Total No. of Printed Pages:1

SUBJECT CODE NO: H-1690
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CSE/SE)
Elective-II: Object Oriented System & Design
(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1) Solve any two Questions from each section.
2) Assume suitable data if necessary & state it clearly.
3) Figures to the right indicate full marks.

SECTION – A

Q.1 a) Explain object oriented software development process with a suitable example. 10

b) Explain Object Oriented Analysis Phase in detail with example of Library Management system. Draw detailed class diagram. 10

Q.2 a) What is a class diagram? Describe its role in the development of OOSD. Also explain associations between classes. 10

b) Validate the domain Model with one or more object diagrams. 10

Q.3 a) Write use case scenarios for Bank ATM operation. Draw use case diagrams. 10

b) What is CRC? How is it used above identify classes? Explain with appropriate example. 10

SECTION – B

Q.4 a) Explain features and importance of activity diagram with suitable example. 10

b) Draw a sequence diagram for inventory Management system. 10

Q.5 a) What is design Pattern? Explain how design Patterns solve design Problems. 10

b) Draw the interaction diagram for Bank safety Locker system. 10

Q.6 a) Explain Behavioural Pattern with appropriate example. 10

b) State and explain difference between creational Patterns and structural Patterns. 10

Total No. of Printed Pages:1

SUBJECT CODE NO:- H-1661
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp. Net. & Engg.)
Soft Computing
(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B 1. Solve any two from each section

Section A

Q.1 a) Explain soft computing and its components? 08
b) Explain Backproposation with suitable example? 12

Q.2 a) What is fuzzy inference system? Define following 10
1) Generalized modus ponens
2) Generalized modus tollens

b) Let R and S be defined on the set {1,3,5} X{ 1, 3, 5} 10
Let R = { (x, y) | y = x+2}

S = { (x, y) |x<y}
Determine relation matrices R_1 , S & Ros?

Q.3 a) Define the terms chromosome fitness function, crossover, mutation as used in genetic algorithm? 10
b) Explain genetic algorithm work with the help of pseudo code? 10

Section B

Q.4 a) Explain the structure of Biological neuron? 10
b) Explain single layer perceptron? And its limitation? 10

Q.5 a) In a single layer perceptron unit 1 receives input from unit 2 and unit 3 given that 10
$W_{12} = -3$, $W_{13} = 2$ $X_2 = 1$ $X_3 = 1$ $Q_1 = 1$ desired output T=1 assume learning rate 0.3 find output ?

b) What is defuzzification? Discuss different methods of defuzzification ? 10

Q.6 8 chromosomes are randomly generated gene (0-7)=(84321, 46234, 78901, 32104, 42689, 63421, 46421, 87640) determine extracted weight from above? 20

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1660
FACULTY OF ENGINEERING AND TECHNOLOGY
ME (Comp. Sci. & Engg.)
Data Mining & Big Data
(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Solve any two questions from each section
2. Figures right indicates full marks
3. Assume suitable data if necessary.

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Section A

Q.1 a) A database has five transactions. Take min support count as 2. Find all frequent item sets using Apriori algorithm. 10

TID	Items _bought
T100	{M,O,N,K,E,Y}
T200	{D, O, N, K ,E, Y}
T300	{C,A,K,E}
T400	{M, I,C, K,Y}
T500	{C,O,O,K,I,E}

b) What is constraint based association mining? What are the types of constraints? 10

Q.2 a) What is K- medoids algorithm? Explain with an example. How does it differ from k- Means algorithm? 10

b) With an example explain how hierarchical clustering works using 10
i) Single linkage
ii) Complete linkage

Q.3 a) What is temporal mining? Describe any one application which is based on it 10

b) What is social networking analysis (SNA) how graph techniques are used for SNA? 10

Section B

Q.4 a) Which are the tools in Hadoop that can be used for machine learning and management & Deployment? 10

b) A cloud uses 1500 nodes for data processing and has a processing of capacity 50GB per hour. Consider the charges as 0.5 USD per node per hour, calculate the total cost and time required for processing one zettabyte of data on this cloud. 10

