



RAN-2311001101010001

B.Sc. (IT) (NEP) (Major Course) (Semester-I) February - 2026
Fundamentals of Programming Using C-I (Paper : Major - 104)

Time: 2 Hours]

[Total Marks: 50

<p>सूचना : / Instructions</p> <p>(1) उपरोक्त दृशविव विगतो उत्तरवली पर अवश्य लभवी. Fill up strictly the above details on your answer book</p>	<p>Seat No.:</p> <table border="1"> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p style="text-align: center;">Student's Signature</p> </div>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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Q.1. Do as directed : (Any Ten) 10

- (1) Constant declared using #define is called _____ constant.
- (2) What is the range of a variable declared as unsigned integer where integer size allocated is 2 byte?
- (3) _____ is a comparison operator and _____ is an assignment operator.
- (4) What is the output for the following code?

```
int main()
{
    int i=5,j;
    j = i++ + ++i + --i;
    printf("%d %d", i, j);
    return 0;
}
```

- (5) What is the output for the following code?

```
int main()
{
    int k=15;
    printf("\n %d %d %d", k = 30, k>40, k==15);
    return 0;
}
```

- (6) What specifier is used in printf() to display hexadecimal integers?
- (7) What is the output for the following code?

```
#include <stdio.h>
int main()
{
    int x;
    x=10,20,30;
    printf("%d",x);
    return 0;
}
```

- (8) _____ function in <string.h> is used to compare two strings for equality.
- (9) What is the output for the following code?
- ```
#include <stdio.h>
int main()
{
 int a = 5, b = 2;
 printf("%d", a++ * ++b);
 return 0;
}
```
- (10) List out control characters used in scanf() function?
- (11) Which keyword is used to skip the current iteration in a loop?
- (12) List out any five escape sequences used in C.

**Q.2. Answer following questions (Any Two)**

14

- (1) What is a language translator? Give different types of Language translators. Write steps to compile and execute code with compiler at command prompt/terminal.
- (2) What is a string in C? How can we declare and initialize a String in C? Differentiate between following string functions:
- strcmp & strncmp
  - strcpy & strncpy
- (3) What is a flowchart? Explain its importance in problem solving List the commonly used flowchart symbols along with their significance. Also, mention the merits and demerits of using flowcharts. Illustrate your answer with a suitable example.

**Q.3. (A) Answer following questions (Any Two)**

10

- (1) What is switch statement? Discuss how switch is better than else.. if ladder. Also list constraints when switch can not be used.
- (2) Differentiate between entry controlled and exit controlled loop with suitable example.
- (3) What is an array? Explain 1D array & 2D array with suitable example.

**Q.3. (B) Answer following questions (Any One)**

4

- (1) Explain bitwise operators in C with example and its applications.
- (2) Explain enumeration and typedef with suitable example.

**Q.4. Answer following question (Any Three)**

12

- (1) Write a C program to count number of digits in a given number.
- (2) Write a C program to find smallest element in an array of 10 integers.
- (3) Write a C program to calculate the sum of all elements of 3 X 3 matrix.
- (4) Write a C program to reverse string without using any inbuilt functions.



## RAN-2311001101040001

**B.Sc. (IT) M.Sc (IT) (Sem. -I) Examination February - 2026**  
**Mathematics - I (Paper - MDC -102)**

**Time: 2 Hours ]**

**[ Total Marks: 50**

|                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |   |   |   |   |   |
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| <p><b>सूचना : / Instructions</b></p> <p>(1) उपरोक्त दृशविव विगतो उत्तरवली पर अवश्य लभवी.<br/>Fill up strictly the above details on your answer book</p> <p>(2) All questions are compulsory.</p> <p>(3) Figures to the right indicate marks of the questions.</p> <p>(4) Follow usual notations.</p> | <p>Seat No.:</p> <table style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">1</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">6</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">8</td> </tr> </table> <div style="border: 1px solid black; height: 80px; margin-top: 10px; display: flex; align-items: center; justify-content: center;"> <p>Student's Signature</p> </div> |  |   |   | 1 | 6 | 8 |
|                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  | 1 | 6 | 8 |   |   |

