SUBJECT CODE NO:- H-341 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (IT) Cloud Computing

Cloud Computing (REVISED)

[Time	Three Hours]	[Max.Marks:80
N.B	Please check whether you have got the right question paper. 1. Question number 1 and question number 6 are compuls 2. Attempt any two questions from the remaining in each	
	Section A	
Q.1	Solve any two questions	10
	1) Explain SOA	201
	2) Explain Grid computing	
	3) Explain cloud service models.	
Q.2	a) Explain Amazon EC2 and Google App Engine.	08
	b) Explain traditional storage versus storage cloud.	07
Q.3	a) Define web services and differentiate SOAP and REST.	07
	b) Explain Pros and cons of virtualization.	08
Q.4	a) Explain key characteristics of cloud computing.	07
	b) Explain storage and Network virtualization.	08
Q.5	a) Explain Caas, Maas, Bpaas.	08
	b) Explain cloud computing Reference Architecture by IBM.	07
	Section B	
Q.6	Solve any two question	10
St	i) Explain Oozie, Flume.	
7000	ii) Explain Big table, Dynamo	
10,00	iii) Explain PUSH services.	
Q.7	a) Define Hadoop and explain its Architecture.	07
	b) Explain context aware services.	08
Q.8	a) Explain Relational operations using Map Reduce.	08
O'NO HO	b) Explain GFS and HDFS.	07
Q.9	a) Explain cloud Security Challenges.	07
S S S S	b) Write in detail about life cycle of data in cloud.	08

		H-341
Q.10	a) Explain infrastructure security at network level.b) Explain parallel computing and cluster computing.	07 08
		SYLY SYN

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H-364

Total No. of Printed Pages:4

SUBJECT CODE NO:- H-364 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT) Data Structures (REVISED)

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

Please check whether you have got the right question paper.

- N.B 1. Q.No.1 from section A and Q.No.6 from section B are compulsory.
 - 2. Solve any two questions from each section from remaining questions.

Section A

Q.1 Solve any five:

10

- a) What are primitive and non-primitive data structure?
- b) Differentiate between static and dynamic memory allocation.
- c) What will be the output of following program?

```
# include <stdio.h>
int main ()
{
  int arr [2][2][2]= {10, 2, 3, 4, 5, 6, 7, 8};
  int *p, *q;
  p = & arr [1] [1] [1];
  p = (int *) arr;
print f ("%d % d \ h", * p, *q);
return O;
}
```

- d) Which data structure is used to perform recursion? Give its definition.
- e) What is linear queue? Write its disadvantage.
- f) Design circular linked list for 4 nodes.
- g) What are advantages of linked representation over sequential representation?
- Q.2 a) Write C program to store information (name, roll no & marks) of 5 students using structure. 08
 - b) Write ADT Array.

07

Q.3 a) Convert given infix expression to postfix expression using stack A * (B + C * D) + E

07

b) Write a program to implement queue using static array.

08

Q.4 a) Write C function to perform following operation on linear linked list.

08

- i) Insertion of node at front of list
- ii) Delete a node from list.
- b) Define linked list. Explain types of linked list.

07

07

Q.5 a) Explain stack empty and stack full condition. Show the stack contents after each operation of for the following sequence of PUSH & POP operation:

PUSH (10) PUSH (20) POP (1) PUSH (30) PUSH (40) PUSH (50) Assume May stack

PUSH (10), PUSH (20), POP (), PUSH (30), PUSH (40), PUSH (50). Assume Max stack size =3.

b) Show how to represent polynomials using linked list. Perform addition of A and B.

$$A = 10x^4 + x^2 + x + 5$$

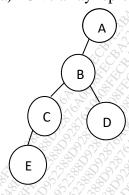
$$B = x^3 + x + 2$$

Section B

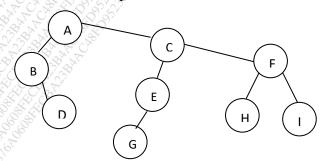
Q.6 Solve any five:

10

a) Give array representation of following binary tree

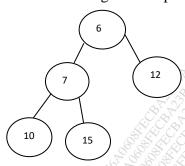


- b) What are the major data structures used in following areas? Define them
 - Network data model.
 - ii. Hierarchical data model.
- c) Traverse the tree in inorder and preorder.

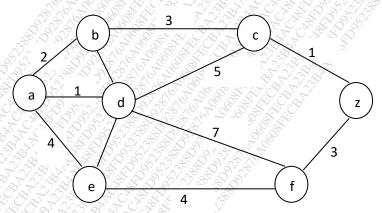


2

- d) Explain following graph terminology
 - i. Cycle
 - ii. Complete graph
- e) Insert key 5 to the following min heap & do the necessary updations.



