

4005

**BCA Ist Semester
Examination, 2024**

**FUNDAMENTALS OF COMPUTER AND
ITS APPLICATIONS**

Paper : NBCA-101

Time : 2 Hours]

[M.M. : 70

Note :- Attempt *Four* questions in all. *One* question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining *three* questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any *one* question.

1. What is Computer ? Explain different components of Computer with the help of block diagram.

Or

2. Explain Generations of computer with technology used, advantages and disadvantages.

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. What is Processor ? Explain different types of processor with its specification.

4. Write short notes on the following :

- (a) ROM
- (b) RAM
- (c) SRAM
- (d) BIOS

5. Explain Monitor and its types in detail.

6. What is Software ? Explain different types of Software.

7. Differentiate between the following :
- (a) Compiler and Interpreter
 - (b) Linker and Loader
8. Discuss the Concept of Algorithm and Flowchart with an example.
9. Explain MS PowerPoint. Give the steps for creating PowerPoint Presentation to introduce yourself and your academic data of intermediate. Don't mention your personal credentials.
10. What is MS Word ? How do we draw tables and graphs in MS Word ? Explain with an example.

4005

BCA Ist Semester Examination, 2025

(New Course)

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Note :- Attempt *Four* questions in all. *One* question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining *three* questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any *one* question.

1. Explain the different generations of computers and discuss the major technological advancements in each generation.

Or

2. Define a computer system. What are the basic components of a computer system ? Explain the function of each component in detail.

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. Discuss various input and output devices. Compare their advantages and disadvantages with suitable examples.
4. What are the different types of memory in a computer ? Explain the differences between RAM, ROM, SRAM and DRAM.
5. Describe the architecture and types of motherboards. What are the functions of BIOS and CMOS on a motherboard ?
6. Write a short note on different types of computer software. Distinguish between system software and application software with examples.

7. Explain the different types of storage devices. Provide a comparative analysis of magnetic disk and optical disk storage.
8. Elaborate on the concept of number systems in computers. Convert the decimal number 156 to binary and hexadecimal formats, showing all steps.
9. Discuss the basic steps in creating, formatting and managing data in MS Excel. Provide examples of using formulas and functions for data processing.
10. What are mail merge and labels in MS Word ? Explain their utility and describe the steps to create a mail merge document.

Dr. Aarti

4007

**BCA Ist (Odd) Semester
Examination, 2023**

BASICS OF INFORMATION SYSTEM

Paper : NBCA-103

Time : 3 Hours]

[M.M. : 70

Note :- Answer any *five* questions. All questions carry equal marks.

1. Explain characteristics of a good information system and its activities. Also differentiate between data and information.

2. Explain concept of management information system and differentiate between MIS and DSS.
3. Define advanced concept of information system with its types and elements.
4. What is system ? Explain the features and quality of Information.
5. What are the various levels of management in information ?
6. What is Internet ? Give difference between Internet, Intranet and Extranet.
7. Explain ISP with their types.
8. What is the structure of an E-mail ? Explain in detail.

9. Explain any *four* Internet Protocols in detail.

10. Explain the structure of E-mail and also explain any *four* E-mail protocols.

4007

B.C.A. Ist Semester Examination, 2025

BASICS OF INFORMATION SYSTEM

Paper : NBCA-103

Time : 2 Hours]

[M.M. : 70

Note :- Attempt *Four* questions in all. *One* question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining *three* questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any *one* question.

1. Explain the features of a system. What are the different decision making levels in an organization ?

Or

2. Define the term internet. What is the difference between WWW and Internet ? What do you mean by FTP ? Explain its uses.

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. What are the different types of information systems ? Explain decision support system. Also explain the difference between DSS and MIS.
4. Discuss the role of expert systems in artificial intelligence and describe some real life applications.
5. What are the different types of connections available to connect to the Internet ? Explain ISDN and dial up connection along with neat diagram.

6. What do you understand by Internet Ethics ? Describe the major ethical principles that should guide online behaviour. Explain, how cyber laws and ethical awareness help in maintaining a safe digital environment ?
7. What do you mean by email ? Explain the structure of email. What client based and web based emails ?
8. What are different types of email protocols ? Explain each of them.
9. What are the key components and functions of SCM and ERP systems ? Explain, how these systems integrate to enhance overall business performance ?
10. Explain the relationship between management information system and information resource management.

4006

BCA Ist Semester Examination, 2025

PROGRAMMING IN C

Paper : NBCA-102

Time : 2 Hours]

[M.M. : 70

Note :- Attempt *Four* questions in all. *One* question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining *three* questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any *one* question.

