Question Paper Set of

S.Y.B.SC.IT. – Sem-IV

REGULAR

University of Mumbai

April, 2023

27/3/23

PRAHLADRAI DALMIA LIONS COLLEGE OF COMMERCE & ECONOMICS

REGULAR , MARCH, 2023

DEPARTMENT: BSCIT	SEMESTER: IV
CLASS: SYBSCIT	SUBJECT: SOFTWARE ENGINEERING
DURATION: 2:30	MARKS: 75

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

a. Define software engineering. Explain the Software Development Life Cycle (SDLC) steps in brief.
b. Explain the classification of the software requirements?
c. Explain the structure of software requirement document.
d. What are the components of software process? Explain.
e. Write a short note on Spiral Model.
f. What are the principles of agile method?

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

a. State and explain the emergent systems properties with example.
b. Explain the legacy system with the help of diagram.
c. Explain the simple critical system with example.
d. Explain the importance of feasibility study in requirements engineering process.
e. Explain requirement validation process checks on the requirements in the requirement document.
f. Write short note on i) Context model, ii) Object model.

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

a. Write short note on architectural design decisions.
b. Write a short note on modular decomposition styles.
c. Explain user interface design process with the help of diagram.
d. Write a short note on Project Scheduling.
e. Explain the risk management process.
f. What is quality assurance? What are the quality standards types? Explain.

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

a Define verification and validation. Explain software inspection in V & V process.
b Write short note on Component Testing.
c Explain Test Automation.
d Write short note on function point (FP) and Line of Code (LOC) measures.
e Explain the software cost estimation technique.
f Explain the Cost Constructive Model (COCOMO) with the formula for computing duration of project and manpower efforts for project.

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

a. Describe the classification of process.
b. Explain the CMMI Process Improvement Framework.
c. Explain the services as reusable components.
d. Explain the Application framework.
e. Write a short note on COTS product reuse.
f. What are the architectural patterns for distributed systems? Explain Master-Slave architecture.

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PRAHLADRAI DALMIA LIONS COLLEGE OF COMMERCE & ECONOMICS

REGULAR EXAMINATION, March 2023

DEPARTMENT: BSCIT	SEMESTER: IV
CLASS: SYBSCIT	SUBJECT: **Core Java**
DURATION: 2:30 Hrs.	MARKS: 75

1. **Attempt *any three* of the following:**
a. Write a short note on the history of JAVA.
b. Explain features of Java.
c. What are the different platforms provided by java programming language? Explain.
d. What are the primitive data types in java? Explain.
e. What are the different types of operators in java? Explain anyone in detail
f. Write a java program to print the area and perimeter of the rectangle by accepting data from the user.

2. **Attempt *any three* of the following:** 15
a. When do we use switch–case statements in java? Support your answer with an example.
b. What is garbage collection in java? Explain gc() and finalize() method.
c. Distinguish between while and do while loop in java.
d. Define constructor. What are the properties of constructor? Explain.
e. Explain for each loop in java using suitable example program.
f. Write a java program to take a number as input from the user and calculate its factorial.

3. **Attempt *any three* of the following:** 15
a. Define inheritance. What are the advantages of inheritance? explain.
b. Write and explain the steps to create the user-defined package in java.
c. Explain method overriding in java with an example program.
d. What are the different types of inheritance supported by java? Explain Single inheritance.
e. What do you mean by hierarchical inheritance? Explain.
f. What is an interface? What are the advantages of using interface? Explain.

4. **Attempt *any three* of the following:** 15
a Explain thread life cycle in java with a suitable diagram.
b Write a short not on exception handling mechanism in java..
c Define vector. Explain any four methods of vector.
d Explain jagged array in java with example program.
e Explain any five thread control methods in java.
f Write a java program to find the smallest number out of 5 numbers using array.

5. **Attempt *any three* of the following:** 15
a. What is an Applet? Explain the advantages of Applet.
b. Explain Button class in java with suitable example.
c. What is layout in java? Explain gridlayout.
d. Create an applet to display 'Hello World' message. Change the text color to blue.
e. Write a detailed note on event delegation model in java.
f. Distinguish between java application and applet.