- f) Differentiate between linear search and binary search.
- g) Sorting is not possible by using which of the following method-insertion, selection, exchange, deletion? Justify your answer.
- Q.7 a) Define binary search tree. Write a recursive function to search any key in BST.
 - b) Construct AVL tree for following sequence of keys: 3, 5, 11, 8, 4, 1, 12, 7, 2.
- Q.8 a) Find shortest path from a to z.



b) Write C program to implement depth first search. 07

		H-304
Q.9	a) Explain binary search method. Consider following list of keys: 15, 20, 25, 30, 35, 40, 45, 50 Search i. $x = 25$ ii. $x = 60$ iii. $x = 40$	08
	b) Apply insertion sort to arrange elements in ascending order 3, 7, 8, 5, 2,1, 9, 15, 4	07
Q.10	a) Write a program to implement selection sort.	07
	b) Write a note on:i. Graph representation techniqueii. Graph traversal technique	08

SUBJECT CODE NO:- H-386 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT) Programming in Java

rogramming in Java (OLD)

[Time:	Three 1	Hours] [Max. Marks	: 80]
N.B		Please check whether you have got the right question paper. i) Question No. 1 and Q. No 6 are compulsory. ii) Attempt any two questions from each section. iii) Figures right indicate full marks. iv) Assume suitable data if necessary. Section A	
Q.1	Attem	apt any five questions:	10
	b) c) d) e) f)	What is JVM? Where it is used? What is "public static void main" in java? Explain Vectors and Arrays? Write difference between them. What is naming conventions used in java? Why interface is used in java? Define error? Explain difference between error and bug. Explain different ways to use thread class. Draw & explain exception hierarchy.	
Q.2	a)	Explain life cycle of thread with suitable diagram & write a program for thread priority?	07
	b)	Write a java code which takes basic salary from user & calculate grand salary(Assume TA, DA &HRA).	08
Q.3	a)	Write a java code to create user defined packages & explain process of creating & using packages.	07
12 20 C	b)	Why java doesn't support multiple inheritance? Explain alternative why to use it with suitable example?	08
Q.4	a)	What is string class? Explain function of string class?	08
3255 2000	(b)	Write a java code for command line arguments.	07
Q.5	a)	Write a java code to take input from file & display output in another file.	07
	b)	Write a short note on: i) Synchronization ii) Wrapper Class iii) Finally iv) Thread exception	08

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		Section B	N (
Q.6	Attem	pt any five questions	10
	a)	Write a java code to display rectangle within circle using applet.	
	b)	What is difference between byte stream and character stream?	15/2
	c)	Differentiate between AWT and Swing.	J. J.
	d)	Explain filter and pipe stream.	
	e)	What is port? Give list of popular ports in system.	7.4
	f)	Write four JDBC drivers.	200
	g)	List types of event listeners.	P.
	h)	Why AWT is called as heavy weight components.	
Q.7	a)	Explain with suitable example , how to create & execute static & dynamic SQL statements.	08
	b)	Explain applet life cycle in detail.	07
Q.8	a)	Write a java code to create student information form using Swing components.	07
		(Take rno, fname, mname, lname, class, branch)	
	b)	Write a java code to demonstrate client & server concept.	08
Q.9	a)	Write a java code to display message on button click using swing class.	07
	b)	Write down the steps to create & use applet with html tags with suitable example.	08
Q.10	a)	Write a short note: i) Local & Remote applet ii)Result set iii) Object serialization iv)Socket.	08
	b)	Write a java code to display information of employee from database.(Assume suitable data	07
	AT A	for employee i.e eno.ename. edept. eloc. esaletc).	

SUBJECT CODE NO:- H-432 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT) Digital Electronics (OLD)

[Time:	: Three Hours]	arks:80
N.B	Please check whether you have got the right question paper. i) Q.1 and Q.6 are compulsory. Solve another four questions taking two from eac section. ii) Assume suitable data wherever needed.	h
	Section A	Ş
Q.1	 Solve any Five from the following (a) What is PLA and PAL? (b) Construct truth table for 3-input NAND gate. (c) Explain minterm and maxterm. (d) What is DEMUX? (e) Convert following POS expression to SOP	10
Q.2	(a) Differentiate between analog signal and digital signal(b) Design 2-bit comparator using logic gates.	07 08
Q.3	 (a) Explain all the characteristics of digital ICs. (b) Explain the following terms: i) Race around condition ii) Edge triggered & level triggered flip flop. 	08 07
Q.4	 (a) Minimize the following expression using K-map and realize it by using gates. F(A, B, C, D) = Σm(0,1,2,3,4,5,13,15) + d(8,9,10,11) (b) Design full adder using mux. 	08 07
Q.5	 (a) Minimize following expression using Quine Mc-cluskey method F(A, B, C, D) = Σm(0,2,6,7,8,10,11,12,13) + d(3,4,14) (b) Implement 16:1 mux using 4:1 mux. 	08 07

