This question paper contains **3** printed pages]

NEPSST—1—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020)

RESEARCH METHODOLOGY

Paper NEPRN-1001

(Wednesday, 16-4-2025)   **Time : 10.00 a.m. to 12.30 p.m.**

Time—2½ 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*)   Qualities of good research.

(*b*)   Features of good design.

(*c*)   ANOVA

(*d*)   Types of data.

2.   (*a*)   What is research ? Explain steps involved in research process.   8

(*b*)   Discuss interview as a technique of data collection.   7

P.T.O.

3. (a) Calculate the Mean, Median and Mode of the following data : 8

Class Interval (CI)	Frequency (F)
50–54	2
45–49	5
40–44	8
35–39	7
30–34	10
25–29	5
20–24	9
15–19	2
10–14	1
5–9	1

(b) What is hypothesis ? Give the characteristics of good research hypothesis. 7

4. (a) Describe non-probability and probability sampling. 8

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

Excellent	Average	Poor	Total
58	32	30	120

5. (*a*) Define case study. Give their components. 8

   (*b*) Explain extraneous variable. 7

6. Write short notes on : 15

   (*a*) Descriptive types of research

   (*b*) Non-parametric test

   (*c*) Primary data sources.

This question paper contains **2** printed pages]

NEPSST—65—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

COMPUTER SCIENCE

Paper SCMPCS-401

(Computer Architecture and Microprocessor)

(Saturday, 19-4-2025)   **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 *Hours*   *Maximum Marks*—80

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

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

(3)   Solve any *three* questions from Q. Nos. **2** to **6**.

(4)   Assume suitable data and draw diagrams wherever necessary.

1.   Attempt the following questions :   20

(*a*)   Explain evolution of computers.

(*b*)   Explain algorithm for fixed point subtraction.

(*c*)   Explain instruction formats.

(*d*)   Explain associative memories.

P.T.O.

2. Attempt the following questions : 20

   (*a*) Draw and explain timing diagram for memory read.

   (*b*) Write and explain an ALP for 8086 to compute sum of two 16-bit numbers.

3. Attempt the following questions : 20

   (*a*) Explain CPU organization.

   (*b*) Explain segmentation.

4. Attempt the following questions : 20

   (*a*) Explain gate level system design methodology.

   (*b*) Write on floating point arithmetics.

5. Attempt the following questions : 20

   (*a*) Explain architecture of 8085.

   (*b*) Explain the functions of pins of 8086.

6. Attempt the following questions : 20

   (*a*) Explain interrupt types.

   (*b*) Write on high speed cache memory.

NEPSST—161—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

COMPUTER SCIENCE

Paper SCMPSC-402

(Python Programming)

(Tuesday, 22-4-2025)   **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 Hours   *Maximum Marks—80*

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

       (*ii*)   Of the remaining, attempt any *three* questions.

       (*iii*)   Draw neat and well labelled diagram wherever necessary.

1.   Write brief notes on the following :   20

     (*i*)   What are features of Python ?   5

     (*ii*)   Polymorphism   5

     (*iii*)   Classes and Objects   5

     (*iv*)   Exception Handling.   5

P.T.O.

2. Describe in detail the following : 20

   (*i*)   Explain control structures in Python. 10

   (*ii*) Write briefly Python data types. 10

3. Describe in detail the following : 20

   (*i*)   What are Templates in Python ? Explain it in detail. 10

   (*ii*) What are Packages ? Explain with example. 10

4. Describe in detail the following : 20

   (*i*)   What is Inheritance ? Explain with suitable example. 10

   (*ii*) Write briefly about error processing. 10

5. Describe in detail the following : 20

   (*i*)   What is exception handling ? 10

   (*ii*) What are models in Python ? 10

6. Write brief notes on the following : 20

   (*i*)   Data Manipulation 5

   (*ii*)   Tags 5

   (*iii*) Info Dialog Boxes 5

   (*iv*)   Numerical, String. 5

NEPSST—272—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020)

COMPUTER SCIENCE

Paper SCMPSC-403

(Advanced Java)

(Thursday, 24-4-2025)   **Time : 10.00 a.m. to 1.00 p.m.**

Time—Three Hours   *Maximum Marks*—80

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

         (*ii*)   Solve any *three* of the remaining five questions (Q. Nos. **2** to **6**).