Q.5	a)	What is objective based data products? How will you apply drive train approach for marketing purpose?	10
	b)	Explain in brief how the application of spreadsheet got enriched to dashboard	10
Q.6	a)	Due to a huge collection of data in advance, is there any 'dark side data'? explain with an example.	10
	b)	Describe in brief: i) What to watch for in Big Data ii) Temporal mining	10

Total No. of Printed Pages:2

SUBJECT CODE NO:- H - 1654
FACULTY OF ENGINEERING AND TECHNOLOGY
ME (C.S. & I.T.)
Advanced Compiler Design & Implementation
(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
i. Solve any two question from each section.
ii. Assume suitable data if necessary.
iii. Figure to right indicates full marks.

Section A

Q.1 a) Explain with a diagram, the phases of complier. 08

b) Write regular definitions for the following using extended regular expression notation: 06
i) Identifier
ii) Unsigned number

c) Define left – recursive grammar. Eliminate left recursion from the following grammar: 06
$E \rightarrow E + T \mid T$
$T \rightarrow T * F \mid F$
$F \rightarrow (E) \mid id$

Q.2 a) Given the grammar: 10
$S \rightarrow AaAb \mid BbBa$
$A \rightarrow \in$
$B \rightarrow \in$
i) Compute FIRST ( ) and FOLLOW ( ) functions.
ii) Construct predicative parsing table.
iii) Parse the input string w = ab.

b) Construct SLR parsing table for the following grammar. 10
$S \rightarrow CC$
$C \rightarrow aC \mid d$

Q.3 a) Explain the working of shift reduce parser. Parse the input string id*id. Using the grammar of question no. 1 (c). 10

b) Construct the parsing table for LALR (1) parser using the grammar. : 10
$S \rightarrow CC$
$C \rightarrow aC \mid d$

Section B

Q.4 a) What is ICAN? Explain the syntax of all the ICAN statements. 10

b) Explain different strategies for handling Run time storage requirements. 10

Q.5 a) How different classes of SDD'S that guarantee evaluation order? 06

b) Obtain postfix SDT for simple desk calculator. 04

c) Discuss the issues in the design of a code generator. 10

Q.6 a) Write intermediate code for the following source code: 10

```
For i from 1 to 10 do
For j from 1 to 10 do
  a[i, j] = 0.0 ;
For i from 1 to 10 do
a [i, i] = 1.0;
```

and identify basic blocks.

b) Explain briefly the performance metrics to be considered while designing garbage collector. 10

Total No. of Printed Pages:1

SUBJECT CODE NO:- H-1780
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp. Sci. & Engg.)
Advanced Algorithm
(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B Attempt any two questions from each section.

Section A

Q.1 a) Explain Activity selection Problem with example. 10
b) How to measure Performance of an algorithm. Explain how to compute complexity of the following problem 10
(1) Binary Search Method
(2) Bubble Sort

Q.2 a) Sort the set of numbers using Quick sort and comment on complexity. 10
30, 45, 25, 55, 50, 20, 80, 65, 60, 70.
b) Explain Hiring problem using Probabilistic analysis & randomized algorithm. 10

Q.3 a) Explain Maximum Bipertive Matching using suitable example. 10
b) Solve the following recurrence relation using Master Method. 10

$$T(n) = 4T\left(\frac{n}{2}\right) + n^2$$

Section B

Q.4 a) Use extended Euclidean algorithm to find GCD (99,78) 08
b) Show How FFT compute the DFT. 12

Q.5 a) Prove that Feedback edge set problem is NP complete 06
b) Prove that 3-SAT is Np complete 07
c) Prove that vector cover is NP complete. 07

Q.6 a) Explain Rabin Carp algorithm 08
b) Multiply the polynomials 06
$A(x) = 7x^3 - x^2 + x - 10$
$B(x) = 8x^3 - 6x + 3$
c) Explain Cook's Theorem. 06