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PRAHLADRAI DALMIA LIONS COLLEGE OF COMMERCE & ECONOMICS

REGULAR EXTERNAL, MARCH, 2023

DEPARTMENT: Information Technology	SEMESTER: IV
CLASS: SYBSCIT	SUBJECT: Computer Graphics & Animation
DURATION: 2:30 HRs	MARKS: 75

Note:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat and labelled diagrams wherever necessary.

Q.1 Attempt any THREE of the following: (15)

a. List and explain the various applications of computer graphics.
b. List and explain the different types of Graphics Devices.
c. Write a note on CRT.
d. Calculate required intermediate coordinated using DDA line drawing algorithm with end points A(1,1) & B(8,7)
e. Calculate the points between the starting coordinates (9, 18) and ending coordinates (14, 22) using Bresanham Line Drawing Algorithm.
f. What is clipping? List the types of clipping. Explain any one type of Clipping with required diagrams.

Q.2. Attempt any THREE of the following: (15)

a. Write a note on 3D – Transformation.
b. Explain 2D Scaling with homogenous transformation matrix.
c. Given a square with coordinate points A (0, 3), B (3, 3), C (3, 0), D (0, 0). Apply the translation with distance 1 towards X axis and 1 towards Y axis. Obtain the new coordinates of the square.
d. Rotate a line CD whose endpoints are (3, 4) and (12, 15) about origin through a 45° anticlockwise direction.
e. scale a triangle with respect to the origin, with vertices at original coordinates (10,20), (10,10), (20,10) by S_x=2, S_y=1.5
f. Write a note on reflection.

Q.3. Attempt any THREE of the following: (15)

a. Explain colour spaces with neat and labelled diagram.
b. What are the different Stages in 3D viewing?

c. Write a note on photometry.
d. Write a short note on radiant Flux.
e. Explain 3D Viewing pipeline with its flowchart.
f. Write a note on Perspective Projection

Q.4. Attempt any THREE of the following: **(15)**

a. Explain z-Buffer Algorithm.
b. What is back face removal?
c. List the properties of Bezier Curves
d. Give the parametric representation for following.
    a. Implicit Curve
    b. Parabola
    c. Hyperbola
    d. Cubic Spline
    e. Explicit Curve
e. Write steps for Subdivision Algorithm.
f. What is hidden surface? Explain the concept of hidden surface removal.

Q.5. Attempt any THREE of the following: **(15)**

a. What is Digital Image? Explain any two file formats for digital image.
b. Explain JPEG Image Compression.
c. Write a note on Histogram Equalization.
d. List and explain any 5 principles of animation.
e. Write a note on image enhancement.
f. Write a note on Animation.

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PRAHLADRAI DALMIA LIONS COLLEGE OF COMMERCE & ECONOMICS

REGULAR, MARCH 2023

DEPARTMENT: BSCIT	SEMESTER: IV
CLASS: SYBSCIT	SUBJECT: COST
DURATION: 2:30 hrs	MARKS: 75

Q.1 **Attempt any three questions** **[15]**

(1a) Find AM and Mode of 8, 6, 6, 5, 8, 9, 8

(1b) Find Standard Deviation of 9, 17, 8, 3, 5

(1c) Write merits and demerits of Arithmetic Mean.

(1d) Find Median

CI	0 – 10	10 – 20	20 – 30	30 – 40
F	5	8	7	6

(1e) Find SD

CI	0 – 2	2 – 4	4 – 6	6 – 8
F	15	18	16	14

(1f) Find Mode

X	10	20	30	40
F	6	8	9	4

Q.2 **Attempt any three questions** **[15]**

(2a) Write a note on Skewness with suitable diagram.

(2b) Find first raw moment for 1, 2, 3, 3, 6

(2c) Explain difference between raw moments and central moments.

(2d) What is the probability of getting multiple of three when a die is rolled?

(2e) Write a note on sampling with suitable example.

(2f) Find $5P_4 + 5C_2$

Q.3 **Attempt any three questions** **[15]**

(3a) Explain Type I and type II errors.