1.   Answer the following questions :   20

   (*a*)   What is JDBC driver ?

   (*b*)   What is Servlet ?

   (*c*)   Explain concept of Multithreading.

   (*d*)   Explain the concept of collection interface.

2.   Answer the following questions :   20

   (*a*)   Explain in detail Thread Synchronization.

   (*b*)   What are thread priorities ? Explain.

                                       P.T.O.

3.   Answer the following questions :   20

    (*a*)   Explain concept of Hashset in detail.

    (*b*)   Explain the concept of iterator in detail.

4.   Answer the following questions :   20

    (*a*)   Explain in detail JDBC architecture.

    (*b*)   Explain concept of Prepared Statement and Callable Statement.

5.   Answer the following questions :   20

    (*a*)   Explain Deploying Simple Servlet in brief.

    (*b*)   Discuss Servlet Life Cycle in detail.

6.   Answer the following questions :   20

    (*a*)   Explain concept of JavaBeans in JSP.

    (*b*)   Describe the concept of Sessions in JSP.

NEPSST—463—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

COMPUTER SCIENCE

SCMPSE-401-A

(Data Analysis using Power IB)

(Saturday, 26-4-2025)   **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 Q. No. **2** to Q. No. **6**.

1. Solve the following questions :   15

    (*a*)   Exploring the power BI desktop interface.

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

    (*c*)   Explain create and format Bar charts.

2. Solve the following questions :

    (*a*)   Explain the implementing data from relational database.   8

    (*b*)   Explain in detail merging and appending data.   7

                   P.T.O.

3. Solve the following questions :

(a) Explain the making a user-friendly model. 8

(b) Explain in detail working with text functions. 7

4. Solve the following questions :

(a) Explain the math and statistical functions. 8

(b) Why Visualizations ? Explain the visualization types. 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

NEPSST—464—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP Pattern)

COMPUTER SCIENCE

SCMPSE-401B

(Statistical Methods)

(Saturday, 26-4-2025)	**Time : 10.00 a.m. to 1.00 p.m.**

Time—3 Hours   *Maximum Marks*—60

N.B. :— (*i*) Question number **1** is compulsory.

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

(*iii*) Figures to the right indicate full marks.

(*iv*) Assume suitable data wherever necessary.

1. Attempt the following :   15

(*a*) Explain statistics.

(*b*) Describe weighted arithmetic mean.

(*c*) Explain range and coefficient of range.

P.T.O.

2. (*a*) Explain scope of statistics in computer science. 7

(*b*) Calculate median and mode from the following data : 8

Class Interval	Frequency
10—20	6
20—30	11
30—40	22
40—50	28
50—60	15
60—70	10
70—80	7

3. Attempt the following :

(*a*) Describe pie diagram. 7

(*b*) Calculate standard deviation and variance from the following data :

8

Wages	20—30	30—40	40—50	50—60	60—70	70—80
Frequency	11	18	24	13	10	6

4. Attempt the following :

   (*a*) Explain event and types of event. 7

   (*b*) Calculate Karl Pearson's coefficient of correlation between X and Y.

   8

X	Y
2	3
7	5
8	9
12	4
10	7
6	2

5. Attempt the following :

   (*a*) Describe correlation and regression. 7

   (*b*) A bag contains 30 marbles of three different colors in which 12 red, 10 blue and 8 green, among these, 3 marbles are both red and blue. What is the probability of randomly picking a marble that is either :

   (*i*) Red or blue

   (*ii*) Red or green. 8

6. Attempt the following :

   (*a*) Write merits and demerits of median and mode. 7

   (*b*) Describe histogram and frequency polygon. 8

NEPSST—465—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP 2020 Pattern)

COMPUTER SCIENCE

SCMPSE-401-C

(Web Technology)

(Saturday, 26-4-2025)   **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 Hours   *Maximum Marks—60*

N.B. :— (*i*)   Question number **1** is compulsory.

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

(*iii*)   Use of any electronic media such as mobile phone, digital diary and electronic calculator is not permitted.

