# Question Paper Set of

# F.Y.B.SC.IT. – Sem-II

# REGULAR

## University of Mumbai

## April, 2023

1-17/23

**PRAHLADRAI DALMIA LIONS COLLEGE OF COMMERCE & ECONOMICS**

**REGULAR , APRIL, 2023**

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|---|---|
| DEPARTMENT: BSCIT | SEMESTER: II |
| CLASS: FYBSCIT | SUBJECT: FMPMC |
| DURATION: 2:30 | MARKS: 75 |

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

a. Explain middle level language with its advantage and disadvantage.
b. What is an encoder? Explain 4-to-2 bit binary encoder in detail.
c. Write a short note on ALE, Trap and Reset.
d. Explain control bus and data bus in detail.
e. Explain D flip flop in detail.
f. Write a short note on microprocessor.

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

a. Explain absolute and linear decoding in detail.
b. Explain direct and indirect addressing mode in detail.
c. Explain conditional jump instruction in detail.
d. What is instructions? Explain 1-byte, 2-byte and 3-byte instructions.
e. Write a short note on 8085 interfacing pins.
f. Write an assembly language program to subtract two 8-bit numbers.

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

a. Write a program to add two 16 bit numbers stored in HL and BC register pair.
b. Write an algorithm to find one's complement of 16 bit number stored in memory location D000H i.e. LSB and D001H i.e. MSB.
c. Write a short note on counters.
d. Write a program to generate a delay using a nested loops.
e. Explain dynamic debugging in detail.
f. Explain parameter passing through register with example.

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

a Differentiate between general purpose system and embedded system.
b What is flash memory? Why writing to flash memory is difficult?
c Explain processor status word (PSW) and accumulator as special function registers.
d Draw a 40 pin diagram of 8051. Explain Reset, PSEN and ALE.
e Write a program to send values 00 to FF to port P1.
f Write a program to toggle bits of P1 continuously forever with some time delay.

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

a. Explain the features of 8051 microcontroller.
b. Explain the structure of embedded program.
c. Write a short note on compiling.
d. Explain cross-assembling process in detail.
e. Explain debuggers in detail.
f. Explain the phases of EDLC (Embedded Product Life Cycle) model.

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**PRAHLADRAI DALMIA LIONS COLLEGE OF COMMERCE & ECONOMICS**

ATKT & **REGULAR EXAMINATION, April 2023**

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|---|---|
| DEPARTMENT: BSCIT | SEMESTER: II |
| CLASS: FYBSCIT | SUBJECT: **Object Oriented Programming with C++** |
| DURATION: 2:30 Hrs. | MARKS: 75 |

1 Attempt any three of the following: (15)

a What are the basic concepts of Object Oriented Programming? Explain

b Explain the features of OOP.

c Define Operator. What are the different types of operators in C++? Explain any one in detail

d Explain for loop with its syntax and an example program.

e Discuss structure of C++ program with appropriate example.

f Write a C++ program to find the sum of first 10 even numbers.

2 Attempt any three of the following: 15

a What is a recursive function? Explain the concept with an example program.

b Define class and object. How class is defined? Explain.

c How a member function of a class is defined outside the function? Explain with suitable example

d Define constructor. Enlist and explain types of constructor in C++.

e How unary operators are overloaded? Write a C++ program to overload (++) increment operator.

f Write down the rules for operator overloading

3 Attempt any three of the following: 15

a Write short note on base class and derived class. How derived class is defined? Give its syntax.

b Explain with example multilevel inheritance in C++.

c What is the difference between protected and private members? Explain

d What is Pure virtual function? Explain in detail.

e Define Stream. Explain different stream classes with suitable diagram.

f Write a short note on formatted Input / Output in C++.

4 Attempt any three of the following: 15

a State and explain different file modes.

b Explain the hierarchy of file stream classes with suitable diagram.

c Define the term generic programming. Give its advantages.

d Write a program in C++ to find the sum of 2 numbers using function template.

e Define error. What are the different types of errors? Explain.

f Explain exception handling mechanism in C++ with suitable example.

5 Attempt any three of the following: 15

a Distinguish between String object and character array.

b Explain the concept of string concatenation with suitable example program.

c Explain compare and swap functions of string class with example.

d What are the new features of ANSI C++? Explain

e Define containers. What are the different types of containers? Explain.

f Write a short note on vector container in C++.

