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

J41
2018

Con. 318–18. Software Engineering SL–6059

(3 Hours) [Total Marks : 80

1. Attempt any **two**:-
   (a) Write a short note on SDLC 5
   (b) Explain Waterfall Model with diagram 5
   (c) What is Legacy System? Explain its component 5

2. Attempt any **two** :—
   (a) Explain Component Based Software Engineering. 5
   (b) Explain different types of Critical system. 5
   (c) What is the meaning of Risk Management ? 5

3. Attempt any **two** :—
   (a) Explain Top down Approach and Bottom up Approach in brief. 5
   (b) Explain Data Dictionary. 5
   (c) What are different types of Task required in requirement engineering 5

4. Attempt any **two** :—
   (a) Explain SRS in detail. 5
   (b) Write in short about Functional and non-functional requirements. 5
   (c) Write a note on Control styles. 5

5. Attempt any **two** :—
   (a) Explain the concept of Inheritance. 5
   (b) Write a short note on Agile Methodology. 5
   (c) Define Quality, Explain its types. 5

[TURN OVER

6. Attempt any **two** :—

(a) Differentiate between Alpha and Beta Testing. 5

(b) Write short note on component testing. 5

(c) Explain COCOMO Model in brief. 5

7. Attempt any **two** :—

(a) Explain Product Metrics? 5

(b) Explain Staffing 5

(c) Explain the CMMI process improvement framework. 5

8. Attempt any **two** (5 marks each) :-

(a) What are the different factors affecting Software productivity. 5

(b) Explain process and product quality. 5

(c) Draw a chart to explain ISO 9000 quality management. 5

(3 Hours) [Total Marks : 100

1. Answer the following :—
   (a) Differentiate between system software and application software. 5
   (b) Write a note on Quality Control. 5

2. Answer any **three** of the following :—
   (a) Explain Incremental Model in detail. 5
   (b) What is the need for ER diagram in data modelling 5
   (c) Write a short note on CASE tools. 5
   (d) Explain different types of Critical System. 5

3. Answer any **three** of the following :—
   (a) Give different types of management activities. 5
   (b) Explain SRS in brief 5
   (c) Explain Spiral Model in Detail. 5
   (d) What is the need of feasibility study in software development? 5

4. Answer any **three** of the following :—
   (a) Explain Client-Server model in detail. 5
   (b) What is the use of Data Dictionary in Database? 5
   (c) Describe the principles of Design Modelling. 5
   (d) Explain user interface design process with the help of diagram. 5

5. Answer any **three** of the following :—
   (a) Define Quality. Explain product quality in detail. 5
   (b) Write a short on Event processing system. 5
   (c) Write short note on project scheduling. 5
   (d) Explain Prototype Model in brief. 5

[TURN OVER

6. Answer any **three** of the following :—

(a) What are the different factors affecting Software productive. 5

(b) Write a note on System Testing. 5

(c) Write short note on Integration testing. 5

(d) Explain V&V model in detail. 5

7. Answer any **three** of the following :—

(a) Write a short note on Security Engineering. 5

(b) Explain Product Metrics. 5

(c) Write a short note on CMMI Process Improvement Framework. 5

(d) Draw a chart to explain ISO 9000 quality management. 5

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

July 2018

Con. 319–18. Multimedia SL–6212

(3 Hours) [Total Marks : 100

N.B. : (1) **All** questions from question No.**1** to **7** are **compulsory**.
(2) Figures to **right** indicate the marks.

1. Attempt **both** the questions:- **10**
   (a) What is Authoring? Explain issues of Multimedia Authoring.
   (b) Explain Huffman Algorithm.

2. Attempt any **three** (5 marks each) :- **15**
   (a) Describe in detail various application of multimedia?
   (b) Explain in detail multimedia database.
   (c) What is multimedia? Explain different characteristics of Multimedia.
   (d) Distinguish between a story, a script and a storyboard, stating their purposes.

3. Attempt any **three** (5 marks each) :- **15**
   (a) Write a note on Nyquist Theorem.
   (b) What is PCM? Explain its type.
   (c) What is an analog signal? How analog signals can be represented as waves?
   (d) Why is Quantization necessary? Distinguish between analog and digital waves.

4. Attempt any **three** (5 marks each) :- **15**
   (a) Define and distinguish different types of text.
   (b) How does the CMYK color model represent color information? Why is it called a subtractive model?
   (c) What is a scanner? How does it function? Explain with the help of diagram.
   (d) What are the basic steps in image processing?