1.   Attempt the following :   15

(*a*)   Explain the structure of HTML in detail.

(*b*)   What is Hyperlink (Anchor) Tag ? Explain.

(*c*)   Explain <img> tag with all attributes.

P.T.O.

2. Solve the following questions :

(*a*) Explain different web protocols in detail. 7

(*b*) Explain table tags with example. 8

3. Solve tne following questions :

(*a*) Explain FRAMESET & FRAME tags in detail. 7

(*b*) Explain different HTML Form controls in brief. 8

4. Solve the following questions :

(*a*) What is DHTML ? Explain ramification DHTML in detail. 7

(*b*) Explain different Text-Level elements with example. 8

5. Solve the following questions :

(*a*) Explain how to publish a website on WWW ? Explain. 7

(*b*) What is CSS ? Explain types of CSS with example. 8

6. Solve the following questions :

(*a*) Explain <div> tag with example. 7

(*b*) What is JavaScript ? Explain adding JavaScript to HTML document with example. 8

This question paper contains **2** printed pages]

NEPSST—32—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

COMPUTER SCIENCE

(SCMPSC-451)

(Mobile Application Development with Kotlin)

(Thursday, 17-4-2025)   **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 Hours   *Maximum Marks—80*

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

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

     (iii) Solve any *three* from Q. Nos. **2** to **6**.

1. Solve *all* questions (5 marks each) :   20

     (a) Explain the Elvis operator in Kotlin.

     (b) What are named arguments in Kotlin functions ? Provide an example.

     (c) Explain how 'Array list' and 'Hand Set' differ in Kotlin.

     (d) Describe the role of 'Linear Layout' in Android UI design.

2. Solve the following questions :

     (a) What are data classes in Kotlin ? How are they different from regular class ?   10

     (b) Explain recursion with an example in Kotlin. Discuss its advantages. 10

         P.T.O.

3. Solve the following questions :

(a) How do try-catch finally blocks work in Kotlin ? Provide an example to demonstrate exception handling. 10

(b) Explain the difference between a 'Hash Map' and a 'Linked List' in Kotlin with examples. 10

4. Solve the following questions :

(a) Explain the concept of the Android activity lifecycle. What are the main life cycle methods ? 10

(b) What is the role of the Android Manifest.Xml file in an Android project ? Provide examples of its content. 10

5. Solve the following questions :

(a) Compare 'Linear Layout' and 'Relative layout' in Android. Provide examples of their usage. 10

(b) Explain how a 'Recycler view' work in Android. How is it different from a 'List view' ? 10

6. Solve the following questions :

(a) What is difference between explicit and implicit intents in Android ? Provide an example. 10

(b) Explain how shared preferences are used to store data in an Android application. Provide an example. 10

This question paper contains **2** printed pages]

NEPSST—113—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

COMPUTER SCIENCE

Paper–SCMPSC-452

(Cloud Computing)

(Monday, 21-4-2025)   **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 Hours   *Maximum Marks*—80

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

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

1.   Attempt the following :   20

   (*a*)   What is Cloud Computing ? Discuss challenges of cloud computing.

   (*b*)   Explain software as a service model.

   (*c*)   Explain Google Cloud in brief.

   (*d*)   Describe the applications of cloud computing.

2.   Attempt the following :   20

   (*a*)   Explain NIST Cloud Computing reference architecture.

   (*b*)   Explain in brief programming model in cloud computing.

                      P.T.O.

3. Attempt the following : 20

    (*a*)   Discuss the basics of virtualization.

    (*b*)   Describe the taxonomy of virtual machines.

4. Attempt the following : 20

    (*a*)   Explain application scaling in cloud computing.

    (*b*)   Explain the concept of resource bundling in cloud computing.

5. Attempt the following : 20

    (*a*)   Discuss the risks and challenges in cloud computing.

    (*b*)   Explain technologies for virtualization-based security enhancement.

6. Attempt the following : 20

    (*a*)   What is AWS elastic computing ? Explain.

    (*b*)   Explain Public and Private IPs.