Total No. of Printed Pages:1

SUBJECT CODE NO: H-1746
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Software Engg.)
System Analysis & Design
(REVISED)

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B i) Attempt any two questions each from section A & section B
ii) Figures to the right indicate full marks

Section A

Q.1	a)	What do you mean by SDLC? Describe the different phases of SDLC?	08
	b)	Describe the principle step of in planning phase? What are the major deliverables?	08
	c)	What is Gantt chart?	04
Q.2	a)	Draw a level 0 & level 1 DFD for food ordering system?	08
	b)	Describe the major steps in conducting JAD session?	08
	c)	Explain the difference between DFD's & ER diagrams	04
Q.3	a)	Explain the elements of use case diagrams?	06
	b)	Draw & explain use case diagram for ATM system?	08
	c)	Explain Meta data & data dictionary?	06

Section B

Q.4	a)	Explain the types of the operational requirements?	06
	b)	Distinguish between the two-tier, three-tier, n-tier client architecture?	08
	c)	Describe the contents of the system specification?	06
Q.5	a)	Describe the principles for user interface design?	08
	b)	Describe four types of navigation controls?	08
	c)	Why are the interface standard important?	04
Q.6	a)	Describe five approaches of system testing?	08
	b)	Explain alpha testing & beta testing?	06
	c)	How are the test cases develop for unit tests?	06

1746

Total No. of Printed Pages:01

EXAMINATION MAY/JUNE 2018

SUBJECT CODE NO: H-1743

FACULTY OF ENGINEERING AND TECHNOLOGY

M.E. (Comp. Sci. & Engg.)

Machine Learning

(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) Solve any two questions from each section.
ii) Assume suitable data if necessary.

SECTION - A

Q.1 a) Explain candidate elimination algorithm with example. 10

b) Explain – 10
i) Issues in machine learning.

ii) Maximally Specific hypothesis

Q.2 a) What is procedure to build Decision tree using ID3 algorithm with Gain & entropy. Illustrate with example. 10

b) Explain back propagation algorithm in detail. 10

Q.3 a) What is linearly inseparable problems? Design a two layer network of perceptron to implement A XOR B. 10

b) How to estimate the accuracy of a hypothesis? Explain confidence interval, Binomial distribution. 10

SECTION – B

Q.4 a) Explain salient features of a Genetic algorithm and enumerate the steps in its prototypical algorithm. 10

b) With the help of block – diagram explain Probability Approximation correct (PAC) Learning model. 10

Q.5 a) How Naive Boyes algorithm is useful for learning and classifying text. 10

b) Explain maximum likelihood hypothesis for predicting probabilities and minimum description length principle. 10

Q.6 a) Explain with reference to Genetic algorithm:- 10
i) Hypothesis space search
ii) Models of evolution & learning

b) Explain K- nearest neighbour learning algorithm in detail. 10

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1740
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (C.S. & I.T.)
Elective-II: Advanced Algorithm
(REVISED)

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B
i. Solve any two questions from each section.
ii. Assume suitable data if required.

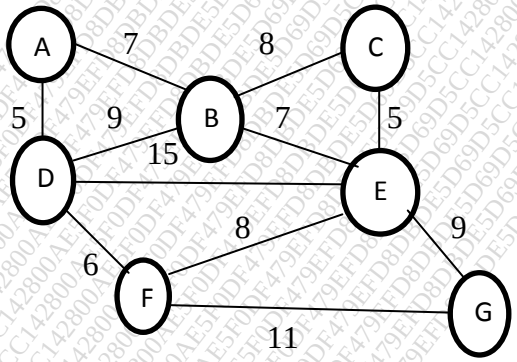
Section A

Q.1 a) Explain Huffman coding. Construct a Huffman tree for the following data and obtain its Huffman code character (A,B,C,D,E) relative frequencies are $(q_1 \ldots q_5)=(0.5,0.35,0.5,0.1,0.4)$ Decode the text whose encoding is 1100110110. 10

b) Define height balanced binary tree construct AVL tree assuming that insertions are made in the order: 15,20,24,10,13,7,30,36,25. 10