(3b) Discuss one tail test and two tail test.

(3c) Explain Normal distribution.

(3d) Explain difference between discrete and continuous probability distribution.

(3e) The mean lifetime of a sample of 100 bulbs is found to be 1570 hours with a standard deviation of 120 hours. Test the hypothesis that the mean lifetime of bulbs produced by a company is 1600 hours. (Tabular value = 1.64)

(3f) Estimate average height of five students whose heights are
152.44, 165.31, 167.62, 155.44 and 156.05

Q.4 **Attempt any three questions** [15]

(4a) Write note on Chi-square test.

(4b) Write steps in Statistical Z-test.

(4c) Perform Chi-Square test to estimate association of gender and choice of music.

	Male	Female
Classical	60	90
Rock	70	80

(Tabular value is 1.64)

(4d) Discuss decision criteria (comparison between calculated value and tabular value) in any statistical test.

(4e) Discuss application of Chi square test in business with suitable examples.

(4f) The share prices of a particular company on stock market are recorded as
66, 65, 69, 70, 69, 71, 70, 63, 64 *and* 68. Find Mean and standard deviation of these prices.

Q.5 **Attempt any three questions** [15]

(5a) Explain difference between linear and non-linear Regression

(5b) Explain Multiple regression.

(5c) Find Karl Pearson's coefficient of correlation.

X	5	6	7	8	9
Y	20	17	12	18	11

(5d) Obtain regression equation of Y on X.

X	15	66	87	108
Y	97	72	35	15

(5e) Plot Scatter graph and comment.

X	10	20	30	40	50
Y	20	37	45	62	78

(5f) Fit a straight line and hence estimate Y for X = 45.

X	10	20	30	40	50
Y	20	37	45	62	78

PRAHLADRAI DALMIA LIONS COLLEGE OF COMMERCE & ECONOMICS

REGULAR , APRIL, 2023

DEPARTMENT: BSCIT	SEMESTER: IV
CLASS: SYBSCIT	SUBJECT: Introduction to Embedded Systems
DURATION: 2:30	MARKS: 75

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

a. Explain sensors and actuators. Explain any one sensor device used in the embedded system in detail.

b. Discuss the characteristics of the embedded system.

c. State the difference between Von-Neumann architecture and Harvard architecture.

d. Explain the I2C bus in detail.

e. Explain the various non-operational quality attributes to be considered in any embedded system design.

f. Explain Endianness and its types.

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

a. What is a memory map? Explain the interrupt map for embedded system.

b. What are the different types of memory? Explain each in brief.

c. Write a short note on the watchdog timer.

d. What is the purpose of memory testing in embedded systems

e. Explain the different communication buses used in the automotive application.

f. Explain the difference between domain-specific and application-specific embedded system. Give two examples of each.

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

a. Explain in detail the features of the 8051 microcontrollers.

b. Explain in detail the following pins of the 8051 microcontrollers: i) PSEN ii)EA

c. Explain the alternate functions of Port 3 of the 8051 microcontrollers.

d. Write an 8051 C program to send hex values for ASCII characters of 0,1,2,3,4,5,A,B,C, and D to port P1.

e. Write a note on data types in embedded C.

f. Write an 8051 C program to toggle all the bits of P1 continuously .

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

a What is debugging? What are different debugging techniques?

b List and explain any five factors to be considered in selecting a microcontroller for any application.

c Explain with a suitable example the structure of the embedded system program.

d Explain the Program Status Word register of 8051 in detail.

e Explain the memory organization of RAM and ROM of 8051.

f Demonstrate the use of the bitwise operator in embedded C.

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

a. Discuss the various phases of the Embedded Product Development Life Cycle.

b. Write a short note on trends in embedded industry.

c. What is EDLC? Why EDLC is essential in embedded product development?

d. What are the functional requirements in the selection of a real-time operating system (RTOS)?

e. Give characteristics of RTOS. Explain with examples the types of RTOS.

f. Explain following terms –

i) Compiler. ii) Debugger. iii) Disassembler. iv)Emulator. v) Simulator.