NEPSST—210—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

COMPUTER SCIENCE

Paper SCMPSC-453

(NoSQL with MongoDB)

(Wednesday, 23-4-2025)   **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 Hours   *Maximum Marks—80*

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

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

       (3)   Use of any electronic media such as mobile phone, digital diary and electronic calculator is not permitted.

1.   Attempt the following :   20

   (*a*)   Explain the value of relational databases.

   (*b*)   Explain an aggregate data models.

   (*c*)   Describe the concept of Map-Reduce.

   (*d*)   What is a document database ? Write its features.

                                            P.T.O.

2. Attempt the following (10 marks each) : 20

   (a) What is an Aggregate ? Explain the example of relations and aggregates.

   (b) Explain the term "Master-Slave Replication".

3. Attempt the following (10 marks each) : 20

   (a) What is Partitioning ? Explain the partitioning and combining.

   (b) What is a Key-Value Store ? Explain its features.

4. Attempt the following (10 marks each) : 20

   (a) What is document database ? Explain the features of document database.

   (b) Explain the content management systems in detail.

5. Attempt the following (10 marks each) : 20

   (a) What is a Graph Database ? Explain the transactions in Graph Database.

   (b) Explain the MongoDB database in detail.

6. Attempt the following (10 marks each) : 20

   (a) Explain the Web Analytics or Real-Time Analytics.

   (b) Explain the concept of Column-Family Stores in detail.

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NEPSST—369—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

COMPUTER SCIENCE

Paper–SCMPSE-451-B

(Software Testing)

(Friday, 25-4-2025)   **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*)   Attempt any *three* questions from Q. No. **2** to Q. No. **6**.

1.   Attempt the following :   15

(*a*)   What is Quality ? Describe the cost of Quality.

(*b*)   Explain the strategic approach to Software Testing.

(*c*)   Explain the Art of Debugging.

2.   Attempt the following questions :

(*a*)   What is software testing, Basic Path, Testing ?   8

(*b*)   Explain Control Structural Testing.   7

                   P.T.O.

3. Attempt the following questions :

    (*a*) What is Automation testing ? Discuss scope of automation.   8

    (*b*) Discuss static and dynamic testing.   7

4. Attempt the following questions :

    (*a*) What is Test Management ? Explain Test Plan Template.   8

    (*b*) Describe the test design technique.   7

5. Attempt the following questions :

    (*a*) What is Defect ? Explain Defect Life cycle.   8

    (*b*) Discuss Defect Tracking System.   7

6. Attempt the following questions :

    (*a*) Explain Selenium IDE.   8

    (*b*) Describe differences between Selenium and other tools.   7

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NEPSST—370—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

COMPUTER SCIENCE

Paper–SCMPSE-451(C)

(PHP and MySQL)

(Friday, 25-4-2025)   **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 Q. No. **2** to Q. No. **6**.

1.   Solve the following questions :   15

(*a*)   Exploring the data types in PHP.

(*b*)   What is String ? Explain the string functions.

(*c*)   Explain the constants and expressions in PHP.

2.   Solve the following questions :

(*a*)   Explain the ? : Operator in PHP.   8

(*b*)   What is Array ? Explain the types of Arrays.   7

P.T.O.

3. Solve the following questions :

(*a*) Explain the constructor and destructor with example. 8

(*b*) Explain in Sessions and Cookies. 7

4. Solve the following questions :

(*a*) Explain the Executing Simple Queries. 8

(*b*) What is MySQL ? Explain the connecting to MySQL and selecting the Database. 7

5. Solve the following questions :

(*a*) Explain in detail Function Overloading with example. 8

(*b*) Explain in detail using cookies and sessions in PHP. 7

6. Solve the following questions :

(*a*) Write a PHP code in Your Web Pages. 8

(*b*) Explain in detail inheritance with example. 7

This question paper contains **2** printed pages]

NEPSST—368—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020)

COMPUTER SCIENCE

Paper–SEMPSE-451 A

(Data Structure)

(Friday, 25-4-2025)   **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 Q. No. **2** to Q. No. **6**.

1.   Answer all the following questions (**5** marks each) :   15

   (*a*)   Explain array and their types.

   (*b*)   Explain circular linked list.

   (*c*)   Explain terminology of binary tree.