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	Section – B	
Q.6	Solve any five	10
	(a) What are the types of shift register?	
	(b) Compare asynchronous and synchronous counter.	7.4.63.35
	(c) What is resolution of ADC?	SON A CONS
	(d) Explain mod-N counter	
	(e) Draw block diagram of 4-bit SISO right shift register	
	(f) Write application of DAC.	
	(g) Write any four application of digital counter.	
	(h) Define clock.	STATE OF
Q.7	(a) Design mod-6 ripple counter using J-K flip flop	08
	(b) Explain the working of universal shift register IC 7494	07
Q.8	(a) Explain resistor network D/A converter with a suitable diagram.	08
	(b) Design 3-bit synchronous counter	07
Q.9	(a) Explain working of dual slope ADC.	07
	(b) Draw and explain the operation of SIPO and PISO	08
Q.10	(a) Explain implementation of R-2 R binary ladder DAC.	08
-	(b) Design a logic circuit to generate following pulse train 1010110101	07

SUBJECT CODE NO:- H-243 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT/ECT)

Elective-II: Cross- Platform Application Development (REVISED)

[Time: Three Hours]		Hours]	[Max.Marks:80
N.B		Please check whether you have got the right question paper. i. Question No.1 and 6 are compulsory. ii. Attempt any two remaining questions from each section. iii. Figures right indicates full marks. iv. Assume suitable data if necessary.	
		Section A	
Q.1	a)	What is cross platform application development?	05
	b)	Write a short note on application lifecycle methods of Xamarin.	05
Q.2	a)	List & Explain Xamarin. Forms UI.	07
	b)	Explain stack Layout & Relative Layout in detail.	08
Q.3	a)	What are different mobile application development environments?	08
	b)	Describe Tabs using tabbed Page.	07
Q.4	(a)	Explain IOS controls in detail.	07
, S.	b)	Explain navigation patterns in details.	08
Q.5	a)	Explain Button View & Label View in detail.	07
0000	b)	List & explain different cross platform application development tools.	08

			H-24.
Q.6	a)	Section B When Custom Renderers used in mobile application development.	05
Q.0			
	b)	What are enterprise Cloud data solutions?	05
Q.7	a)	Explain IOS Custom Renderer in detail.	07
	b)	Explain overall architecture of Dependency Service with neat diagram.	08
Q.8	a)	Describe in detail Renderer base classes and Native controls.	08
	b)	Explain view Models in detail.	07
Q.9	a)	Explain web services in detail.	07
	b)	Write a short note on:	08
		i) Effectsii) Gestures	
Q.10	a)	Write & explain steps of using SQLite Database.	08
	b)	How plugins are used in mobile application development.	07

SUBJECT CODE NO: H-242 FACULTY OF SCIENCE AND TECHNOLOGY

B.E. (CSE/IT/ECT/EE)

Elective-II: Managing Advance Server (REVISED)

[Time:	Three	e Hours]	[Max.Marks:80]
N.B		Please check whether you have got the right question paper. 1) Q.1 and Q.5 are compulsory. 2) Attempt any two questions from Q.2 to Q.4 and Q.6 to Q.8 SECTION - A	
Q.1	Attem	pt <u>any two</u> from following.	10
	a)	Write note on Group Policy Object (GPO)	
	b)	Describe Network Policy and Access Services	
	c)	Explain domain in detail.	
Q.2	a)	Explain forward and reverse lookup zone in detail.	08
	b)	What is DHCP? How DHCP assigns IP addresses?	07
Q.3	a)	What is file server? How share Folder is used?	08
	b)	Explain Event Viewer with its types.	07
Q.4	a)	What is DFS & how it is installed?	08
A115	b)	What is DNS? Explain in detail.	07
		SECTION – B	
Q.5	Attem	pt any two from following questions:	10
	(a)	Explain Domain Controller (DC).	
	b)	Describe Security log in detail.	
	c)	Explain IP Address & IP Classes	

		H-242
Q.6	a) Draw and explain block diagram of OSI reference model.	08
	b) Explain in brief Shadow Copy.	07
Q.7	a) What does mean by forests, trees and domains mean.	08
	b) Explain different types of Profile.	07
Q.8	a) Compare Local Profile & Roaming Profile.	08
	b) Explain Hyper – V in detail.	07