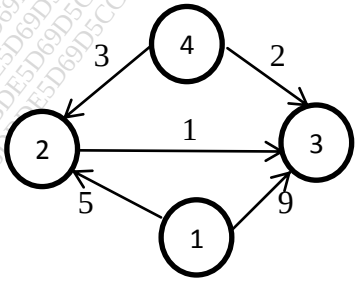
Q.2 a) Explain hashing technique in detail. Draw a hash table with open addressing and a size of 9. Use hash function "k%9". Insert the keys 5,29,20,0,27 and 18 into a table. 10

b) Define spanning tree. Find minimum cost spanning tree using prims & kruskali method. 10



Q.3 a) Write algorithm for merge sort. For following set of data apply merge sort: 10,50,87,73,64,92,23,34,54,18. Count the number of operations for the sorting method. Derive recurrence relation for merge sort. 10

b) Write algorithm for All pair shortest path problem: Apply it on given graph : 10



Section B

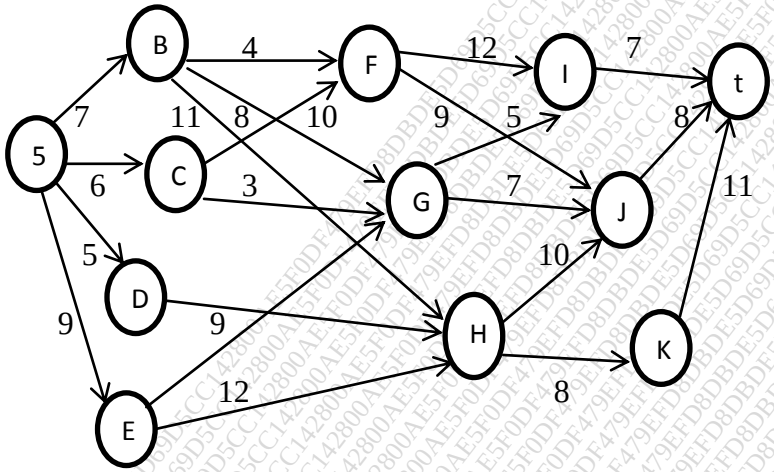
Q.4 a) Write an algorithm for knapsack problem using greedy approach Analyze it with following example 10

n =5 , capacity=6

$(P_1:P_5)=(12,10,20,15,14)$

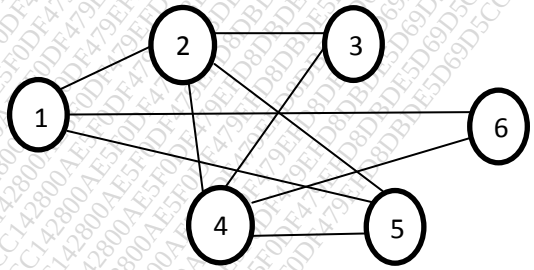
$(W_1:W_5)=(2,1,3,2,2)$.

b) Find a minimum cost path from s to t in the following multistage graph. 10



Q.5 a) What is backtracking? Find the solution 4 queens problem using backtracking and generate state space tree. 10

b) What is NP-Hard NP-Complete problem? For the graph given below show that clique is directly proportional to vector cover. 10



Q.6 Write a note on: 20

i. NP Hard code generation problem.
ii. PRAM Algorithm.
iii. Job Sequencing with deadline.
iv. Comparison Trees.

Total No. of Printed Pages:1

SUBJECT CODE NO:- H-1739
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Software Engg.)
Elective-II: Computer Vision
(REVISED)

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B
1. Solve any two questions from each section.
2. Assume suitable data.

