

## SKM's J. M. PATEL COLLEGE OF COMMERCE, GOREGAON (W), MUMBAI-90

## REGULAR EXAMINATION – MARCH 2023

TIME: 2 Hr 30 min  
PROGRAMME: S.Y.BSc.IT / SEM – IV

MARKS: 75  
COURSE: Core Java

- 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 labelled diagrams wherever necessary.

Q 1. Attempt any three of the following.

15 M

- 1) What are the primitive data types in java? Briefly explain their size, range and other details.
- 2) Explain the following terms: Case sensitivity, keywords, comments, variables, static.
- 3) Define identifier? Explain rules for identifier in java.
- 4) Write a java program to count vowels and consonants from a string.
- 5) Write a java program to demonstrate the use of Arithmetic operators.
- 6) Briefly explain the salient features of java.

Q 2. Attempt any three of the following.

15 M

- 1) Write a program to accept a number from user and print its factorial.
- 2) What is constructor? Explain the characteristics of constructor.
- 3) Explain the use of "this" keyword.
- 4) Explain conditional statements in java, give suitable example.
- 5) Write a program to demonstrate method overloading.
- 6) Write a note on access specifiers in java. Explain with example.

Q 3. Attempt any three of the following.

15 M

- 1) What is package? Write steps to create package in java.
- 2) What is inheritance? What are the types of inheritance available in java. Explain any one type of inheritance in detail.
- 3) Differentiate between Abstract Class and Interface.
- 4) What is an interface? Demonstrate the use of interface.
- 5) Write a java program to accept three numbers in parent class and find the largest number in child class.
- 6) Explain usage of super keyword in java.

Q 4. Attempt any three of the following.

15 M

- 1) Write a Java program to use the try, catch and finally block.
- 2) Write difference between vector and array.
- 3) Explain the ways of accessing array elements in java, explain with example.
- 4) Explain methods of file class in detail.
- 5) Write a java program to create a file and writing data to the file.

6) Write a short note on exception handling in java.

**Q 5.** Attempt *any three* of the following.

**15 M**

- 1) Briefly explain: delegation model, event, event listeners, and event sources.
- 2) Create a frame which has which has three fields, i.e., first name, last name, and date of birth and a button.
- 3) What is container? Explain types of containers available in java.
- 4) Explain the following along with its constructors, in detail: Label, Checkbox, Button.
- 5) Write a java program to create a frame containing three buttons (Yes, No, Close). When button yes or no is pressed, the message "Button Yes/No is pressed" gets displayed in label control. On pressing CLOSE button frame window gets closed.
- 6) Explain the mouseListener interface. Write a program to demonstrate the same.

\*\*\*\*\*All The Best\*\*\*\*\*

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16/02/23

SKM's J. M. PATEL COLLEGE OF COMMERCE, GOREGAON (W), MUMBAI-90

REGULAR EXAMINATION – MARCH 2023

TIME: 2 Hr 30 min  
PROGRAMME: S.Y.BSc.IT / SEM – IV

MARKS: 75  
COURSE: Embedded System

- 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, labelled diagrams wherever necessary.

Q 1. Attempt any three of the following.

15 M

- 1) What is Embedded System? Explain purpose of using embedded system.
- 2) List applications of embedded system. Discuss any two in detail.
- 3) Explain on board communication interfaces used in embedded systems.
- 4) Write the difference between: Microprocessor and Microcontroller.
- 5) Define sensor and actuator? Explain different sensors and actuators used in embedded devices.
- 6) What are non-operational quality attributes of embedded system?

Q 2. Attempt any three of the following.

15 M

- 1) What is role of display panel in washing machine? What inputs can be accepted from user in a washing machine display interface?
- 2) What is memory map and also explain I/O map for embedded system.
- 3) Explain control and status register. Give example.
- 4) What is memory? Explain different types of ROM memory.
- 5) What is watchdog timer? Explain its types.
- 6) Write a note on following: i) CRC                      ii) Interrupt map

Q 3. Attempt any three of the following.

