S.Y.B.Sc. (I.T.) (Sem – IV)

June 2016

Con. 250-16. Software engineering **EZ-4990**

Time: 3hrs Marks- 100

Note: All questions are compulsory

Q1) **Answer the following**

a) What are the attributes of software? (5)
b) Write a note on Quality Control. (5)

Q2) **Answer any 3 of the following**

a) Explain Classes of Software (5)
b) Write a short note on CASE tools. (5)
c) Explain component system (5)
d) Explain different types of Critical system. (5)

Q3) **Answer any 3 of the following**

a) What are the benefits of Incremental Model? (5)
b) Explain User and software requirements. (5)
c) Give different types of management activities. (5)
d) Explain the term CBSE in brief (5)

Q4) **Answer any 3 of the following**

a) Explain Object model and its Advantages (5)
b) Explain types of system model. (5)
c) Explain Requirement engineering and its Task (5)
d) Explain Client-Server model in brief. (5)

Q5) **Answer any 3 of the following**

a) Explain in detail the UI design process (5)
b) Write a short on Event processing system. (5)
c) Explain agile methods. (5)
d) Explain architectural design (5)

Q6) **Answer any 3 of the following**

a) Write a short note on Integration Testing. (5)
b) What are the goals and types of software testing (5)
c) Explain COCOMO Model in brief. (5)
d) Explain V and V model. (5)

Q7) **Answer any 3 of the following**

a) Explain Inspection Process. (5)
b) Write a short note on CMMI Process Improvement Framework. (5)
c) What is quality assurance (5)
d) Draw a chart to explain ISO 9000 quality management (5)

S.Y.B.Sc.(I.T.) (Sem - IV)

June 2016

Multimedia

Con. 251-16. **EZ-4967**

(3 Hours) **[Total Marks : 100**

Note: (1) All questions from question nos. 1 to 7 are compulsory.
(2) Figures in right indicate the marks

Q1. Attempt both questions: (10 M)

a. What is Multimedia? List and describe components of Multimedia.
b. Explain the analog to digital conversion in detail .

Q2. Attempt any three: (15 M)

a. What are different steps involved in image processing?
b. What is image? List different types of image.
c. Describe principle of Raster scanning? How image is generated using Raster scanning.
d. Describe different types of Multimedia database.

Q3.Attempt any three: (15 M)

a. Describe the Run Length Encoding method of compression.
b. What is Quantization error?
c. Distinguish between spatial and temporal waves.
d. What are analog signals and its essential properties?

Q4.Attempt any three: (15 M)

a. What is Authoring? List different types of authoring system.
b. Write notes on Multimedia production.
c. Differentiate between RGB and CMYK color Models.
d. What is scanner? List different types of scanning mechanism.

Q5. Attempt any three: (15 M)

a. Describe fundamental characteristics of sound.
b. What is Acoustic? List and describe different type of acoustic.
c. State difference between interlaced and non-interlaced scanning.
d. Define PDP and write its advantages and disadvantages.

Q6.Attempt any three: (15 M)

a. What is compression and decompression?
b. Explain Huffman coding.
c. List and describe the file format of video storage.
d. Explain working of CODEC

Q7. Attempt any three: (15 M)

a. What is video transition? Explain three methods of video transition
b. Write notes on Fourier representation.
c. Write notes on Timeline, Animation, Tweening and Action script.
d. Write notes on Pulse Code modulation

S.Y.B.Sc.(I.T.) (Sem.IV)

June 2016

JAVA and Data structure

Con. 252-16. **EZ-4530**

Total Marks : 100 Duration : 3 Hrs

Note: All Questions are compulsory

Q. 1

A Define multithreaded programming. Explain the life cycle of a thread. 5M

B Define this keyword. Explain two major uses of this keyword. 5M

Q. 2 **Attempt any three**

A Write a short note on JVM. Explain the various features of JVM 5M

B Define Array. List and explain different types of arrays. 5M

C Describe the use of while loop statement with a java program to find the sum and average of n-numbers 5M

D Write a java program to find the reverse of a number and a string using the concept of method overloading 5M

Q. 3 **Attempt any three**

A Define inheritance. Describe the different types of inheritance supported by java programming language. 5M

B What are the two uses of super keyword in java? Explain each one with an example program 5M

C 'A class can implement multiple interfaces' – comment and justify the answer with an appropriate example program. 5M