SUBJECT CODE NO:- H-208 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT) **Discrete Mathematics**

(OLD)

[Time:	Three	Hours] [Max. Ma	rks: 80]
N.B		Please check whether you have got the right question paper. 1) Question No.1 from Section A and Question No.6 from Section B are comp 2) Solve any two questions from remaining in each Section. 3) Assume suitable data if necessary. Section A	oulsory.
Q.1	Attem	npt any five:-	10
	b) c) d) e) f)	What is Existential quantifier? Explain Associative Laws of set. What is Modus Tollens? What is Universal quantifier? Define probability. Explain power set with example. Explain basic connectives of compound proposition. Explain Equality of two sets.	
Q.2	a) i) ii)	Translate the following statements into logical expressions using predicates, quantifiers and logical connectives. If a number is rational, then it is a real number. An equilateral triangle has three angles of 60° and conversely.	08
	b)	If A ={4,5,7,8,10} B={4,5,9} and C={1,4,6,9} then verify that $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$	07
Q.3		One card is drawn from pack of 52 cards. What is the probability that card is either red card or a king. Prove by mathematical Induction $n^3 + 2n$ is divisible by 3 for all $n \ge 1$	08 07
Q.4	a)	Construct the truth table for the following statement to determine tautology or contradiction. $(p\Lambda(\sim p V r))\Lambda \sim r$	08
	b)	State $\sim p \ \lor \sim q$ is a valid conclusion from premise $(p \land q) \rightarrow r, r \rightarrow s, \sim s$	07
Q.5	a)	Write converse and contrapositive of following:- 1) If Jay is a poet, then he is rich.	08
	b)	2) If she works, she will earn money. Show that $(r \land s) \rightarrow q \Leftrightarrow \neg(r \land s) \lor q$	07

Section B

Q.6	Solve	any five:-	10
		Explain Directed graph. Explain Range and Domain of a function. Explain Ring and its properties. Explain zero-one matrices.	
Q.7	a)	Let $(x) = 4x + 3$, $g(x) = 3x + 4$ and $h(x) = 6x$ for $x \in R$; find gof , fog , foh and goh . Where R is set of real numbers.	08
	b)	Explain pigeonhole principle and show that in any room of people who have been doing handshaking there will always be at least two people who have shaken hands the same number of times.	07
Q.8	a)	Consider $A = \{1,2,3\}$; $R_1 = \{(1,1),(2,2),(3,3)\}$; $R_2 = \{(1,1),(2,2),(3,3),(1,3)\}$ $R_3 = \{(1,1),(3,3),(1,3),(3,1)\}$ $R_4 = \{(1,2),(2,1),(1,3),(3,1)\}$ Determine whether above relations are symmetric, reflexive, transitive and antisymmetric.	. 08
	b)	What is group, explain with example.	07
Q.9	a)	What is Ring? Explain with example.	07
	b)	Determine whether algebraic system (Q, t) is a group where Q is the set of all rational number and t is an addition operation.	08
Q.10	a)	Explain elements of coding theory in detail.	07
	b)	Given a $(6, 3)$ linear block code with the following parity-check matrix. $\begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 1 \end{bmatrix}$	08
	1)	Find the generator matrix	

2) Find the code word for the data bit 101.

SUBJECT CODE NO:- H-505 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE)

Elective-II: Data Science (REVISED)

[Time:	Three Hours]	[Max.Marks:8
N.B	Please check whether you have got the right question paper. 1) Q .No. 1 and Q.No.6 are compulsory. 2) Solve any two questions from the remaining questions in each Section A	etion.
Q.1	A) What is data science? Explain data science involvement.B) Compare and contrast between business intelligence and Data science.	05 05
Q.2	A) With a suitable diagram explain data science life cycle.B) Explain i) Association rule mining ii) Market basket analysis	08 07
Q.3	A) What is a recommendation engine? Explain it's working.B) What is a recommender system? How it is built? Explain	08 07
Q.4	A) What is text mining? Explain why we need it.B) Explain i) Text mining algorithms ii) Sentiment analysis	07 08
Q.5	 Write short notes on the following (Any three) i) Tools of data science ii) Recommendation use case iii) Big data iv) TF-IDF 	15
	Section B	
Q.6	What is time series data, explain time series variables and time series data componen	ts. 10
Q.7	A) What is ARIMA model? How it is implemented for forecasting.B) What is tableau? Explain tableau concept.	08 07
Q.8	A) What is deep learning? Explain biological neural networks.B) How artificial neural networks are useful in deep learning? Explain how AN is built.	08 N model 07
Q.9	A) With respect to data visualization explain i) Filters ii) ChartsB) With suitable example explain reinforcement learning use cases.	08 07

