F.Y.B.Sc.(I.T.) – Semester II

Architecture of Microprocessor

(Time: 2 hours) **Total Marks: 60**

N. B.: (1) All questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

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

a. Describe the functional blocks involved in the organization of a microprocessor based system.

b. What is a microprocessor? State few characteristics of 8085.

c. Explain the role of accumulator, general purpose registers, Program Counter and Stack Pointer in the 8085 programming model.

d. Discuss the functions of following externally initiated signals of the 8085.
i) READY ii) HOLD iii) TRAP

e. What are control and status signals in the 8085 microprocessor? Explain their role during memory and I/O operations.

f. With a neat diagram, explain the flag register of the 8085 microprocessor.

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

a. What is a tri-state device? Explain the working of tri-state buffers in bus-oriented systems.

b. What is a machine cycle? Explain the different types of machine cycles in the 8085 microprocessor.

c. Differentiate between memory mapped I/O and peripheral mapped I/O.

d. What is Read Only Memory (ROM)? What are the different types of ROM.

e. What is debugging? Explain the different techniques used for debugging an 8085assembly language program.

f. What is Random Access Memory? Explain SRAM and DRAM.

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

a. Explain following instructions:
i) CMA ii) ANI 8-bit data.

b. I) State whether following instructions are valid or invalid.
i) XRA A ii) SHLD B iii) DAD D iv) RAR A
II) State length of following instructions in terms of bytes:
i) MOV M,A ii) ORI 75H iii) STAX B iv) JNC 2050H v) CPI 69H vi) POP B

c. With suitable example, explain the difference between LXI H 2050 H and LHLD 2050H.

d. Specify the Accumulator content and flag register status as the following instructions are executed:
MVI A, F5 H
MVI D, 63 H
ADD D
CMA
XRA D
HLT

e. Explain different addressing modes of the 8085 microprocessor with examples.

f. Write a short note on Data Transfer instruction group.

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

a. What is an interrupt? With respect to the 8085 microprocessor, discuss the different ways in which interrupts are classified.

b. Define a stack in the 8085 microprocessor. Explain operation of stack with PUSH and POP instructions.

c. How do flag conditions control the execution of conditional CALL and RETURN instructions? Explain with suitable examples.

d. What is a delay routine? Explain how a time delay is generated using a single register in the 8085.

e. Explain the sequence of operations performed by 8085 during execution of **CALL** and **RET** instructions.

f. Write a short note on SIM instruction.

F.Y.B.Sc.(I.T.) – Semester II
Microprocessor Architecture
(Time: 1 hour) **Total Marks: 30**

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(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

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

a. What are control and status signals ? Explain in detail.
b. Define following terms:
i) Machine language **ii)** Assembler **iii)** instruction **iv)** Opcode **v)** Operand
c. Discuss the working of Carry (CY), Parity (P), Zero (Z) flags with suitable examples.
d. What are Data Transfer instructions? Explain any two instructions from this group.
e. Write a short note on programming model of microprocessor 8085.

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

a. What is subroutine? Discuss CALL and RET instructions.
b. Write a short note on interrupts in 8085.
c. I) Write addressing mode of following instructions:
i) ADD M **ii)** XCHG **iii)** SUB B **iv)** CPI 78H
II) Write length of following instructions in terms of bytes:
i) STAX B **ii)** LHLD 8900H **iii)** MVI C, 45H **iv)** RLC
d. With suitable example, explain the instructions associated with stack memory.
e. Explain following instructions with suitable examples:
i) INX H **ii)** CMA

F.Y.B.Sc.(I.T.) – Semester II (NEP)
WEB DESIGNING
(Time: 30 minutes) **Total Marks: 15**

N. B.: (1) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(2) Answers to the **same question** must be **written together**.
(3) Numbers to the **right** indicate **marks**.
(4) Draw **neat labeled diagrams** wherever **necessary**.

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

a. Explain HTML Elements, Empty HTML Elements, and HTML Attributes.

b. Write HTML code to demonstrate ordered lists with all the attributes.

c. What is internal style? Write HTML code to create a web page with internal style.

d. Explain any five properties of the text field in HTML.

e. Explain the jQuery form events.

F.Y.B.Sc.(I.T.) – Semester II
OBJECT ORIENTED PROGRAMMING

(Time: 1 hour)

Total Marks: 30

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.

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

a. What is Polymorphism? Explain compile-time and run-time polymorphism.
b. Explain control flow statements in C++ with suitable examples.
c. What are constants in C++? Explain the types of constants.
d. Write a C++ program to demonstrate class and object.
e. What are pointer member operators? Explain with an example.

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

a. Write a C++ program to demonstrate multilevel inheritance.
b. What is exception handling? Explain the exception handling mechanism in C++.
c. Differentiate between a text file and a binary file.
d. Explain the swapping of strings with an example.
e. Write a program to design a simple calculator for two numbers (operations like add, subtract, multiply, divide) using a class template.