                                  P.T.O.

2. Solve the following questions :

    (*a*)   Explain concept of pointer and structure with example.   7

    (*b*)   Explain stack with their operations.   8

3. Solve the following questions :

    (*a*)   Explain D-queue and priority queue.   7

    (*b*)   Explain linked list with memory representation.   8

4. Solve the following questions :

    (*a*)   Explain binary search tree.   8

    (*b*)   Explain graph traversals shortest path algorithm.   7

5. Solve the following questions :

    (*a*)   Explain static and dynamic memory allocation.   7

    (*b*)   Explain recursion function with example.   8

6. Solve the following questions :

    (*a*)   Explain hash function.   8

    (*b*)   Explain selection sort.   7

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NEPSST—32—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

COMPUTER SCIENCE

(SCMPSC-451)

(Mobile Application Development with Kotlin)

(Thursday, 17-4-2025)	Time : 10.00 a.m. to 1.00 p.m.

Time—3 Hours *Maximum Marks*—80

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

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

    (*iii*) Solve any *three* from Q. Nos. **2** to **6**.

1. Solve *all* questions (5 marks each) :   20

    (*a*) Explain the Elvis operator in Kotlin.

    (*b*) What are named arguments in Kotlin functions ? Provide an example.

    (*c*) Explain how 'Array list' and 'Hand Set' differ in Kotlin.

    (*d*) Describe the role of 'Linear Layout' in Android UI design.

2. Solve the following questions :

    (*a*) What are data classes in Kotlin ? How are they different from regular class ?   10

    (*b*) Explain recursion with an example in Kotlin. Discuss its advantages. 10

P.T.O.

3. Solve the following questions :

(a) How do try-catch finally blocks work in Kotlin ? Provide an example to demonstrate exception handling. 10

(b) Explain the difference between a 'Hash Map' and a 'Linked List' in Kotlin with examples. 10

4. Solve the following questions :

(a) Explain the concept of the Android activity lifecycle. What are the main life cycle methods ? 10

(b) What is the role of the Android Manifest.Xml file in an Android project ? Provide examples of its content. 10

5. Solve the following questions :

(a) Compare 'Linear Layout' and 'Relative layout' in Android. Provide examples of their usage. 10

(b) Explain how a 'Recycler view' work in Android. How is it different from a 'List view' ? 10

6. Solve the following questions :

(a) What is difference between explicit and implicit intents in Android ? Provide an example. 10

(b) Explain how shared preferences are used to store data in an Android application. Provide an example. 10

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NEPSST—113—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

COMPUTER SCIENCE

Paper–SCMPSC-452

(Cloud Computing)

(Monday, 21-4-2025)   **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 Hours   *Maximum Marks*—80

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

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

1. Attempt the following :   20

   (*a*)   What is Cloud Computing ? Discuss challenges of cloud computing.

   (*b*)   Explain software as a service model.

   (*c*)   Explain Google Cloud in brief.

   (*d*)   Describe the applications of cloud computing.

2. Attempt the following :   20

   (*a*)   Explain NIST Cloud Computing reference architecture.

   (*b*)   Explain in brief programming model in cloud computing.

                                                    P.T.O.

3. Attempt the following : 20

   (*a*) Discuss the basics of virtualization.

   (*b*) Describe the taxonomy of virtual machines.

4. Attempt the following : 20

   (*a*) Explain application scaling in cloud computing.

   (*b*) Explain the concept of resource bundling in cloud computing.

5. Attempt the following : 20

   (*a*) Discuss the risks and challenges in cloud computing.

   (*b*) Explain technologies for virtualization-based security enhancement.

6. Attempt the following : 20

   (*a*) What is AWS elastic computing ? Explain.

   (*b*) Explain Public and Private IPs.

This question paper contains **2** printed pages]

NEPSST—210—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

COMPUTER SCIENCE

Paper SCMPSC-453

(NoSQL with MongoDB)

(Wednesday, 23-4-2025)   **Time : 10.00 a.m. to 1.00 p.m.**

Time—3 Hours   *Maximum Marks—80*

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

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

       (3) Use of any electronic media such as mobile phone, digital diary and electronic calculator is not permitted.