[TURN OVER

5. Attempt any **three** (5 marks each) :- **15**
   (a) Discuss the fundamental characteristics of sound.
   (b) Distinguish between additive and subtractive colors.
   (c) What is plasma? Explain the construction and working of a Plasma Display Panel.
   (d) Discuss several audio-video file formats.

6. Attempt any **three** (5 marks each) :- **15**
   (a) What is compression and explain different types of compression?
   (b) What is meant by Run Length Encoding?
   (c) Write a note on ZIP Coding.
   (d) Write a note on JPEG Compression Technique.

7. Attempt any **three** (5 marks each) :- **15**
   (a) Give advantage and disadvantage of Macromedia flash.
   (b) Describe stages of Multimedia Production.
   (c) Write a note on Multimedia Presentation.
   (d) Differentiate between motion tweens and classic tweens.

(3 Hours) [Total Marks : 80

N.B. : (1) **Each** questions carries **5** marks.
(2) **All** questions are **compulsory**.

1. Attempt any **two** questions (5 marks each) :- **10**
   (a) Describe in detail various application of multimedia?
   (b) Explain in detail multimedia database.
   (c) What is multimedia? Explain different characteristics of Multimedia.

2. Attempt any **two** questions (5 marks each) :- **10**
   (a) Write a note on Nyquist Theorem
   (b) What is PCM? Explain its type.
   (c) What is an analog signal? How analog signals can be represented as waves?

3. Attempt any **two** questions (5 marks each) :- **10**
   (a) Define and distinguish different types of text.
   (b) How does the CMYK color model represent color information? Why is it called a subtractive model?
   (c) What is a scanner? How does it function? Explain with the help of diagram.

4. Attempt any **two** questions (5 marks each) :- **10**
   (a) Distinguish between a story, a script and a storyboard, stating their purposes.
   (b) Why is Quantization necessary? Distinguish between analog and digital waves.
   (c) What are the basic steps in image processing?

5. Attempt any **two** questions (5 marks each) :- **10**
   (a) Discuss the fundamental characteristics of sound.
   (b) Distinguish between additive and subtractive colors.
   (c) What is plasma ? Explain the construction and working of a Plasma Display Panel.

[TURN OVER

6. Attempt any **two** questions (5 marks each) :- **10**
   (a) What is compression and explain different types of compression?
   (b) What is meant by Run length Encoding?
   (c) Write a note on ZIP Coding.

7. Attempt any **two** questions (5 marks each) :- **10**
   (a) Give advantage and disadvantage of Macromedia flash.
   (b) Describe stages of Multimedia Production.
   (c) Write a note on Multimedia Presentation.

8. Attempt any **two** questions (5 marks each) :- **10**
   (a) Discuss several audio-video file formats.
   (b) Write a note on JPEG Compression Technique.
   (c) Differentiate between motion tweens and classic tweens.

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

JAVA and Data Structure

July 2018

Con. 320-18. SL-6416

(3 Hours) [Total Marks : 80

N.B. : (1) **All** questions are **compulsory**.

(2) Figures to the **right** indicate **marks**.

1. Attempt any **two** question of the following :—
   (a) Why java is platform independent? Explain in detail. 5
   (b) Difference between method overloading and method overriding in java. 5
   (c) Explain about abstract classes in java. 5

2. Attempt any **two** question of the following :—
   (a) Discuss the different models of Threads and their states 5
   (b) Explain how to use a particular package in a Java program. Give example. 5
   (c) Write a java program to check whether the number is palindrome or not 5

3. Attempt any **two** question of the following :—
   (a) What is the difference between the Reader and Writer classes? 5
   (b) What is stream class? How are the stream class classified? 5
   (c) What is File class in java? Explain the various types of methods in File class. 5

4. Attempt any **two** question of the following :—
   (a) Explain static variable and static methods with an example program 5
   (b) Write a java program to implement the interface concept for finding the sum and average of given Numbers. 5
   (c) Write a short notes on BufferedReader Class. 5

5. Attempt any **two** question of the following :—
   (a) What is Data Structure? Explain Various types of Data Structure in detail . 5
   (b) What is Stack? Why it is known as LIFO? Write algorithm of PUSH, POP operation on Stack. 5
   (c) Explain Sequential search and Binary search with help of example. 5

