of hypervisor.
5. Attempt the following questions (10 marks each) : 20
- (a) Describe the concept of resource bundling.
  - (b) What is application scaling ? Explain.
6. Attempt the following questions (**10** marks each) : 20
- (a) Explain virtualization system security issues and vulnerabilities.
  - (b) Explain in detail AWS management console.

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**NEPWT—168—2024**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**M.Sc. (CS) (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2024**

COMPUTER SCIENCE

Paper SCMPSC-453

(NOSQL With MongoDB)

**(Monday, 16-12-2024)**

**Time : 10.00 a.m. to 1.00 p.m.**

*Time—Three Hours*

*Maximum Marks—80*

*Note :—* (i) All questions carry equal marks.

(ii) Question No. 1 is compulsory.

(iii) Solve any *three* questions from remaining five questions  
(Q. No. 2 to Q. No. 6).

1. Answer the following questions :

20

(a) Explain aggregate data model

(b) What is view ? Explain materialized views.

(c) Explain basic map-reduce concept.

(d) What is consistency in graph database ?

P.T.O.

2. Answer the following questions : 20
- (a) Explain the value of relational database.
  - (b) Explain key value and document data models.
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- (a) Explain sharding in detail.
  - (b) What is quorums ? Explain read and write quorums in detail.
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