D 'Multiple catch can be associated with a single try-block'- Comment and justify the answer. 5M

Q. 4 **Attempt any three**

A Define file class and list its constructors. List and explain any four methods of File class. 5M

B Define InputStream and OutputStream classes in java language. List and explain any four methods of each. 5M

C Write a java program to accept the name and rollno of a student from the user and store the information into a file using PrintWriter 5M

D Explain the classes and methods required for random access file handling in java language 5M

Q. 5 **Attempt any three**

A Define binary search. Write an algorithm for binary search method and explain its analysis. 5M

B Write the algorithm for push, pop, search and empty operations on stack data structure. 5M

C Write a short note on recursion. Write the iterative and recursive functions to Find the factorial of a given number. 5M

D Define array data structure and describe its properties. Explain the method of duplicating an array. 5M

Q. 6 **Attempt any three**

A Write a java program to implement the concept of single-linked list with the following operations:-

i) Create()
ii) insertBeg()
iii) empty()
iv) display() 5M

B What is hashing function? List and explain the following hashing functions 5M
   i) Mid square
   ii) Modulo N

C What is mean by tree traversal? Explain inorder tree traversal and write the algorithm for the inorder tree traversal. 5M

D Create B Tree for the given data set 7, 54, 29, 41, 12, 5, 78, 35, 22 and 18 5M

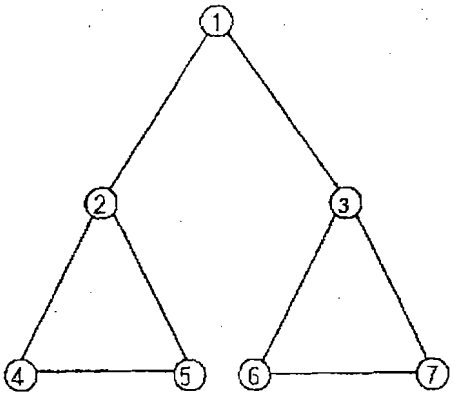
Q. 7 **Attempt any three**

A Write a java program to implement the selection sort. 5M

B Create a max heap for the given data set 10, 15, 3, 21, 77, 35, 12, 89 and 6 5M

C Describe the concept of graph representation using adjacency matrix. 5M

D Find the DFS and BFS for the given graph.



5M

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S.Y.B.Sc.(I.T.) (Sem-IV)

Con. 253-16. Quantitative techniques **EZ-4478** June 2016

(3 Hours) **[Total Marks : 100**

N.B. (1) ALL QUESTIONS ARE COMPULSORY

(2)FROM QUESTION 2 TO 7, SUBQUESTION (a) IS COMPULSORY AND ATTEMPT ANY ONE FROM (b) &(c)

Q.1 Attempt any one:- **10**

(a)For a Random variable X the ratio of the probability of 3 successes in 5 independent trials to the probability of 2 successes in 5 independent trials is $\frac{1}{4}$ .Find the Expectation, Variance of random variable X & also find the probability of 4 successes in 6 independent trials.

(b)Use Lagrange's Interpolation formula to fit a polynomial to the following data & hence find y at 1. **10**

x	-1	0	2	3
y	-8	3	1	12

Q.2(a)By using Bisection method find root of the equation x-Cos x = 0 upto 9 iterations. **8**

(b)By using Δ & E find the missing term of the following table **7**

x	2	3	4	5	6
y	45.0	49.2	54.1	----	67.4

(c)Find $\sqrt{18}$ by using Newton-Raphson method correct up to 3 decimal places. **7**

Q.3(a) Solve the following equations by Gauss-Seidel method correct upto three decimal places **8**

$30x - 2y + 3z = 75$

$2x + 2y + 18z = 30$

$x + 17y - 2z = 48$

(b) $Evaluate \int_0^6 \frac{1}{1+x}\, dx \; by \; Simpson's \frac{3}{8} th \; rule \;\; take \;\; h = 1$ **7**

(c) Use Euler's Method to estimate y(1) for $\frac{dy}{dx} = x^2 + y^2$, y(0)=1 & h=0.2 **7**

Q.4(a)The income distribution of workers in a certain factory was found to be normal with mean of Rs. 500 and standard deviation equal to Rs. 50.There were 228 persons above Rs.600.How many Persons were there in all?(Area under the S.N. curve between 0 & 2 is 0.4772) **8**