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| ATKT / REGULAR, MARCH 2023 | |
| DEPARTMENT: BSCIT | SEMESTER: II |
| CLASS: FYBSCIT | SUBJECT: Numerical Methods |
| DURATION: 2:30 hrs | MARKS: 75 |

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

(1a) Explain Round off error and Truncation error with one example for each.

(1b) Explain Absolute error, Relative error and Percentage error using suitable formulas.

(1c) Round off to total four significant digits:
a) 1352.026
b) 23.52625

(1d) Truncate given numbers to two decimal places:
a) 334.032
b) 56.3768

(1e) Find the absolute error and relative error if true value = 25.36 and approximate value = 25.3

(1f) Find value of $e^1$ using first three terms of the series

$$e^x = 1 + x + \left(\frac{x^2}{2!}\right) + \left(\frac{x^3}{3!}\right) + \left(\frac{x^4}{4!}\right) + \ldots..$$

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

(2a) Solve equation $x^3 - 1.2x^2 + 2x - 2.4 = 0$, using N-R method starting from $x = 1$

(2b) Prepare forward difference table.

| X | 3 | 6 | 9 | 12 |
|---|---|---|---|---|
| Y | 8 | 10 | 13 | 16 |

(2c) Obtain root of the equation $x^3 - 4x - 9 = 0$ using bisection method in [2,3].

(2d) Find a) X2, b) Y0, c) $\Delta$Y0, d) $\Delta^2$Y0, e) $\Delta^3$Y0, wherever possible

| X | 2 | 4 | 6 | 8 |
|---|---|---|---|---|
| Y | 33 | 34 | 38 | 50 |

(2e) Prepare backward difference table.

| X | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Y | 12 | 30 | 64 | 160 |

(2f) Obtain root of the equation $x^2 - 2x - 5 = 0$ using false position method in [3,4].

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

(3a) Write formulas for Trapezoidal rule, Simpson's 1/3 rule, and Simpson's 3/8 rule for finding numerical integration.

(3b) Evaluate $\int_1^4 (x + 2)dx$ using Trapezoidal rule, take h=0.5

(3c) Sole the following simultaneous equations using Gauss-Siedel method.

$10x + y + z = 12$
$2x + 10y + z = 13$
$2x + 2y + 10z = 14$

(3d) Evaluate $\int_2^5 (3x + 2)dx$ using Simpson's 3/8 rule, take h=0.5

(3e) Sole the following simultaneous equations using Gauss-Jordan method.

$2x + 4y - 6z = -8$
$x + 3y + z = 10$
$2x - 4y - 2z = -12$

(3f) Given, $\frac{dy}{dx} - 1 = xy$ and y(0)=1. Obtain Taylor series for y(x).

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

(4a) Find Regression Coefficient of Y on X

| X | 3 | 7 | 12 | 20 |
|---|---|---|---|---|
| Y | 8 | 10 | 13 | 16 |

(4b) Discuss properties of Regression coefficients

(4c) Fit a straight line and hence estimate Y for X=10

| X | 3 | 7 | 12 | 20 |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Y | 8 | 10 | 13 | 16 |

(4d) Find Regression equation using method of least squares and hence estimate Y for X=10

| | | | | |
|---|---|---|---|---|
| X | 3 | 7 | 12 | 20 |
| Y | 8 | 10 | 13 | 16 |

(4e) Explain differences between linear and non-linear Regression.

(4f) Explain simple and multiple Regression.

Q.5 **Attempt *any three* of the following:** [15]

(5a) Explain Objective function, constraints and non-negativity constraints in LPP.

(5b) Maximize $Z = 2x + 3y$
Subject to,
$x + 3y \leq 9$
$2x + y \leq 13$
$x, y \geq 0$. Solve Graphically.

(5c) Minimize $Z = 3x + 8y$
Subject to,
$3x + 10y \geq 150$
$4x + 5y \geq 150$
$x, y \geq 0$. Solve Graphically.

(5d) Write a note on classification of second order partial differential equations.