FY.B.Sc.(I.T.) – Semester II
C++ Programming

(Time: 2 hours)

Total Marks: 60

N. B.: (1) **All** questions are **compulsory**.
(2) Make**suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

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

a. Compare Procedure Oriented Programming and Object Oriented Programming.
b. What is the scope resolution operator (::)?
c. Explain reference variables and the bool data type in C++.
d. Write the structure of a C++ program.
e. Explain Conditional statement with example.
f. Explain new and delete operators.

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

a. Explain Objects and Classes with a simple C++ example.
b. What is operator overloading? Explain with suitable example.
c. Write a C++ Program that illustrates multiple inheritance.
d. What are access specifiers? Explain public, private and protected.
e. Write a C++ Program to find Maximum out of Two Numbers using friend function.
f. What is a constructor? Explain types of constructors.

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

a. What is pointer to object in C++? Explain with example.
b. What is mean by string in C++? Explain any five string functions.
c. Write a C++ program illustrating the use of virtual functions in class.
d. What is Binding in C++? Explain late and early binding.
e. Explain try, throw and catch mechanism.
f. Explain this pointer in C++.

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

a. Explain algorithms in STL.
b. Explain map container.
c. Write a C++ Program to create Simple calculator using Class template.
d. Explain random access to files.
e. Explain iterators in STL.
f. Explain vector container and its in build function with example.

F.Y.B.Sc.(I.T.) – Semester II (NEP)
WEB PROGRAMMING
(Time: 1 hour) Total Marks: 30

N. B.: (1) All questions are compulsory.
(2) Make suitable assumptions wherever necessary and state the assumptions made.
(3) Answers to the same question must be written together.
(4) Numbers to the right indicate marks.
(5) Draw neat labeled diagrams wherever necessary.
(6) Use of Non-programmable calculators is allowed.

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

a. Explain the functionalities of JavaScript.

b. Explain the types of dialog boxes in JavaScript with a suitable example.

c. Write a JavaScript program to accept a number from the user and display the sum of its digits.

d. Explain any five functions of the Array object in JavaScript.

e. Explain the bracket patterns of the JavaScript RegExp Object with suitable examples.

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

a. Explain the data types in PHP.

b. Explain loop termination with a suitable example.

c. Explain the functions to sort indexed and associative arrays in PHP. Give suitable examples.

d. Write a short note on sessions in PHP.

e. Write PHP code to demonstrate SQL Prepared.

F.Y.B.Sc. (I.T.) NEP – Semester II
ESSENTIALS OF WEB DEVELOPMENT

(Time: 2 hours) **Total Marks: 60**

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat, labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

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

a. Explain the heading tags and their default CSS Settings.
b. Explain the following formatting tags with suitable examples:
i) <b> **ii)** <del> **iii)** <q> **iv)** <address> **v)** <kbd>
c. List and explain the types of hyperlinks.
d. Explain the id and next element selectors with suitable examples.
e. Write HTML code to demonstrate CSS Margin. Explain the margin effects applied in the code.
f. List and explain the semantic elements.

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

a. Write HTML code to design a web page with a client-side image map.
b. Explain the <audio> tag and its attributes.
c. Write HTML code to design the following web page:

Item	Quantity	Price	Amount
Pen Drive	5	500	2500
Charger	1	1500	1500
Pen	3	10	30
Total			**4300**

d. When are radio buttons used? How are they created in HTML? Explain the properties of radio buttons.
e. Explain the jQuery slide effects with syntax.
f. Explain the attributes of jQuery mouse events.

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

a. Explain the functionalities of JavaScript.
b. Explain the types of dialog boxes in JavaScript with a suitable example.
c. Write a JavaScript program to accept a number from the user and display the sum of its digits.
d. Explain any five functions of the Array object in JavaScript.
e. Explain the bracket patterns of the JavaScript RegExp Object with suitable examples.
f. Write a short note on cookies in JavaScript.

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

a. Explain the following:
i) WAMP Server **ii)** PHP Syntax **iii)** Comments in PHP
b. Explain the data types in PHP.
c. Explain loop termination with a suitable example.
d. Explain the functions to sort indexed and associative arrays in PHP. Give suitable examples.
e. Write a short note on sessions in PHP.
f. Write PHP code to demonstrate SQL Prepared.

F. Y.B. Sc. (I.T.) – Semester II
SUBJECT: FINITE MATHEMATICS

(Time: 1 hour) **Total Marks: 30**

N. B.: (1) **All** questions are **compulsory**.
(2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.
(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **non-programmable** calculators is **allowed**.

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

a. Let U = {1, 2, 3, 4, 5, 6 ,7, 8} be universal set & $A = \{1, 3, 4, 7\}$, $B = \{1, 4, 6\}$, $C = \{3, 4, 8\}$ be subsets of U. Prove the following
i) $(A \cup C)' = A' \cap C'$ **ii)** $A - B = A \cap B'$ **iii)** $A \cup (B \cap C) = (A \cup B) \cap (AUC)$

b. Let $R = \{(1,1), (1,2), (2,1), (2,3), (3,2), (3,3)\}$ be the relation defined on set $A = \{1, 2, 3\}$
i) Express relation R in matrix form. **ii)** Draw diagraph of relation R.
iii) Find indegree & outdegree of each element of A.
iv) Determine whether R is reflexive, symmetric & transitive.