15 M

- 1) Write note on datatypes in embedded C.
- 2) With neat block diagram explain the components of 8051 microcontroller.
- 3) Explain the logical operations used in embedded system.
- 4) Write the criteria for choosing a Microcontroller.
- 5) Demonstrate the use of Bitwise operator in Embedded C.
- 6) What is the need of interfacing external memory with 8051 microcontrollers? How is the interfacing done?

Q 4. Attempt any three of the following.

15 M

- 1) Explain the steps in designing an embedded system using 8051 microcontroller.
- 2) What are different types of files created in the process of burning a program into IC.
- 3) Write a note on Compiling and Linking.
- 4) What are the factors to be considered in selecting a microcontroller for embedded system? Explain any two in detail.
- 5) Write a note on infinite loop. Explain with example.
- 6) Explain the build process for embedded system.

Q 5. Attempt any three of the following.

15 M

- 1) Distinguish between Real time operating system and General-purpose operating system.
- 2) List and explain the non-functional requirements to be considered to select the correct RTOS.
- 3) List and explain different phases of EDLC.
- 4) Briefly explain the services provided by the operating system kernel.
- 5) What are the components of IDE of embedded system development environment?
- 6) Explain in detail Prototyping model and Spiral model.

\*\*\*\*\* All the Best \*\*\*\*\*

Program: SYB.Sc.IT  
Course: Computer Graphics and Animation  
Semester: IV

Marks: 75  
Duration: 2<sup>1/2</sup> Hrs.

- Note: 1. All questions are compulsory.  
2. Figures to the right indicates full marks.  
3. Answer to the same question must be written together.  
4. Make suitable assumption wherever necessary and state the assumption mode.

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

(5\*3=15M)

- Write a short note on Random scan display and raster scan display.
- Explain LED with advantages and disadvantages.
- Explain the following terms
  - Pixel
  - Persistence
  - Resolution
  - Aspect ratio
- Write a short note on Bresenham's line drawing algorithm.
- Explain any five input devices for graphics system.
- Explain mid-point Ellipse algorithm.

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

(5\*3=15M)

- Write a short note on reflection through an arbitrary line.
- What is the concept of window to viewport transformation? Explain in detail.
- Write a short note on 3D Shearing.
- Write a short note on Projection.
- Explain Geometric Interpretation of Homogeneous Coordinates.
- Explain 2D Translation and Scaling.

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

(5\*3=15M)

- Explain Photometry in detail.
- Explain 3D viewing pipeline in detail.
- List and explain the steps of specifying arbitrary 3D view.
- Explain the mathematics of planar Geometric Projection
- Write a short note on Camera Model and viewing pyramid.
- Explain Radiometry in detail.

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

(5\*3=15M)

- Write a short note on Bezier Curves.
- Explain the concept of Back face culling in detail.
- Define Curve. What are its types? Explain in brief.
- Explain Scan line method.
- Describe the methods used for determination of visible surfaces in rendering.
- Write a short note on B-Spline Curves.

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

(5\*3=15M)

- Explain Key framing and Deformation.
- Write a short note on image processing.
- Write a short note on Principles of Animation.
- What are the steps of JPEG image compression?
- Differentiate between Contrast Stretching and Histogram.
- List and explain the various types of digital image formats.

## SKM's J. M. Patel College of Commerce, Goregaon, Mumbai

Semester -End &amp; ATKT Examination – March 2023

Program: SYB.Sc.IT

Marks: 75

Course: Software Engineering

Duration: 2<sup>1/2</sup> Hrs.

Semester: IV

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**Note:**

1. All questions are compulsory.
2. Figures to right indicate full marks.
3. Answer to same questions must be written together.
4. Make Suitable assumption wherever necessary and state the assumptions made.

**Q.1. Attempt any 3 among the following.****[15 M]**

1. Explain Software Development Life cycle with the help of diagram.
2. Difference between Waterfall model and Agile method.
3. What are functional and non-functional requirements of the software?
4. What is SRS? Explain characteristics of SRS
5. Explain different phases in Scrum process.
6. Write a short note on Extreme programming.