[TURN OVER

6. Attempt any **two** question of the following :—
   (a) What do you mean by Linked List? Write an algorithm to insert and delete a node in Singly Linked List. 5
   (b) What is Hashing? Explain Different Hashing function method in detail Explain each one. 5
   (c) Explain Inorder, Preorder and Postorder Traversal operation on Binary tree with example. 5

7. Attempt any **two** question of the following :—
   (a) Explain Breadth First Search traversal of Graph using an example. 5
   (b) Explain Bubble Sort with the help of example. 5
   (c) Discuss following with reference to graphs. 5
   (i) Directed graph (ii) Undirected graph (iii) Degree of vertex
   (iv) Null graph (v) Acyclic Graph

8. Attempt any **two** question of the following :—
   (a) What is Queue? Why it is known as FIFO? Write an algorithm to insert and delete an element from a simple Queue. 5
   (b) What is Doubly Linked List? Write an algorithm to insert and delete a node in Doubly Linked List. 5
   (c) Explain Depth First Search traversal of Graph using an example. 5

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(10)

(3 Hours) [Total Marks : 100

N.B. : (1) **All** questions are **compulsory**.
(2) **Figures** to the **right** indicate marks.

1. (a) Distinguish between the following terms :— **10**
   (i) Objects and classes
   (ii) Data abstraction and data encapsulation
   (iii) Inheritance and polymorphism
   (iv) Dynamic binding and message passing
   (b) List a few areas of application of OOP technology.

2. Attempt any **three** of the following :— **15**
   (a) Why is Java known as platform-neutral language?
   (b) Describe the structure of a typical Java program.
   (c) What is type casting and type conversion? Why is it required in programming? Explain with an example.
   (d) Write a program to convert the given temperature in Fahrenheit to Celsius using the following conversion formula C=F-32/1.8 and display the values in a tabular form.

3. Attempt any **three** of the following :— **15**
   (a) Describe different forms of inheritance with examples.
   (b) Discuss the different levels of access protection available in Java.
   (c) What is a package? Discuss the various levels of access protection available for packages and their implications.
   (d) What is a thread? How thread is created in java? Explain with an example.

4. Attempt any **three** of the following :— **15**
   (a) Write a short notes on Byte Stream Classes and Character Stream Classes in java.
   (b) What is File Class in java? How to create File Class object? List and explain the different methods in File class.
   (c) Write a Short notes on RandomAccessFile classes.
   (d) Write the following JAVA programs: 1) create a file that should contain 1 to 10 numbers. 2) Read the data from the file which is created above.

[TURN OVER

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

(a) Define data structures. In how many ways can you categorize data structures? Explain each of them.

(b) Discuss the best case, worst case, average case, time complexity of an algorithm.

(c) What is Stack? Explain the two operations of Stack with an example.

(d) Write a program in java to print the Fibonacci series using recursion.

6. Attempt any **three** of the following :— **15**

(a) What do you mean by Searching? Explain Sequential search and Binary search with help of example.

(b) Create a Binary Search Tree for the following data and do in-order, Preorder and Postorder traversal of the tree.
50,60,25,40,30,70,35,10,55,65,5

(c) Explain the basic two techniques for Collision-resolution in Hashing with example.

(d) Discuss following with reference to trees.
(i) Height of the tree (ii) Complete Binary Tree (iii) Full Binary Tree

7. Attempt any **three** of the following :— **15**

(a) Discuss following with reference to graphs.
(i) Directed graph (ii) Undirected graph (iii) Degree of vertex (iv)Null graph (v) Acyclic Graph

(b) Explain Breadth First Search traversal of Graph using an example.

(c) What is Graph? Explain matrix and linked list representation of a graph.

(d) Explain Selection Sort with the help of example

S.Y.B.Sc (I.T.) (Sem IV) July 2018

Con. 321-18. Quantitative Techniques **SL-6694**

(3 hours) Total Marks: 80

N.B. : (1) All questions are compulsory.

(2) Figures to the right indicate full marks for each question.