1. Attempt the following :   20

(*a*) Explain the value of relational databases.

(*b*) Explain an aggregate data models.

(*c*) Describe the concept of Map-Reduce.

(*d*) What is a document database ? Write its features.

P.T.O.

2. Attempt the following (10 marks each) : 20

(a) What is an Aggregate ? Explain the example of relations and aggregates.

(b) Explain the term "Master-Slave Replication".

3. Attempt the following (10 marks each) : 20

(a) What is Partitioning ? Explain the partitioning and combining.

(b) What is a Key-Value Store ? Explain its features.

4. Attempt the following (10 marks each) : 20

(a) What is document database ? Explain the features of document database.

(b) Explain the content management systems in detail.

5. Attempt the following (10 marks each) : 20

(a) What is a Graph Database ? Explain the transactions in Graph Database.

(b) Explain the MongoDB database in detail.

6. Attempt the following (10 marks each) : 20

(a) Explain the Web Analytics or Real-Time Analytics.

(b) Explain the concept of Column-Family Stores in detail.

This question paper contains **2** printed pages]

NEPSST—369—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020 Pattern)

COMPUTER SCIENCE

Paper–SCMPSE-451-B

(Software Testing)

(Friday, 25-4-2025)   **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*) Attempt any *three* questions from Q. No. **2** to Q. No. **6**.

1. Attempt the following :   15

(*a*) What is Quality ? Describe the cost of Quality.

(*b*) Explain the strategic approach to Software Testing.

(*c*) Explain the Art of Debugging.

2. Attempt the following questions :

(*a*) What is software testing, Basic Path, Testing ?   8

(*b*) Explain Control Structural Testing.   7

P.T.O.

3. Attempt the following questions :

(*a*) What is Automation testing ? Discuss scope of automation. 8

(*b*) Discuss static and dynamic testing. 7

4. Attempt the following questions :

(*a*) What is Test Management ? Explain Test Plan Template. 8

(*b*) Describe the test design technique. 7

5. Attempt the following questions :

(*a*) What is Defect ? Explain Defect Life cycle. 8

(*b*) Discuss Defect Tracking System. 7

6. Attempt the following questions :

(*a*) Explain Selenium IDE. 8

(*b*) Describe differences between Selenium and other tools. 7

This question paper contains **2** printed pages]

NEPSST—370—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

COMPUTER SCIENCE

Paper–SCMPSE-451(C)

(PHP and MySQL)

(Friday, 25-4-2025)   **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 Q. No. **2** to Q. No. **6**.

1.   Solve the following questions :   15

  (*a*)   Exploring the data types in PHP.

  (*b*)   What is String ? Explain the string functions.

  (*c*)   Explain the constants and expressions in PHP.

2.   Solve the following questions :

  (*a*)   Explain the ? : Operator in PHP.   8

  (*b*)   What is Array ? Explain the types of Arrays.   7

P.T.O.

3.   Solve the following questions :

(*a*)   Explain the constructor and destructor with example.   8

(*b*)   Explain in Sessions and Cookies.   7

4.   Solve the following questions :

(*a*)   Explain the Executing Simple Queries.   8

(*b*)   What is MySQL ? Explain the connecting to MySQL and selecting the Database.   7

5.   Solve the following questions :

(*a*)   Explain in detail Function Overloading with example.   8

(*b*)   Explain in detail using cookies and sessions in PHP.   7

6.   Solve the following questions :

(*a*)   Write a PHP code in Your Web Pages.   8

(*b*)   Explain in detail inheritance with example.   7

NEPSST—368—2025

FACULTY OF SCIENCE AND TECHNOLOGY

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

APRIL/MAY, 2025

(NEP-2020)

COMPUTER SCIENCE

Paper–SEMPSE-451 A

(Data Structure)

(Friday, 25-4-2025)   **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 Q. No. **2** to Q. No. **6**.

1.   Answer all the following questions (**5** marks each) :   15

(*a*)   Explain array and their types.

(*b*)   Explain circular linked list.

(*c*)   Explain terminology of binary tree.

P.T.O.