(b)If the probability that an individual suffers a bad reaction from a particular injection is 0.001 by using Poisson distribution determine the probability that more than two individuals will suffer a bad reaction out of 2000. **7**

(c) A continuous Random variable has the probability density function $f(x) = 6(x - x^2),\ 0 \le x \le 1$. find mean, variance , mode & median . **7**

[TURNOVER

Q.5(a)The equations of the two regression lines are x+6y=6 and 3x+2y=10. 8
find (i)means of x & y (ii)Coefficient of Correlation between x & y & also find y when x=12

(b)Fit a straight line for the following data. 7

x	1	2	3	4	5	6
y	49	54	60	73	80	86

(c)Obtain the Rank Correlation coefficient from the following data. 7

x	18	20	34	52	12
Y	39	23	35	18	46

Q.6(a)Samples of electric tubes of two companies were tested for lengths of their life and following information was obtained 8

	Company A	Company B
Size of samples	8	7
Mean life	1210	1314
Standard Deviation	36	42

Test at 5% l.o.s whether the difference in the sample means is significant.(Table value of 't' for 13 d.o.f is 2.16,for 14 d.o.f is 2.15 & for 15 d.o.f is 2.13)

(b)Can it be concluded that the life span of an Indian is more than 70 years, if a random sample of 100 Indians has an average life span of 71.8 years with Standard Deviation of 7.8 years? (At 5% l.o.s table value is 1.645) 7

(c)A Coin is Tossed 400 times and was found to result in 'Head' 245 times. Can we conclude that the coin is fair? (At 5% l.o.s table value is 1.96) 7

Q.7(a)Solve the following L.P.P by Simplex Method. 8

Maximize $Z = 3x + 5y + 4z$

Subject to $2x + 3y \leq 8$,

$2y + 5z \leq 10$

$3x + 2y + 4z \leq 15$

$x, y, z \geq 0$

(b) Solve the following L.P.P by Graphical Method. 7

Minimize $Z = 15x + 10y$

Subject to $x + 2y \geq 2$,

$3x + y \geq 3$

$3x + 2y \leq 6$

$x, y \geq 0$

(c)A firm manufactures two types of products A & B and sells them at a profit of Rs. 3 on type A and Rs. 4 on type B. Each product is processed on two machines G and H. Type A requires two minutes on G & three minutes on H, Type B requires two minutes on G & two minutes on H. The machine G is available for not more than 17 hours and machine H is available for not more than 20 hours per day. Formulate the Problem to maximize the profit? 7

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S.Y.B.Sc.(I.T.) (Sem-IV)

Con. 254-16. Embedded systems EZ-4101 June 2016

(3 Hours) **[Total Marks : 100**

Q.1 Attempt following questions

a) What is importance of "infinite loop" in embedded systems? Explain with an example. 5

b) Distinguish between SRAM and DRAM. 5

Q.2 Attempt any three questions from the following.

a) Explain Big endian and Little endian processors in detail. 5

b) Write a short note on watchdog timer. 5

c) What is UART in embedded system? 5

d) Explain classification of embedded systems on the basis of generation. 5

Q.3 Attempt any three questions from the following.

a) Explain in detail application specific embedded system with an example 5

b) Explain different automotive communication buses in embedded systems. 5

c) Explain following characteristics of embedded systems. 5

i. Application and domain specific ii. Small size and weight

d) Explain the following operational quality attributes of embedded systems. 5

i. Response ii. Throughput

Q.4 Attempt any three questions from the following.

a) What do you mean by remote debugger? 5

b) Explain the concept of device programmer in embedded systems. 5

c) Explain linking process in embedded systems. 5

d) Write a short note on host platform and target platform. 5

Q.5 Attempt any three questions from the following.

a) What do you mean by memory testing? Explain address bus test in detail. 5

b) Write short note on checksum in embedded systems. 5

c) Write short note on direct memory access. 5

d) Explain different types of hybrid memory. 5

Q.6 Attempt any three questions from the following.

a) Explain following scheduling algorithms 5

i. first in first out ii. priority based

b) Enlist steps to develop device driver in embedded systems. 5

c) Explain real-time characteristics of embedded operating systems. 5

d) Write a short note on control and status register. 5

[TURNOVER

Q.7 Attempt any three questions from the following.

a) Write a short note on simulator. 5

b) What are the objectives of Embedded product Development Life Cycle? 5

c) Write short notes on emulators. 5

d) What are the different phases of Embedded product Development Life Cycle? 5

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