H-505

15

- Q.10 Write short notes on the following (Any three)
 - Exponential smoothing models Dashboards i)
 - ii)
 - iii) Important terminologies of ANN
 - Box plot iv)

SUBJECT CODE NO:- H-504 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE)

Elective-I: Data Analytics with R (REVISED)

[Time:	Three I	Hours]	Max.Marks:80
N.B		Please check whether you have got the right question paper. 1. Q.no.1 and Q.no.6 are compulsory 2. Attempt any two questions from the remaining in each so	ection.
		Section A	A CASTA
Q.1	a) b)	e short notes on (any two) Inferential statistics Head and Tail functions Hypothesis Testing	05 05 05
Q.2	a) b)	Explain in detail about Binomial probability distribution. Explain in detail about Range, Inter Quartile Range, variance & standard devia	08 ottion. 07
Q.3		Explain in detail about built in functions in R. along with some examples. Find the mean median and Range of i) 76, -56, 28, 101, 8, -24, 47, 98, 15, -39 ii) 3, 12, 15, 8.9, 23, 0.78, 18, 45, 0, 86, 7, 6, 9, 5, 35, 20.	08 07
Q.4		Explain in detail how to read and write a CSV file. Mention and brief on some functions used for manipulation of data in R.	08 07
Q.5	~ 1 1 ~	What is a sample? Explain in detail various sampling techniques. What is variable? Explain in detail about Dependent and Independent variables	08 07
		Section – B	
Q.6	a) b)	short notes on (any two) K = means Classification Adjusted R- squared	05 05 05
Q.7		What is Hierarchical clustering? Explain in detail various distance measures. Briefly differentiate between K-means and fuzzy c- means clustering.	08 07
Q.8		Explain in detail about various categories of Machine learning algorithms. What is linear Regression? Explain in detail about linear Regression.	08 07

		H-50
Q.9	a) What is SVM? Explain in detail	08
	b) Explain in detail about Naive Bayes classifier with a suitable example.	07
Q.10	a) Brief on the summary terms such as Multiple R- squared Degree of freedom and	08
	Residuals. b) What is logistic Regression? Explain in detail.	07

SUBJECT CODE NO:- H-352 FACULTY OF SCIENCE AND TECHNOLOGY **T.E.** (**IT**)

Multimedia Computing (OLD)

[Time:	Time: Three Hours] [Max.N					
		Please check whether you have got the right question paper.				
N.B		1) Q.No.1 and Q.No.6 are compulsory.				
		2) Assume suitable data if required.				
		3) Attempt three question from each section.				
		Section A	5 VO L 00 5 VO L 00 00 00			
Q.1	Solve an	ny five	10			
	a) I	Define author and audience.	2			
	,	What is horizontal scan rate of monitor?				
		Differentiate tone & Note.				
	,	Advantages of hypertext over text.				
		What is mean by frames rate.				
		Aspect ratio of monitor.				
Q.2	a) V	What is diode? Explain with diagram working of LED TV.	08			
		Explain H.261 & H.263 video file format.	07			
Q.3	a) I	Explain need of color model? Explain CMYK color model in details.	08			
		What is MIDI? How different devices can be connected to a computer.	07			
Q.4	a) V	What is virtual reality? Explain various forms of virtual reality.	08			
	b) E	Explain working of color analog video camera.	07			
Q.5	a) E	Explain role of testing and feedback stages to improve quality of presenta	tion. 08			
	b) E	Explain how image is acquired through digital camera.	07			
27 20 03 55 V		Section – B				
Q.6	Solve an	ly five	10			
3 3 4 4	(i)	What is mean by compression?				
# D 01	ii)	Enlist use of MPEG-2.				
13 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	iii)	What is DVD – RAM				
	iv)	Differentiate bandwidth and Load of N/W				
	v) +	Define CD-R and CD-RW				
	vi)	What do you mean by multimedia over wireless N/W.				
7 2000	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 5 7 5 4 7 6 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				

Q.7	a) Explain various steps in MPEG compression standard.	08
	b) Explain DVD specification in detail.	07
Q.8	a) Explain DPCM & ADPCM coding scheme.	08
	b) Explain in detail wireless interactive multimedia.	07
Q.9	a) Explain multimedia N/W communication.	08
	b) Describe Huffman coding with Ex.?	07
Q.10	a) How data can be written on CD-R	08
Q .10	b) Explain media on demand technology	07
	i) Interactive TV.	
	ii) Set top box	10 1 1 2 00 0g.