**Q.1. A. Attempt Any Two:** (6)

1. If the function  $f: R \rightarrow R$  given by  $f(x) = x^2 - 2$  and  $g: R \rightarrow R$  given by  $g(x) = 3x - 5$  then find  $(fog)(x)$ ,  $(gof)(x)$ ,  $(gog)(-3)$ .
2. Let  $f: R \rightarrow R$  be a function defined as  $f(x) = (3x + 4)/5$ . Prove that  $f$  is one-to-one and onto and hence find the inverse of  $f$ .
3. Let  $R$  be the set of real numbers. Define a binary operation  $*$  on  $R$  as  $a * b = a + b + ab$ ,  $\forall a, b \in R$ . Find the inverse of 21.

**B. Attempt Any Two:** (6)

1. Define the following terms with illustration.
  - i) Order of a matrix
  - ii) Symmetric matrix
  - iii) Diagonal matrix
2. Prove that  $1 + \frac{3}{4} + \frac{9}{16} + \frac{27}{64} + \dots$  converges and find its sum.
3. Find the inverse of the matrix  $A = \begin{bmatrix} 1 & 3 & 4 \\ 3 & -1 & 6 \\ -1 & 5 & 1 \end{bmatrix}$  using elementary row operation.

**Q.2. A. Attempt Any Two:** (6)

1. Let  $R$  and  $S$  be two relations on  $A = \{1, 2, 3, 4\}$  and  $B = \{a, b, c\}$  given by  $R = \{(1, a), (2, c), (3, a), (3, b), (4, c)\}$  and  $S = \{(1, a), (2, c), (3, a), (4, b), (2, a), (3, b), (4, c)\}$ . List the elements of  $R \cap S$ ,  $R \cup S$ ,  $R^{-1}$ .
2. Prove that the function  $f: R \rightarrow R$  defined as  $f(x) = \frac{3x+4}{5}$ .  
Prove that  $f$  is one-one and onto, also find the inverse of  $f$ .
3. If  $R$  and  $S$  are equivalence relations in the set  $X$ , prove that  $R \cap S$  is equivalence relation.

**B. Attempt Any Two:** (6)

1. For any square matrix  $A$ , prove that:
  - (i)  $A + A^T$  is symmetric matrix.
  - (ii)  $A - A^T$  is skew-symmetric matrix.

- If  $A = \begin{bmatrix} 3 & 0 \\ 4 & 3 \end{bmatrix}$  and  $B = \begin{bmatrix} 3 & 4 \\ 1 & -5 \end{bmatrix}$ , then find  $A - B$ ,  $AB$ ,  $A^2$ .
- Show that the following system of equation is consistent and hence solve it.  
 $x + 2y - z = 3$ ,  $3x - y + 2z = 1$ ,  $2x - 2y + 3z = 2$ ,  $x - y + z = -1$ .

**Q.3. A. Attempt Any Two:**

(6)

- Define mean, median, mode. State merits and demerits of median.
- Find the mean, median and mode for the following data:

|              |       |       |       |       |       |       |
|--------------|-------|-------|-------|-------|-------|-------|
| Marks        | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-64 |
| No. of marks | 3     | 5     | 12    | 18    | 14    | 8     |

- Calculate mean deviation(about median) of the following data:

|                 |        |         |         |         |         |         |
|-----------------|--------|---------|---------|---------|---------|---------|
| Ages (in years) | 0 - 10 | 10 - 20 | 20 - 30 | 30 - 40 | 40 - 50 | 50 - 60 |
| No. of persons  | 13     | 38      | 67      | 76      | 22      | 4       |

**B. Attempt Any Two:**

(6)

- In usual notation prove that  $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ .
- Calculate the standard deviation of the following data:

|                 |       |       |        |         |         |
|-----------------|-------|-------|--------|---------|---------|
| Marks           | 0 - 4 | 4 - 8 | 8 - 12 | 12 - 16 | 16 - 20 |
| No. of Students | 5     | 12    | 8      | 7       | 8       |

- If the Mean of a Poisson Variable is 3, find the probability that  
 (i)  $X=0$ , (ii)  $0 < X \leq 3$ , (iii)  $1 \leq X < 5$ .