2. Solve the following questions :

(*a*) Explain concept of pointer and structure with example. 7

(*b*) Explain stack with their operations. 8

3. Solve the following questions :

(*a*) Explain D-queue and priority queue. 7

(*b*) Explain linked list with memory representation. 8

4. Solve the following questions :

(*a*) Explain binary search tree. 8

(*b*) Explain graph traversals shortest path algorithm. 7

5. Solve the following questions :

(*a*) Explain static and dynamic memory allocation. 7

(*b*) Explain recursion function with example. 8

6. Solve the following questions :

(*a*) Explain hash function. 8

(*b*) Explain selection sort. 7

NEPSST—43—2025

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2025

(NEP 2020)

RESEARCH AND PUBLICATION ETHICS

NEPPE-1002

(Thursday, 17-4-2025)   **Time : 2.00 p.m. to 4.00 p.m.**

Time—2 Hours   *Maximum Marks—40*

N.B. :— (*i*) Question Number **1** is compulsory.

(*ii*) Solve any *three* questions of the remaining.

1. Write notes on :   5×2=10

(*a*) Nature of philosophy

(*b*) Research integrity

(*c*) Importance of publication ethics

(*d*) Characteristics to call a journal open

(*e*) *h*-index.

P.T.O.

2. (*a*) Define philosophy. Explain its branches. 5×2=10

(*b*) What do you mean by fabrication, falsification and plagiarism (FFP).

3. (*a*) Define publication ethics. Write the importance of publication ethics.

5×2=10

(*b*) Describe SHERPA/ROMEO online resource and list three variant of text.

4. (*a*) What is predatory journal ? List the common characteristics of it.

5×2=10

(*b*) What is impact factor ? How does it calculate ? Explain it with a suitable example.

5. (*a*) What is plagiarism ? Give their types. 2×5=10

(*b*) Describe in detail SNIP and SJR.

6. Write short notes on : 4×2.5=10

(*a*) Moral philosophy

(*b*) Duplicate publication

(*c*) Principle of transparency

(*d*) Turnitin.

NEPSST—114—2025

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2025

COMPUTER SCIENCE

Paper SCMPSC-551

(Web Application with MVC Core)

(Monday, 21-4-2025)   **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 Hours   *Maximum Marks—80*

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

         (2)   *All* questions carry equal marks.

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

1.   Solve the following questions :   20

     (*a*)   What are the advantages of ASP.NET Core ?

     (*b*)   Explain action methods.

     (*c*)   What is HTML Helpers ? Explain.

     (*d*)   Describe Authentication and Authorization.

2.   Solve the following questions :

     (*a*)   Explain life cycle of ASP.Net Core Request.   10

     (*b*)   What is Razor view ? Explain advantages of Razor view.   10

<div align="right">P.T.O.</div>

3.   Solve the following questions :

(*a*)   Explain Built-in HTML helpers and URL helpers tag in detail. 10

(*b*)   Explain in detail Model Binder.   10

4.   Solve the following questions :

(*a*)   Explain the concept of Server Side and Client-Side Validation. 10

(*b*)   Describe in brief Model level validation using Validatableobject. 10

5.   Solve the following questions :

(*a*)   Explain basic CRUD operations using Entity Framework.   10

(*b*)   What is Memory Caching ? Explain in detail.   10

6.   Solve the following questions :

(*a*)   What is URL Routing ? Explain in detail.   10

(*b*)   Explain in detail the concept of Web API.   10

NEPSST—211—2025

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (CS) (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2025

COMPUTER SCIENCE

Paper–SCMPSC-552

(Introduction to AI and ML)

(Wednesday, 23-4-2025)   **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 Hours   *Maximum Marks*—80

N.B. :— (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 various types of AI.

    (*b*) Explain basic definitions and terminology.

    (*c*) Explain Components of knowledge-based agent architecture.

    (*d*) Explain the applications of Machine Learning.

2. Answer the following questions :   20

    (*a*) Explain supervised learning in detail.

    (*b*) Explain Unsupervised Learning Algorithm.

P.T.O.

3. Answer the following questions : 20

   (*a*) Explain binary classification using logistic regression.

   (*b*) Explain in short the Dimensionality Reduction.