SUBJECT CODE NO:- H-554 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT)

Elective –I: Digital Image Processing (REVISED)

[Time:	[Time: Three Hours]		
N.B		Please check whether you have got the right question paper. 1) Que. No. 1 and Que.No.6 are compulsory. 2) Attempt any two questions from the remaining question from each section 3) Assume suitable data if necessary. Section A	n.
Q.1	Solve	any five:-	10
	a) b) c) d) e) f)	What is digital image? Define neighbors of pixel. What is Image Negative?	
Q.2		 A 4 × 4, 4 bits per pixel original image is given by [10,12,8,9; 10,12,12,14; 12,13,10,9; 14,12,10,12] i) Apply histogram equalization to the given image by rounding the resulting image pixels to integers. ii) Sketch the histogram of the original image and histogram equalized image. What is image filtering? Explain basic steps for filtering in frequency domain. 	08 8
0.2			
Q.3	The O'	Elaborate the components of digital image processing along with its block diagram. What is connectivity in digital image processing? Explain different types of connectivity.	08 07
Q.4	a)	Explain with neat diagram image compression model.	08
	b)	Explain the LZW encoding technique with suitable example.	07
Q.5	Write	short note on:- (Any three)	15
	a) b) c) d)	Data Redundancy Sampling and quantization Log and power-law transformation Binary image compression standards.	

Section B

Q.6	Solve	any f	ive:-						6, 46 6 6			10
	a) b) c) d) e) f) g) h)	Wri Def Def Wh Def Def	te appline gradine mulatis color incide ima	ean by di ications of dient open ltilevel the lor compage open nature.	of segmerator. aresholo blement ing and	nentatio ding. ?						
Q.7	a)	Exp	lain th	ree types	of disc	ontinui	ties in o	digital in	nages.			07
	b)	Def	ine thre	esholding	g and ex	xplain tl	he vario	ous metl	nods of threshold	ing with sui	table example.	08
Q.8	a)	Exp	olain RO	GB color	model.							07
	b) The input picture and structuring element as shown below. Perform the erosion and dilation of the input image/picture.									08		
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Q.9	a)	Exp	lain the	e differer	nt types	of regi	on desc	criptors	required in image	e description	ı step.	07
NA ST	b)		- V	presentat tion proc	01 (1, 1	hat is ro	ole of c	hain cod	de & polygonal a	pproximatio	on in	08
Q.10	Write	short	note o	n:- (Any	three)	16 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6						15
	a) b) c)	\$\ \\$\ \\$\ \\$\ \\$\ \\$\ \\$\ \\$\ \\$\ \\$\										
0 (B)	(d)	Ske	letoniz	ation.	The state of							

SUBJECT CODE NO:- H-523 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT) Operating System (REVISED)

[Time:	hree Hours] [Max.Mai	rks:80
N.B	Please check whether you have got the right question paper. 1. Solve 3 questions from each section. 2. Question no. 1 from section A and Question no.6 section B, are compulsory. 3. From the remaining questions in section A and B, solve any two questions. Section A	
Q.1	A) Compare Linux and Windows OS in detail.	05
	B) Define process. Explain various process states with a diagram.	05
Q.2	a) Examine monolithic operating system structure in detail.	07
	b) Explain different system calls for the Windows Win 32 API.	08
Q.3	a) Discuss solution to Producer – Consumer problem using sleep () and wakeup ().	07
	b) Explain following: a. Race condition b. Mutual exclusion c. Busy waiting d. Critical section	08
Q.4	a) Explain how file system is implemented and managed using inodes.	07
	b) Explain how files are structured and named in an operating system design.	08
Q.5	a) Explain priority scheduling algorithm with an example.	07
	b) Differentiate between time sharing system and Simple batch System with essential properties.	08
	Section B	
Q.6	a) Discuss the following related to disk space managementa. Block sizeb. Keeping track of free blocks.	05
	b) What is the purpose of paging in the page tables?	05

Q.7	a)	Given five memory partitions of 100 KB, 500KB, 200KB, 300KB, and 600 KB (in order), 0' how would each of the first – fit, best – fit, and worst – fit algorithms place processes of 212KB, 417KB, 112KB, and 426 KB (in order)? Which algorithm makes the most efficient use of memory?					
	b)	Suppose the OS on your computer uses the buddy system for memory management. Initially the system has a 1 MB block of memory available, which begins at address 0. Show the results of each request / release via successive figures. A: Request 25K, B: Request 500K, C: Request 60K, D: Request 100K, E: Request 30K, Release A, F: Request 20K. After memory is allocated to process F, how much internal fragmentation exists in the	08				
		system?					
Q.8	a)	Explain how I/O can be performed using Interrupt driven I/O.	07				
	b)	Explain Goals of the I/O software in detail.	08				
Q.9	a)	For a deadlock to occur, which four conditions must hold?	07				
	b)	A system has 3 types as resources R1, R2, R3, their number of units are 3,2 and 2 respectively. Four processors P1, P2, P3, P4 are currently connecting for resources in the following manner: a. P1 is holding one unit of R1 and is requesting for one unit of R2. b. P2 is holding two units of R2 and requesting for one unit each of R1 & R3. c. P3 is holding one unit of R1 &. Is requesting one unit of R2. d. P4 is holding two units of R3 & is requesting for one unit of R1. Determine which, if any, of the processes are deadlocked in this state.	08				
Q.10	a)	Explain optimal page replacement algorithm with an example.	07				
	(b)	What is disk scheduling? Explain the various goals of disk scheduling.	08				