**Q.4. A. Attempt Any Two:**

(6)

- In a factory producing screws, three machines produces respectively 25%, 45% and 30% of the total production out of which 5%, 3% and 2% are defective respectively. One screw draw from random form the production and found that defective, what is the probability that it is produced by machine II.
- There are 20 tickets numbered 1,2, ..., 20. One ticket is drawn at random. Find the probability that the ticket bears a number which is (i) even, (ii) a perfect square, and (iii) multiple of 3.
- Define
  - Mutually Exclusive Events
  - Null event
  - Trial

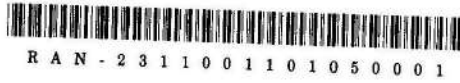
**B. Attempt Any Two:**

(8)

- State the probability function of a Binomial distribution and obtain its mean, variance.
- Calculate first quartile, 7<sup>th</sup> decile, 80<sup>th</sup> percentile and quartile deviation the following distribution:

|             |         |         |         |         |         |         |
|-------------|---------|---------|---------|---------|---------|---------|
| Classes     | 30 - 40 | 40 - 50 | 50 - 60 | 60 - 70 | 70 - 80 | 80 - 90 |
| Frequencies | 3       | 7       | 18      | 16      | 8       | 4       |

- For two events A and B,  $P(A) = 1/2 = P(B)$  and  $P(A \cup B) = 2/3$  then find  $P(A' \cup B')$ ,  $P(A' \cap B')$ ,  $P(A \cap B)$  and  $P(A \cap B')$ .



# RAN-2311001101050001

B.Sc. (IT) NEP (Sem. - I) Examination February - 2026

AEC : Communication Skills in English (Paper - 101)

Time: 60 minutes ]

[ Total Marks: 25

|                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |  |
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|                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  |  |  |  |

- Q. 1 Draft an email on the following: (Any 1) (05)**
- (A) Draft an email to the Project Manager availing his permission for work from home due to personal reasons.
- (B) Draft an email to the team leader informing him about the status of the project.
- Q. 2 Do as Directed: (08)**
- (A) Interpret the given news headlines and comment:
- (1) *Automobile Industry Sees Shift Towards Electric Vehicles.*
- (2) *Breakthrough in Artificial Intelligence Raises Ethical Questions.*
- (B) **Identify whether the following workplace messages are formal or informal and justify your choice.**
- (1) Hi team, Let's catch up tomorrow at 10A.M. to discuss the project. Cheers!
- (2) To whom it may concern, we regret to inform you that your application has not been successful. We appreciate your interest in our company.
- (3) Thanks for your help with the presentation! You're a life saver.
- Q. 3 Answer the following questions: (Any 3) (12)**
- (A) You are drafting an email to a client about a bug fix, but your first draft is long and unclear.  
**Question:** How would you apply the Seven Cs of communication to improve the email?
- (B) **Scenario:** During a project meeting, your manager explains the new workflow. Some team members just nod but later ask questions that were already answered.  
**Question:** How would you show that you are *listening* actively instead of just hearing?
- (C) **Scenario:** A team mate is upset about workload and starts complaining during a break.  
**Question:** How would you apply good conversational skills to listen empathetically and respond constructively?
- (D) **Scenario:** An advertisement mentions: "*Applicants must have creativity, presentation skills, and ability to design campaigns for diverse clients.*"  
**Question:** Does this point to a technical IT role or a creative/marketing-oriented role? Support your answer.