Q.1 Attempt any two of the following:-

a)From the following table find the number of students who obtained less then 45 marks. 05

Marks	30-40	40-50	50-60	60-70	70-80
No. of students	31	42	51	35	31

b)Using Langrange's Interpolation formula, Estimate polynomial through the following points. (0. 3), (2, 3), (5, 18) Hence estimate f (4). 05

c)Solve the equation $x - cosx = 0$ using Newton-Raphson Method, correct upto 4 decimal places. (only 2 iterations) 05

Q.2 Attempt any two of the following:-

a) Solve $3x + 2y = 4.5,\ 2x + 3y - z = 5,\ -y + 2z = -0.5$ taking initial value $x_0 = 0.4, y_0 = 1.6, z_0 = 0.4$ by Gauss Seidel method. 05

b) Evaluate $\int_0^1 \sqrt{\sin x + \cos x}\, dx$ taking 5 sub intervals in trapezoidal rule. 05

c) $\frac{dy}{dx} = x + y + xy$ With y (0) = 2 estimate y (1) by Euler's method taking h=0.5. 05

Q.3 Attempt any two of the following:-

a) Fit a straight line trend for the following data estimate the import for the year 1998. 05

Year	1991	1992	1993	1994	1995	1996
Import in '000 Rs.	40	44	48	50	46	52

b) Find mean, variance and standard deviation for the following data: 05

X	15	117	19	21	23	25	27	29	31
F	12.5	16.5	22.5	27.5	13.2	18.4	17.1	3.1	18.2

[TURN OVER

c)Find the regression equations for the following data and hence estimate X when Y=18. 05

X	10	12	14	19	8	11	17
Y	20	24	25	21	16	22	20

Q.4 Attempt any two of the following:-

a) Using the bisection method, find an approximation root of the equation $x^4 + x - 3 = 0$ up to the 4th iteration. 05

b) Compute the coefficient of correlation for the following data: 05

X	7	9	8	5	6	3	4	1	2
y	18	20	19	21	24	26	25	23	27

c) Using Taylor's series method the solution of $\frac{dy}{dx} = 3x + y^2$ and y =1, when x = 0. Find the value of y for x=0.1 correct up to 4 decimal places. 05

Q.5 Attempt any two of the following:-

a)An examiner claim that his paper assessment is 90% right. A moderator takes a random sample of 100 papers and finds 12 papers nor assessed properly. Test the claim of the examiner at 5% level of confidence. 05

b) An old machine produced 10 defective bolts in a batch of 300. After the servicing was done the same machine was found to produce 6 defective bolts in a batch of 200.Help the manufacturer to conclude whether the machine has improved after the servicing? 05

c)The average income of 100 men in a city is Rs.15,000 with standard deviationRs.8,500 and the average income of 100 women is Rs.12,000 and standard deviation Rs.9,000. Can it be said at 5% level of confidence that there is significant difference between the average income of men and women? 05

Q.6 Attempt any two of the following:-

a)If 8% of the mobiles are produced by a Nokia a defective, the production of the company are 50 mobiles per day. Find the probability that, i). None of the defective mobile. ii). 4 mobiles are defective. 05

b)In a certain lottery, one prize of Rs.1000/- three prizes of Rs.500/- each five prizes of Rs.100/- each and 10 prizes of Rs.50/- each are to be awarded to 19 tickets drawn from the total number of 10000 tickets sold at prize of Rs.1/- per ticket. Find the expected net gain, to the person buying a particular ticket. 05

c) It is observed that the average number of phone calls per minute coming into switchboard of a company is 3. Find probability that during a particular minute there will be (i) no phone calls, (ii) exact 2 phone calls, (iii) At least 3 phone calls. 05

Q.7 Attempt any two of the following:-

a) Solve graphically,

Minimize $Z = 4x_1 - 2x_2$

Subject to $3x_1 + 2x_2 \geq 36,\ 2x_1 + x_2 \leq 24, x_1, x_2 \geq 0.$ 05

b)A sample from normal population has mean 50 and variance 24. If sample size is 25, can we say that the population variance is 27 or longer? 05

c) Fit Poisson distribution to following data and test goodness of fit at 5% LOS. 05

X	0	1	2	3	4	5	6	7	8
F	52	151	130	102	45	12	5	1	2

Q.8 Attempt any two of the following:-

a) A manufacturer claims that 10% of his product is defective. A sample of 300 items selected at random had 32 defective items. Test his claim at 1% level of significance. 05

[TURN OVER

(15)

b) State the properties of normal distribution. For the Normal distribution the limits of middle 50% of the observations are 250 and350. Find Median, Standard deviation, Mean deviation. 05

c) A manufacturer of furniture makes two products: Chairs and tables. Processing of these products is done on two machines A and B. A chair requires 2 hours on machine A and 6 hours on machine B. A table requires 5 hours on machine A and no time on machine B. Time available per day on machine A and B are 16 and 30 hours respectively. Profits earned from a chair and a table are Rs.50 and Rs.250 respectively. Formulate the problem as standard LPP and also write the simplex tableau and from it the initial basic Solution. 05

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(3 hours) Total Marks: 100

N.B. : (1) All questions are compulsory.