SUBJECT CODE NO:- H-530 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT) **Theory Of Computation**

(REVISED)

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

Please check whether you have got the right question paper.

N.B

- i) Q.No.1 and Q.No.6 are compulsory.
- ii) Attempt any two questions from Q.No.2 to Q.No.5 and from Q.No.7 to Q.No.10 of each section.
- iii) Figures to the right indicate full marks.

Section A

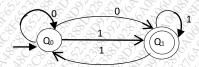
- Q.1 Attempt any five Questions from following.
 - a) Give applications of finite automata
 - b) What is relation between FA and RE
 - c) Describe the sets for $(a+b)^*$ and $(a+b)^+$ State the difference in these two sets
 - d) Differentiate DFA and NFA with transition function
 - e) Find regular expression for given language L={a, c, ab, cb, abb, cbb......}
 - f) Define mealy machine with example
 - g) Give the restriction rules of CNF and GNF
 - h) Explain parse tree
- Q.2 a) Construct DFA for checking divisibility by 3 of integer number

b) Convert following NFA to its Equivalent DFA.

07

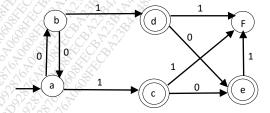
08

20



Q.3 a) Minimize following DFA

07



H-530

	 b) Attempt following 1) Find regular expression for a language containing set of all strings over {0,1} ending with "011" 2) Find regular expression of a given Language L(r)={ε, a, aa, aaa, aaaa, aaaaa} 3) For given DFA, find Regular expression 	08
	± a,b a,b	
	4) For given DFA, find Regular expression	1302 V
	$- \blacktriangleright Q_0 \xrightarrow{a,b} \bullet Q_1 \xrightarrow{a,b} \bullet Q_2 \xrightarrow{a,b} Q_3$	37
Q.4	a) Find out the Regular expression from given DFA by Arden's theorem.	08
	b) Prove that $L = \{a^n \mid n \text{ is prime}\}\ \text{not in Regular}$	07
Q.5	a) Explain Chomsky classes for Grammar	08
	b) Consider the following Grammar $S \rightarrow 0B 1A$ $A \rightarrow 0 0S 1AA$ $B \rightarrow 1 1S 0BB$ for a string "00110101" find leftmost and rightmost derivations.	07
	Section B	
Q.6	Attempt any five Questions from following a) Explain the component of PDA with neat diagram. b) What is difference in LBA & TM? c) Define class P and class NP problems d) Define acceptance of string using PDA e) Define church-turing thesis f) Differentiate decidable and undecidable problem.	10
	g) Halting problem of TM.	
26,20	h) Define universal TM.	

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07

Q.7	a) Construct PDA accepting all strings from language $L=\{WW^R WE\{0,1\}^*\}$ by empty stack	08
	b) Convert following CGF into PDA $S \rightarrow SB \mid AB$ $A \rightarrow CC$ $B \rightarrow b$ $C \rightarrow c$	07
Q.8	a) Explain multitape and multitrack variants of TM.b) Design TM that read a binary string and replace every occurrence of 111 by 101	08 07
Q.9	 a) Design a TM to accept all strings of even numbers of 1's b) Show that L = {aⁿbⁿcⁿ n ≥ 1} is not in CFL 	08 07
Q.10	a) State and explain post correspondence problem and prove that following Domino's are undecidable $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	08

b) Construct PDA even numbers of a's and b's.

SUBJECT CODE NO:- H-537 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT)

Database Management System (REVISED)

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

N.B

Please check whether you have got the right question paper.

- 1. Q.No.1 from section A and Q.No.6 from section B are compulsory.
- 2. Solve any two from remaining from Section A and Section B from each.
- 3. Assume suitable data.