1. Why do we use do-while loop in C ? Also, tell any properties which you know ?

Or

2. What do you understand by operators in C ? Explain ternary operator with suitable example.

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. (a) Explain function prototype. Why is it required ?
(b) Write a C program using function to swap two variables using call by reference. Also call the function in main().
4. Write a C program to generate Fibonacci series using function.
5. Explain how macros differ from functions and discuss the advantages and limitations of using macros with examples.

6. Explain the following code line by line and also give the output :

```
#include <stdio.h>
```

```
void f(int *p) {
```

```
    int a = 100;
```

```
    p = &a;
```

```
    printf("%d", *p);
```

```
}
```

```
int main() {
```

```
    int b = 200;
```

```
    f(&b);
```

```
    printf("%d", b);
```

```
    return 0;
```

```
}
```

7. Explain the functions malloc(), calloc(), realloc(), and free() with proper syntax and examples showing their usage.
8. What do you understand by operators in C ? Explain ternary operator with suitable example.
9. Discuss the character set, keywords, variables, constants, and data types in detail. Illustrate with suitable examples.
10. Discuss the different components of a C program and describe the process of writing, compiling, and executing a C program with an example.

6622

BCA Ist Semester Examination, 2025

(Old Course)

MATHEMATICS-I

Paper : BCA-103

Time : 2 Hours]

[M.M. : 70

Note :- Attempt *Four* questions in all. *One* question out of two questions (10 marks each) is to be attempted from Section 'A'. Remaining *three* questions (each carrying 20 marks) are to be attempted out of eight questions given in Section 'B'.

Section-A

[10×1=10]

Note :- Attempt any *one* question.

1. Find the rank of the matrix by reducing it to normal form :

$$\begin{bmatrix} 1 & 2 & -1 & 3 \\ 4 & 1 & 2 & 1 \\ 3 & -1 & 1 & 2 \\ 1 & 2 & 0 & 1 \end{bmatrix} \quad [10]$$

Or

2. Find inverse of the matrix M by applying elementary transformations :

$$M = \begin{bmatrix} 0 & 2 & 1 & 3 \\ 1 & 1 & -1 & -2 \\ 1 & 2 & 0 & 1 \\ -1 & 1 & 2 & 6 \end{bmatrix} \quad [10]$$

Section-B

[20×3=60]

Note :- Attempt any *three* questions.

3. For what values of k , the equations :

$$x + y + z = 1$$

$$2x + y + 4z = k$$

$$4x + y + 10z = k^2$$

have a solution and solve them completely in each case?

[20]

4. Find characteristic equation of the matrix :

$$A = \begin{bmatrix} 2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 2 \end{bmatrix}$$

and hence, compute A^{-1} . Also find the matrix represented by :

$$A^8 - 5A^7 + 7A^6 + A^4 - 5A^3 + 8A^2 - 2A + I \quad [20]$$

5. If :

$$y = e^{m \cos^{-1} x}$$

show that :

$$(1 - x^2) y_{n+2} - (2n + 1) x y_{n+1} - (n^2 + m^2) y_n = 0$$

and calculate $y_n(0)$.

[20]

6. If :

$$u = \tan^{-1} \frac{x^3 + y^3}{x - y}$$

prove that :

$$(i) \quad x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} = \sin 2u$$

$$(ii) \quad x^2 \frac{\partial^2 u}{\partial x^2} + 2xy \frac{\partial^2 u}{\partial x \partial y} + y^2 \frac{\partial^2 u}{\partial y^2} = \sin 4u - \sin 2u$$

$$= 2 \cos 3u \cdot \sin u \quad [20]$$

7. (a) Expand $x^2y + 3y - 2$ in power of $(x - 1)$ and $(y + 2)$ using Taylor's theorem. [10]

(b) If $u = xyz$, $v = x^2 + y^2 + z^2$, $w = x + y + z$, find the Jacobian :

$$\frac{\partial(x, y, z)}{\partial(u, v, w)} \quad [10]$$

8. The temperature T at any point (x, y, z) in space is $T = 400xyz^2$. Find the highest temperature at the surface of a unit sphere $x^2 + y^2 + z^2 = 1$. [20]

9. Verify divergence theorem for $\vec{F} = 4xz \hat{i} - y^2 \hat{j} + yz \hat{k}$ taken over the cube bounded by the planes :

$$x = 0, x = 1, y = 0, y = 1, z = 0, z = 1 \quad [20]$$

10. Verify Stokes' theorem for $\vec{F} = (x^2 + y^2) \hat{i} - 2xy \hat{j}$ taken round the rectangle bounded by the lines :

$$x = \pm a, y = 0, y = b \quad [20]$$