Section A

Q.1	a)	What is segmentation? Explain the edge based image segmentation.	10
	b)	Explain correspondence between filtering in spatial and frequency domain.	10
Q.2	a)	Elaborate 3D graph based segmentation technique in detail.	10
	b)	Discuss perception model with example.	10
Q.3	a)	Describe the steps of linear discriminant analysis	10
	b)	How principle component analysis is useful for dimensionality reduction, Justify.	10

Section B

Q.4	a)	Explain the active appearance model in detail.	10
	b)	Explain Image understanding control strategies.	10
Q.5	a)	Define texture. Explain statistical and syntactic texture description	10
	b)	Write short note on 1) Marr's Theory 2) Homography	10
Q.6	a)	What is optical flow? Discuss optical flow in motion analysis.	10
	b)	Explain 3D vision tasks in detail.	10

Total No. of Printed Pages:01

SUBJECT CODE NO:- H-1762
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp. Sci. & Engg.)
Advanced Database Mgt. System
(REVISED)

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B i) Solve any two questions from each section.
ii) Assume suitable data if necessary.

Section A

Q.1 a) What are long duration transactions? What are their effects on concurrency protocols? 10
b) Explain in detail about parallel database architecture with neat diagram. 10

Q.2 a) What is data frequentation in distributed database? Explain its types. 10
b) Explain the architecture of Transaction server in detail. 10

Q.3 a) What do you mean by TP monitors? Explain architecture of TP monitors in detail. 10
b) Explain Distributed Query Processing techniques in detail. 10

Section B

Q.4 a) List the basic operations of following built in interfaces for ODMV object model. 10
i) Object
ii) Collection
iii) Iterator
iv) Set and List

b) What is the difference between persistent and transient objects? How persistence is handled in typical OODBMS? 10

Q.5 a) What are differences between attributes and elements in xml? List some of the important attributes used to specify elements in xml schema. 10

b) Why are scripting languages popular for programming web application? Where in the Three-Tier architecture does a PHP Program execute? Where does a JavaScript program execute? 10

Q.6 a) Explain various mobile Transaction models in detail. 10
b) Explain various MDDMS components in detail 10

Total No. of Printed Pages:1

SUBJECT CODE NO:- H-1765
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Software Engg.)
Cloud Computing
(REVISED)

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B i) Solve any two questions from each section.
ii) Assume suitable data.

Section A

Q.1	a)	Explain cloud architecture in details.	10
	b)	Explain cloud services in details.	10
Q.2	a)	Explain types of cloud services development in details	10
	b)	Explain web services with example.	10
Q.3	a)	Explain desktop virtualization in details.	10
	b)	Explain storage virtualization in details.	10

Section B

Q.4	a)	Explain virtualization security management in details	10
	b)	Explain VM-specifics security techniques.	10
Q.5	a)	Explain cloud customer responsibilities in details	10
	b)	Explain information security governance processes.	10
Q.6	a)	Explain field level security.	10
	b)	Explain manual sharing and managing data.	10

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-1763
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CNE/CS & IT)
Advanced Operating System
(REVISED)

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B 1) Solve any two from each section.
2) Assume suitable data if necessary indicate it.

Section A

Q.1 a) Suppose the following process arrives for execution at the time indicated. 10

Process	Arrival time	Burst time
P_1	0.0	8
P_2	0.4	4
P_3	0.5	1

Using SJF find:- i) Average waiting time
ii) Average turn around time

b) Consider the following process with length of CPU Burst-time given milliseconds. 10

Process	Burst	Priority	Arrival
P_1	10	3	0
P_2	6	5	0
P_3	2	2	0
P_4	4	1	0
P_5	8	4	0

SJF:- i) Preemptive
ii) Non-Preemptive
Find averages waiting time and turnaround time.