(5e) Discuss applications of LPP

(5f) Classify:
$\frac{\partial^2 u}{\partial x^2} + 3\frac{\partial^2 u}{\partial x \partial y} + 2\frac{\partial^2 u}{\partial y^2} + 5 = 0$

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**PRAHLADRAI DALMIA LIONS COLLEGE OF COMMERCE & ECONOMICS**

**ATKT & REGULAR EXAMINATION, April, 2023**

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|---|---|
| DEPARTMENT: BSCIT | SEMESTER: II |
| CLASS: FYBSCIT | SUBJECT: **Web Application Development** |
| DURATION: 2:30 | MARKS: 75 |

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

a What is the Internet? Write in brief the applications of the Internet.
b Write short note on Email
c What is WWW? Write its evolution in detail.
d Explain HTML list types with the help of an example
e Write short note on HTML hyperlinks
f Explain HTML tables and its attributes with the help of an example.

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

a Explain HTML radio button and checkbox with the help of an example.
b Demonstrate the use of the GET method in HTML.
c Write a short note on HTML CSS types.
d Write short note on CLASS attribute in HTML
e Explain HTML Video with the help of an example
f Explain DIV tag in HTML

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

a Write short note on JS arithmetic operators
b Write javascript code to demonstrate the use of window.alert method.
c Explain JS If condition statement with the help of an example.
d Write short note on JS while loop
e Explain JS onclick event with the help of an example
f Explain JS onload event with the help of an example

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

a Write PHP code to display the message "Hello World!"
b Write a short note on PHP variables.
c Explain PHP echo and print statements with the help of an example.
d Write a short note on PHP string function.
e Explain switch..case statement in PHP with the help of an example.
f Write short note on PHP for loop

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

a Write PHP and HTML code to accept names from the user. If the name column is blank then display appropriate messages. Else display the welcome message with name.
b Write short note on PHP date functions
c Explain PHP function without any parameters.
d Write a short note on PHP cookies.
e How to create mysql table in PHP
f Write PHP code to create variable in one web page and access it from another web page (Make use of Session variable)

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ATKT

**PRAHLADRAI DALMIA LIONS COLLEGE OF COMMERCE & ECONOMICS**

**ATKT EXAMINATION, April 2023**

| | |
|---|---|
| DEPARTMENT: BSCIT | SEMESTER: II |
| CLASS: FYBSCIT | SUBJECT: **Microprocessor Architecture** |
| DURATION: 2:30 Hrs. | MARKS: 75 |

Q1 ) Attempt any 3 of the following (15)

1. Describe a Microprocessor based system.
2. Explain the terms:-
   i) Word ii) Byte iii) Nibble iv) Machine language v) Assembly language
3. Explain Tristate device logic and Buffer.
4. Write a short note on classification of memory.
5. Draw a neat label functional block diagram of 8085 microprocessor and explain the flags of the flag register.
6. Explain the timing diagram of the Memory Read Cycle.

Q2) Attempt any 3 of the following (15)

1. Explain the working of the OUT instruction in 8085 microprocessor.
2. List and explain the various data transfer instruction.
3. What is a instruction, instruction word size? Write types of instruction based on size?
4. Explain the following instruction i) ADI ii) JC iii) XRA iv) ORI v) JNZ
5. Write an assembly program for 8085 microprocessor to add the content of C030H and C031H . Store the sum in C040H and carry at C041H.
6. Differentiate between conditional and unconditional jump used in 8085 microprocessor. Explain different conditional jump instructions.

Q3) Attempt any 3 of the following (15)

1. Explain following logical instructions – i. RAL ii. RLC
2. Explain the effect of POP and PUSH instruction on stack pointer
3. What is stack? How is stack used both by microprocessor and user?
4. Explain following instructions for 8085 microprocessor –
   i. Restart ii. Conditional call and return.
5. Define Stack, Stack pointer and describe its uses.
6. List and describe arithmetic instructions in the 8085 microprocessor.

Q4) Attempt any 3 of the following (15)

1. Explain the working of interrupt in the 8085 microprocessor.
2. Write a short note on SIM instruction.
3. What is the function of assembler, editor and loaders ?
4. Explain the steps of 8085 microprocessor interrupt process.
5. Explain the hardware features of a typical software development system.
6. Explain data transfer instruction with examples.

Q5) Attempt any 3 of the following (15)

1. Explain the internal structure of the Pentium Pro Processor.
2. Explain the architecture of SPARC.
3. List the components of SPARC processor. Discuss each in brief.
4. Explain the concept of windowed register of SPARC microprocessor.
5. What are the features of the Pentium Pro Processor.
6. Explain CPUID instruction in Pentium II.