c. In a survey of 500 students, it is observed that 340 participated in sports, 128 participated in dance & 100 participated in both activities. Find number of students who participated in
i) At least one of the activities **ii)** None of the activity **iii)** One activity

d. Among the integers 1 to 210, determine the number of integers divisible
i) Either by 3 or by 5 or by 7. **ii)** By 3 & 7 but not by 5.

e. Let $f = \{(1,4), (2,1), (3,2), (4,3)\}$ & $g = \{(1,3), (2,2), (3,4), (4,1)$ be functions defined on $A = \{1, 2, 3, 4\}$ .Find
i) $f \circ g$ **ii)** $g \circ g$ **iii)** $f \circ f$

f. Explain the following terms with suitable example of each
i) Surjective Function **ii)** Invertible Function
iii) Relative difference between two sets **iv)** Symmetric Difference between two sets

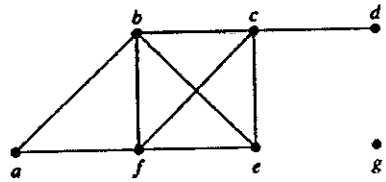
2. Attempt *any three* of the following: 15

a. Find first 5 terms of the sequence given by relation
$b_n + 10b_{n-1} - 5b_{n-2} = 0, n \geq 2$ given $b_0 = -3, b_1 = 4$

b. Determine total number of words that can be formed by using letters of the word 'ENGLISH'
i) There is no restriction **ii)** Each word begins with E & end with S
iii) Each word end with consonant **iv)** Each word begins with vowel

c. Solve recurrence relation : $a_n - 5a_{n-1} - 6a_{n-2} = 0, n \geq 2$ given $a_1 = 4, a_2 = -2$

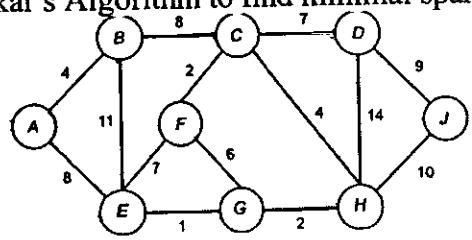
d. Define: Degree of vertex, Even vertex, Odd vertex, Pendant vertex , Isolated vertex
Find degree of each vertex of following graph & determine which are even vertices, odd vertices, pendant vertices & isolated vertices



e. It is observed that 3% bulbs are defective. If 100 bulbs are selected randomly, find the probability that
i) There is no defective bulb **ii)** There are 4 defective bulbs
iii) There are at least 2 defective bulbs.

f. Define: Minimal spanning tree

g Apply Kruskal's Algorithm to find minimal spanning tree of following weighted graph



F.Y.B.Sc. (I.T.) NEP – Semester II
Digital Marketing
(Time: 1 hour) **Total Marks: 30**

17/03/2025

N. B.: (1) **All** questions are **compulsory**.
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(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat, labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

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

a. Explain briefly the benefits of Digital Marketing.
b. Explain in brief the evolution of digital marketing.
c. Describe the 7 C's of Digital Marketing.
d. Explain the need for digital marketing plan.
e. Explain the basis of digital customer segmentation.
f. Write a note on Vodcast.

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

a. What are the types of email marketing?
b. Explain in detail uses of content marketing.
c. Explain ways for creation and management of social media profiles for business?
d. What are the key elements of campaign marketing?
e. Explain the methods of online marketing research.
f. Explain the principles of website designing.

F.Y.B.Sc.(I.T.) – Semester II

Microprocessor Architecture Lab

(Time: 30 min) 18/3/2026 **Total Marks: 15**

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(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.
(6) Use of **Non-programmable** calculators is **allowed**.

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

a. What is a buffer? Explain how tri-state buffers are used in microprocessors.
b. Differentiate between memory-mapped I/O and Input/Output-mapped I/O.
c. What is meant by program debugging? Explain its importance.
d. Explain the sequence of operations performed during a Memory Read Cycle in 8085.
e. Differentiate between Read Only Memory and Random Access Memory.

F.Y.B.Sc.(I.T.) – Semester II

PL/SQL

(Time: 30 mins) 18/08/2025 **Total Marks: 15**

N. B.: (1) **All** questions are **compulsory**.
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(3) Answers to the **same question** must be **written together**.
(4) Numbers to the **right** indicate **marks**.
(5) Draw **neat labeled diagrams** wherever **necessary**.

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

a. What is an anonymous block? Explain PL/SQL Anonymous block with syntax.

b. Explain IF-THEN-ELSE control structure with syntax and example.

c. What is a cursor in PL/SQL? Explain explicit cursor with syntax. What are the steps to be included while working with explicit cursor?

d. What is an exception? Mention the types of exceptions in PL/SQL. Give example for NO_DATA_FOUND.

e. What is a trigger in PL/SQL? Explain about row level trigger with syntax.

f. Explain the reverse FOR loop statement with syntax and example.

F.Y.B.Sc.(I.T.) – Semester II

Microprocessor Architecture Lab

(Time: 30 min) 18/03/2026 **Total Marks: 15**

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

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e. Differentiate between Read Only Memory and Random Access Memory.