(2) From question 2 to 7, sub question (a) is compulsory and attempt any one from (b) and (c).

Q.1 Attempt any one of the following:-

a)An Automobile manufacturer makes automobiles and Trucks in a factory that is divided in to two shops. Shop A which perform the basic assembly operation must work 5 man-days on each truck but only 2 man-days on each on automobile. Each automobile requires 3 man-days in shop B an equal time e and ach taken by truck in shop B. Shop A and B has 180 and 135 man days and profit per automobile and truck is Rs.2000 and Rs.3000 respectively. Formulate the problem as standard LPP and Solve it by the simplex method. 10

b)Apply Euler's modified method to solve $\frac{dy}{dx} = x + 3y$ subject to y (0)=1 with h = 0.25 and hence find an approximate value of y when x=1. 10

Q.2 Attempt any three of the following:-

a) Apply Newton-Raphson's method to find the root of equation $x^4 - x - 10 = 0$ correct upto four decimal places. 08

b) If $f(x) = x^4 + 3x^3 + 1$ find f(1), f(2), f(3), f(4), f(5), f(6) and construct the forward table also find $\Delta^5 f(x)$. 07

c) Find f (7) by Lagrange's formula. 07

Age (x)	0	2	5	8	10	12
Weight (y)	7.5	10.25	15	16	18	21

P.T.O.....

[TURN OVER

(17)

Q.3 Attempt any three of the following:-

a) Solve by Gauss Seidel method, $6x + y + z = 105$, $4x + 8y + 3z = 155$, $5x + 4y - 10z = 65$. 08

b) Use Taylor's series method to solve the equation $\frac{dy}{dx} = -xy$; y (0)=1. Find y (0.2). 07

c) Calculate up to 5 decimal places $\int_4^{5.2} \log_e x\,dx$ by using Simpon's $\left(\frac{3}{8}\right)^{th}$ rule taking 6 sub interval. 07

Q.4 Attempt any three of the following:-

a)Find the rank correlation coefficient for the following data: 08

X	64	72	70	85	64	90	60	85	89	54
Y	47	43	29	47	25	52	47	50	51	20

b)For the following data, find the two regression equation and estimate Y when X=45 .

Also estimate X when Y=30. 07

Variable	X	Y
Mean	43	37
S.D.	3.1	2.8

And correlation coefficient r=0.65.

c)Fit a straight line trend for the following data estimate the sales for the year 2007. 07

Year	1998	1999	2000	2001	2002	2003	2004	2005
Sales in '000 Rs	120	124	126	130	128	132	138	137

Q.5 Attempt any three of the following:-

a) In a random sample of 600 men taken from a city, 350 are found to be smokers. In another random sample of 800 men, 400 are found to be smokers. Do the data indicate that there is a significant difference between the habit of smoking in the two cities? 08

b)A random sample of 100 cakes had average weight 80 gm and standard deviation 32 gm. If the population weight is 78 gm, test the hypothesis that the sample is taken from the same population. 07

c) A simple sample of the height of 6400 Englishmen mean of 67.85 inches had standard deviation of 2.56 inches, while a sample of heights of 1600 Austrians has a mean of 68.55 inches and a standard deviation of 2.52 inches. Do the data indicate the Austrians on an average are taller than the Englishmen? 07

Q.6 Attempt any three of the following:-

a)A random variable X follows Poisson distribution with mean=2.5. Find i).P(X=3), ii). P(X=2), iii). P(X≤2), iv). P(X≥1), v). P(1≤X≤3). 08

b)The probability that a student is not a swimmer is 0.4. if 5 students are randomly chosen, find the probability that,i). 4 out of then are swimmers. ii). At least 4 are swimmers. 07

c)For the Normal distribution the limits of middle 50% of the observations are 250 and 350. Find Median, Standard deviation, Mean deviation. 07

Q.7 Attempt any three of the following:-

a)Solve the L.P.P. graphically. 08

Minimize $Z = 40x + 80y$

Subject to $36x + 6y \geq 108, 3x + 12y \geq 36, 20x + 20y \geq 100, x, y \geq 0$

b)A following data gives measurement of certain objects on 11 items. It is assume that variance of measurement is not more 0.16. Test the consumption at 1% level of significance. It is given that the data is from normal law.