Q.2 a) Describe the advantages and Disadvantages of distributed Vs centralized system and its issues? 10

b) Explain ATM reference model? 10

Q.3 a) Compare ISO-OSI and client server model? 10

b) Define logical clock? Explain Lamport's algorithm suitable example? 10

Section B

Q.4	a)	Explain Dead lock detection in distributed system?	10
	b)	Describe write through protocol and write once protocol?	10
Q.5	a)	Explain Ring based multiprocessor?	10
	b)	Explain page based distributed memory?	10
Q.6	a)	Explain DASH (Directory Architecture for Shared Memory)?	10
	b)	Explain NUMA multiprocessor?	10

Total No. of Printed Pages:1

SUBJECT CODE NO: H-1620
FACULTY OF ENGINEERING AND TECHNOLOGY
ME (Comp.Sci. & Engg.)
Computer Vision
(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) Solve any two questions from each section.
ii) Assume suitable data, if necessary and state it clearly.

SECTION A

Q.1	a)	What is computer vision? Explain the applications of computer vision.	10
	b)	Write difference between Enhancement and Restoration.	05
	c)	Explain mean shift image segmentation.	05
Q.2	a)	Explain neural network based pattern recognition approach in detail.	10
	b)	Describe the role of pattern recognition for computer vision. Elaborate the steps in design cycle of pattern recognition system.	10
Q.3	a)	Explain graph matching based object recognition process.	10
	b)	Elaborate k-nearest neighbor clustering method for growing of objects.	10

SECTION B

Q.4	a)	Explain different images understanding control strategies.	10
	b)	Explain the point distribution model.	10
Q.5	a)	Write note on homograph.	05
	b)	What is 2.5D Sketch? What are their applications?	05
	c)	Explain in detail the concept of scene reconstruction from multiple views.	10
Q.6	a)	What is optical flow? Discuss optical flow in motion analysis.	10
	b)	Discuss the concept of video tracking in detail.	10

Total No. of Printed Pages:1

SUBJECT CODE NO: H-1832
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (Comp. Sci.& Engg.)
El-1 Remote Sensing
(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1) Solve any two question from each section.
2) Assume necessary data if necessary.

Section A

Q.1 a) Explain electromagnetic spectrum in detail. What are the major wavelength ranges used for remote sensing application? Explain. 10

b) Explain reflectance characteristics of earth caner types. 10

Q.2 a) How do you classify remote sensing on the basis of technology, platform & sensors? 16

b) What type of orbits does remotes sensing satellite have to be in to acquire image? Why? 04

Q.3 a) Explain multispectral thermal and hyper spectral sensing with example. 12

b) Differentiate between active and passive remote sensing. 08

Section B

Q.4 a) What is image interpretation? How image is interpreted in spatial resolution. 10

b) Explain different image enhancement technique in detail. 10

Q.5 a) Explain the types of image classification for remote sensing imagery. 10

b) Explain principal component analysis in detail. 10

Q.6 a) Explain the methods for accuracy assessment. 10

b) Explain how remote sensing is useful in forestry and Urban & regional development application. 10

Total No. of Printed Pages:01

SUBJECT CODE NO: H-1830
FACULTY OF ENGINEERING AND TECHNOLOGY
M.E. (CSE/SE)
El- 1 Real Time Systems
(REVISED)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B 1) Attempt any Two questions from each section.
2) Assume suitable data if necessary.

SECTION – A

Q.1 a) What is real time system? List types of RTS? Draw architecture of typical RTS. 10

b) What is difference between design general purpose system & Real time system with example? 10

Q.2 a) Explain monolythic OS & Modular OS in detail. 10

b) Explain feature descriptive language to describe design of real time system. 10

Q.3 a) What are the design issues in real time system? Describe various programming languages for real time system. 10

b) Write difference between Kernel, micro kernel & Nano kernel. 10

SECTION –B

Q.4 a) Draw & explain architecture of real time database system. 10

b) What is memory database system? Explain its design issues. 10

Q.5 a) What are the message sending techniques? Explain any one. 10

b) Explain need for real time communication? What are network topology in real time communication? 10

Q.6 a) Explain various scheduling properties & scheduling metrics? 10

b) Explain precedence constraint task scheduling algorithms. 10