**Q.2. Attempt any 3 among the following.****[15 M]**

1. Explain the term socio technical system along with its essential characteristics.
2. Write a short note on System Engineering.
3. Short note on legacy model and draw the diagram of its layered structure.
4. Explain three main types of critical system.
5. Explain the following terms:
  - a. Security
  - b. Human error
  - c. Vulnerability
  - d. Availability
  - e. Reliability
6. Explain the context diagram and its components with help of a diagram.

**Q.3. Attempt any 3 among the following.****[15 M]**

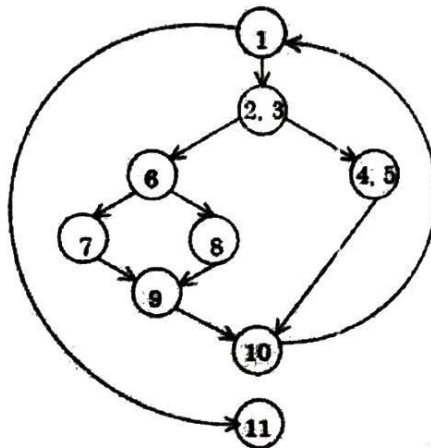
1. Explain client server model along with advantages and disadvantages.
2. Write short note on project planning along with types of project plan.
3. Explain UI design principles.

4. Explain the term software project management. Explain various management activities performed by project management.
5. Short note on project scheduling.
6. Explain Principles of risk management.

**Q.4. Attempt any 3 among the following.**

**[15 M]**

1. Difference between White box testing and Black block testing.
2. Short note on Cleanroom software development process.
3. List various estimation technique? Explain any two in detail.
4. Observe the following graph and answer the questions



- I. Explain the term cyclomatic complexity.
  - II. How many predicate nodes are there and name them.
  - III. Calculate the cyclomatic complexity for the above graph.
  - IV. How many regions are there in the graph.
  - V. How many nodes are there in the graph.
5. Given the values, compute Function point when all complexity adjustment factor (CAF) and weighting factors are **average**. User Input = 50, User Output = 40, User Inquiries = 35, User Files = 6, External Interface = 4.
  6. Short note on software measurement.

**Q.5. Attempt any 3 among the following.**

**[15 M]**

1. Explain process improvement with the help of diagram.
2. Explain the different levels of Capability Maturity Model Integration.
3. Explain Service construction with help of the diagram.
4. Briefly describe the concept of Service Oriented Architecture along with the benefits.
5. Explain the concept of Master slave architecture along with diagram.
6. Write a short note on SaaS.

SKM'S

JASHBHAI MAGANBHAI PATEL COLLEGE OF COMMERCE

Regular Semester End Examination March 2022-23

PROGRAMME: S.Y.B.SC.I.T. (Sem-IV)

COURSE: Computer Oriented Statistical Techniques.

DURATION: 2 ½ hours.

MARKS: 75

Note: All questions are compulsory.

Figures to the right indicates full marks

Write all the sub questions together only.

Use of simple Non-programmable Calculator is allowed.

Q.1 Attempt any four from the following

(5X3=15)

- A. Enlist merits and demerits of median.
- B. Mean marks obtained by 10 students is 128.29. Later it was found that the marks of two students were wrongly taken as 14 and 19 instead of 41 and 91. Calculate the corrected mean marks of 10 students.

C. Calculate the 40<sup>th</sup> and 60<sup>th</sup> Percentile for the following

C.I.	100-200	200-300	300-400	400-500	500-600	600-700
FREQ.	10	45	32	20	23	30

D. Calculate the variance for the given data :

C.I.	0-20	20-40	40-60	60-80	80-100
FREQ.	3	9	10	15	13

E. Find out median and coefficient of Range for the following observation:  
87, 89, 90, 86, 79, 69, 100, 69, 88, 56, 10

F. Write the relation between Arithmetic mean, harmonic mean and geometric mean.  
Which one of this has the largest value?  
If H.M. = 26.65 , G.M.= 28.65 then find the value of A.M.