1.182, 2.5, 2.3, 2.4, 2.3, 2.5, 2.7, 2.5, 2.6, 2.6, 2.7, 2.5. 07

c)A sample of size 16 from Normal population has Standard Deviation 12. Can we say that population standard deviation is 10? Given level of significance is 5%. 07

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

July 2018

Con. 322–18. Embedded Systems SL–6958

(3 Hours) [Total Marks : 80

1. Attempt any **two** :— 10
   (a) Write a note on BIG ENDIAN & LITTLE ENDIAN processors.
   (b) Differentiate between RISC & CISC
   (c) What is meant by Embedded system? Explain different application of Embedded system.

2. Attempt any **two** :— 10
   (a) What are the non-operational qualities attributes of embedded system.
   (b) What is Washing Machine? Explain its functions.
   (c) Explain different Buses used in automotive application in Embedded system.

3. Attempt any **two** :— 10
   (a) What is compiler? Explain cross-compiler.
   (b) What are Linkers and Locators?
   (c) What is Debugging? Explain remote Debugging.

4. Attempt any **two** :— 10
   (a) Draw & explain 12C Bus.
   (b) Write any three characteristics of Embedded system in detail.
   (c) Explain the concept of device programmer in embedded system.

5. Attempt any **two** :— 10
   (a) What is RAM? Explain static RAM and dynamic RAM.
   (b) Write a note on direct memory access.
   (c) Explain interrupt map. What is interrupt service routine?

[TURN OVER

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6. Attempt any **two** :— **10**

(a) Explain the concept of 'Device Driver' in embedded system.

(b) Write a note on Watchdog timers.

(c) What is embedded operating system? Explain Task and Task states.

7. Attempt any **two** :— **10**

(a) Explain phases of EDLC. Why it is essential?

(b) What is meant by simulator based debugging? Explain in detail.

(c) Write short note on Disasembler and Decompiler.

8. Attempt any **two** :— **10**

(a) Explain role of IDE in embedded software development.

(b) Explain Real time characteristics of embedded operating system

(c) State the functions of status registers in detail.

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Con. 322–18. SL–6958

(3 Hours) [Total Marks : 80

N.B. : (1) **All** questions are **compulsory.**
(2) **Each** sub-question is of **5** marks.

1. Answer the following :— [2x5=10]
   (a) With help of one suitable example explain Sensors and Actuator.
   (b) Explain any three purpose of Embedded system.

2. Answer any **three** of the following :— [3x5=15]
   (a) What is meant by Embedded system? Explain different application of Embedded system.
   (b) Write note on anyone of following
      1. USB
      2. Wi-Fi
      3. I2C Bus
   (c) What is PLD? Explain in detail.
   (d) Differentiate between Microprocessor and Microcontroller ..

3. Answer any **Three** of the following :— [3x5=15]
   (a) What are the operational qualities attributes of Embedded system?
   (b) Write the characteristics of Embedded system.
   (c) With help of one example, explain application specific Embedded system.
   (d) State the features of LIN Bus in automotive domain system.

4. Answer any **Three** of the following :— [3x5=15]
   (a) Explain role of Infinite Loop in Embedded system. Discuss the Embedded software development process.
   (b) What are Linkers and Locators?
   (c) What is Debugging? Explain remote Debugging.
   (d) Write a note on Compiler.

[TURN OVER

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5. Answer any **Three** of the following :— **[3x5=15]**
   (a) Explain ROM and its types.
   (b) Explain the Checksum method of validating memory contents.
   (c) Explain memory mapped I/O in detail.
   (d) Explain interrupt map. What is interrupt service routine?

6. Answer any **Three** of the following :— **[3x5=15]**
   (a) Write a note on Device drivers.
   (b) Explain Task and Task scheduler in embedded operating system.
   (c) Write characteristics of RTOS.
   (d) Explain the concept of Watchdog timer in detail.

7. Answer any **Three** of the following :— **[3x5=15]**
   (a) Explain the role of Integrated Development (IDE) for embedded software development.
   (b) Write a note on Dissembler.
   (c) What is meant by simulator based debugging? Explain in detail.
   (d) Explain different Phases of EDLC.