4. Answer the following questions : 20

   (*a*) Explain simple hill climbing technique in Heuristic Search.

   (*b*) Explain Subset Selection.

5. Answer the following questions : 20

   (*a*) Explain Cross-validation.

   (*b*) Explain uninformed search algorithm.

6. Answer the following questions : 20

   (*a*) Explain Semi-Supervised Learning.

   (*b*) Explain Training *versus* Testing.

NEPSST—372—2025

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2025

COMPUTER SCIENCE

Paper–SCMPSE-551 B

(Data Mining and Data Warehousing)

(Friday, 25-4-2025)   **Time : 2.00 p.m. to 5.00 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 Q. No. **2** to Q. No. **6**.

1.   Attempt the following :   15

   (*a*)   Define data mining Vs knowledge discovery in databases.

   (*b*)   Explain Database/OLTP system.

   (*c*)   What is web structure mining ? Explain.

               P.T.O.

2. Solve the following questions :

(*a*) Explain Data mining and Data warehousing with their components ? 8

(*b*) Explain basic Data mining task and Data mining metrics ? 7

3. Solve the following questions :

(*a*) Define statistical perspective on data mining. 8

(*b*) Explain OLAP and web search engines. 7

4. Solve the following questions :

(*a*) Explain statistical based algorithms. 8

(*b*) Explain neural network based algorithms. 7

5. Solve the following questions :

(*a*) Explain data mining concepts and data mining technique in detail. 8

(*b*) Explain web content mining and web usage mining. 7

6. Solve the following questions :

(*a*) Explain data warehouse architecture. 8

(*b*) Explain DBMS schemas for decision support. 7

This question paper contains **2** printed pages]

NEPSST—373—2025

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (NEP) (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2025

COMPUTER SCIENCE

Paper–SCMPSE-551 (C)

(DevOps Fundamental)

(Friday, 25-4-2025)   **Time : 2.00 p.m. to 5.00 p.m.**

Time—2½ *Hours*   *Maximum Marks*—60

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

     (*ii*) *All* questions carry equal marks.

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

1. Solve the following :   15

     (*a*) Discuss the steps involved in installation of Docker.

     (*b*) Explain Maven Architecture in short.

     (*c*) Write a note on Azure Pipelines.

2. Solve the following :

     (*a*) What is DevOps ? Discuss the benefits of working in a DevOps environment.   8

     (*b*) Discuss Terraform Life Cycle.   7

P.T.O.

3. Solve the following :

(*a*) Explain merging in Git. 8

(*b*) Explain Jenkins Master-slave architecture. 7

4. Solve the following :

(*a*) Explain Kubernetes Architecture. 8

(*b*) Explain postman tests. 7

5. Solve the following :

(*a*) Explain DevOps stages. 8

(*b*) Explain Git workflows. 7

6. Solve the following :

(*a*) Discuss Jenkins Security Management. 8

(*b*) Explain IAC Practices. 7

NEPSST—371—2025

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

APRIL/MAY, 2025

(NEP-2020)

COMPUTER SCIENCE

Paper SCMPSE-551A

(Database Administration)

(Friday, 25-4-2025)   **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours   *Maximum Marks—80*

N.B. :—   (*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*)   What is SGA ? Explain it in detail.

   (*b*)   Explain standalone host with disk array.

   (*c*)   Explain I/O connections among data files.

   (*d*)   What is Tablespace ? Explain it in detail.

                                P.T.O.

2. Answer the following questions : 20

   (*a*) Explain other files in oracle architecture.

   (*b*) Explain Redolog file and control file.

3. Answer the following questions : 20

   (*a*) Explain architectural overview of hardware configuration of oracle database.

   (*b*) Explain Stand-Alone Host with multiple database.

4. Answer the following questions : 20

   (*a*) Explain concurrent I/O among Background processes.

   (*b*) Explain locally managed Tablespaces.

5. Answer the following questions : 20

   (*a*) What is physical backup ? Explain it in detail.

   (*b*) Explain closed backup method.

6. Answer the following questions : 20

   (*a*) Explain Recovery in NOARCHIEVELOG mode.

   (*b*) Explain client server application.