Q.2 Attempt any three from the following

(5X3=15)

- A. Write a short notes on skewness and kurtosis.
- B. Find the moments for the given data:

X	2	4	6	8	10
F	1	3	5	7	9

- C. Write a short notes on sampling theory.
- D. A population consist of four numbers 1, 4, 5 and 7. Consider all possible sample of size 2 that can be drawn without replacement from this population. Find,  
I. The mean of sampling distribution of mean,  
II. Standard deviation of the sampling distribution of the mean



- E. State Stirling's approximation to  $n!$  and hence  $40!$
- F. A professor in a discrete mathematics class passes out a form asking students to check all the mathematics and computer science courses they have recently taken. The finding is that out of a total of 50 students in the class, 30 took precalculus; 16 took both precalculus and Java; 18 took calculus; 8 took both calculus and Java; 26 took Java; 47 took at least one of the three courses. 9 took both precalculus and calculus;
- How many students did not take any of the three courses?
  - How many students took all three courses?

**Q.3 Attempt any three from the following**

(5X3=15)

- A. Define the following:
- Estimator
  - Point Estimates
  - Interval estimates
  - Efficient estimates
  - Unbiased estimates
- B. Write a short notes on characteristics of estimator.
- C. Short notes on: p-value of hypothesis test and Level of significance.
- D. Explain confidence interval.  
The operations manager of a large production plant would like to estimate the mean amount of time a worker takes to assemble a new electronic component. Assume that the standard deviation of this assembly time is 3.6 minutes. After observing 120 workers assembling similar devices, the manager noticed that their average time was 16.2 minutes. Construct a 92% confidence interval for the mean assembly time. (where  $z_{\alpha/2} = 1.75$ )
- E. The mean daily consumption of vegetable among 500 sampled middle class families is 750 gms with a standard deviation of 80 gms. A similar sample survey of 400 working class families gave a mean of 700 gms with a standard deviation of 70 gms. Are we justified in saying that the middle class families consume more quantity of vegetables than the working class families? Use 5% level of significance. (where  $z_{\alpha/2} = 1.96$ )
- F. In order to ensure efficient usage of a server, it is necessary to estimate the mean number of concurrent users. According to records, the sample mean and sample standard deviation of number of concurrent users at 100 randomly selected times is 37.7 and 9.2, respectively.
- Construct a 90% confidence interval for the mean number of concurrent users. (where z-value=1.64)
  - Construct a 99% confidence interval for the mean number of concurrent users. (where z-value=2.58)

**Q.4 Attempt any three from the following**

(5X3=15)

- A. For the potato yield from 12 different farms. We know that the standard potato yield for the given variety is  $\mu=20$ .  
 $x = [21.5, 24.5, 18.5, 17.2, 14.5, 23.2, 22.1, 20.5, 19.4, 18.1, 24.1, 18.5]$   
Test if the potato yield from these farms is significantly better than the standard yield.  
(where  $t_{(0.05,11)} = 1.796$ )
- B. Write a short notes on t-distribution
- C. What is F-distribution? Enlist its characteristics.

- D. Determine if the number of journal borrowed from a library depends on the month based on the following data: (where  $\chi^2_{(11,0.05)} = 18.307$ )

Month	Jan	Feb	March	April	May	June	July	Aug.	Sept	Oct	Nov	Dec
No. of journal	23	45	32	12	19	11	12	10	14	30	12	22

- E. The following table represent the gender and part affiliation. Test that gender and party affiliation are independent of one another. (where  $\chi^2_{(1,0.05)} = 3.84$ )

	Democrat	Republican
Male	25	35
Female	15	45

- F. What is Chi-Square distribution? States its condition of validity and its application.

Q.5 Attempt any three from the following

(5X3=15)

- A. Fit a straight line for the given information

X	1	3	5	9	16
Y	7	9	10	15	20

- B. Fit a straight line trend value for the following time series.

Year	2000	2001	2002	2003	2004	2005	2006
Production (lakhs)	30	37	24	20	15	30	20

- C. Obtain the regression line for the given data:

X	-5	0	5	10	12
Y	1	3	5	6	7

- D. Find the coefficient of correlation between x and y for the given data:

X	5	7	9	10	12
Y	-5	-3	0	5	10

- E. Fit a parabola for the given data:

X	-2	0	3	4	5
Y	1	4	7	8	10

- F. Write a short notes on regression analysis.