Section A

Q.1	Attempt any five questions:	
	i) List out roles of database administrator.	
	ii) List out DML commands.	
	iii) Define foreign key with example.	
	iv) What is weak entity?	
	v) What is tuple and relation in relational data model?	
	vi) Define multi-valued attribute.	
	vii) What is ternary relationship?	
	viii) List out various Data Model.	
Q.2	a) Explain the advantages and disadvantages of DBMS.	08
	b) Describe three schema architecture with example.	07
Q.3	a) Explain Mapping of ER to relational model.	08
	b) What is Relational Model? Explain Domain and attribute with example.	07
Q.4	a) Explain strong and weak entity set with example.	07
غر خر	b) Differentiate	08
	i) Entity Versus Relationship	
Tool of	ii) Binary Versus Ternary Relationship	
Q.5	a) Construct the ER diagram for Hospital Management	08
	- Identify attribute, entities and relations.	
	- Identify primary key and foreign key	
	- Specify constraints	
	b) Discuss the characteristics of relation that make them different from ordinary table	es and files. 07

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		Section B	1, 2, VC
Q.6	Attemp	t any five questions:	210
	i)	What is serial schedule?	
	ii)	What is conflict equivalent?	
	iii)	What is multivalued dependency?	
	iv)	What is functional dependency?	
	v)	Why normalization is necessary?	2000
	vi)	What is order by clause in SQL?	ST P
	vii)	What is selection and projection in relational algebra?	3,50,7
	viii)) What is natural Join?	8 13 m
Q.7	a)	Explain Boyce-Codd normal form (BCNF) with example.	08
		Explain second normal form with example.	07
Q.8	a)	Consider the following relational schema of banking example.	08
		branch (branch _name, branch _city, assets)	
		customer (customer _name, customer _city, customer _street)	
		account (account _number, branch _name, balance)	
		loan (loan _number, branch _name, amount)	
		depositor (customer _name, account _number)	
		borrower (customer _name, loan _number)	
		Write following queries using SQL?	
		i) Find balance of customer whose account number is 3233	
		ii) Find the names of customer who have loan at bank and the loan amount.	
		iii) Find all customers who have an account from at least uptown branch.	
		iv) Find all loans less than Rs.34000.	
	b)	What is join dependency? Explain fifth normal form with example.	07
		5	
Q.9	a)	Explain aggregate functions in SQL.	07
-	b)	Explain union, intersection, difference and cross product in relational algebra.	08
Q.10	a)	What is concurrency control? Explain two phase lock protocol.	08
600	(b)	What is transaction? Explain ACID properties of transaction.	07

SUBJECT CODE NO:- H-544 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT) Programming In Java

Programming In Java (REVISED)

[Time:	Three 1	Hours] [Max.Marks:	80]
N.B		Please check whether you have got the right question paper. 1. Q.No.1 Q.No.6 are compulsory. 2. Attempt any two questions from remaining questions of each section. 3. Assume suitable data wherever necessary. Section A	
Q.1	a) b)	any two: List out wrapper classes in Java Explain features of java Define class, object.	10
Q.2	a)	Differentiate between abstract class and interface.	07
	,	How to create user defined package?	08
Q.3	a)	What is exception handling? How to handle multiple exceptions.	07
		How to create user defined exception?	08
Q.4	a)	Explain static, inner class with code snippet.	07
	b)	Write a java program to generate random numbers / integers in 499 to 999 ranges.	08
Q.5	a)	Write a java program contains "Car" as abstract class and an instance variable reg no, one concrete method openTank (), two abstract methods steering (int direction, int angle), braking (int force) and its implementation sub classes Tata, Mahindra which overlies above methods.	08
	b)	Explain and differentiate between, final, finally, finalize	07
		Section B	
Q.6	Solve	any two:	10
2001	a)	Define stream,	
3, 4, 40,	(b)	Explain thread priority	
300	(c)	How to perform action on control component	
Q.7	a)	Write a java program to demonstrate object serialization.	07
	b)	Explain thread life cycle.	08
Q.8	a)	Explain applet life cycle.	07
	b)	Write a java program read data from keyboard contains student id, name, branch & write it to "student.txt" file.	08

Q.9 a) Explain multiple ways of synchronizing thread.

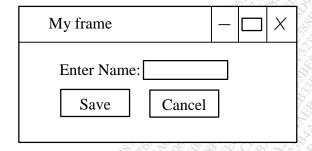
07

b) Write a java program for applet with button & label as "food messing" as message to be displayed

08

Q.10 a) Write a java program which shows following output window using AWT.

08



b) Write a java program to create "My Thread" class with run () method then attach a thread to this MyThread class object.

07

SUBJECT CODE NO:- H-553 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT)

Elective –I: Computer Network Architecture And Protocols (REVISED)

[Time:	Three Hours] [Max.Marks	:80]
N.B	 Please check whether you have got the right question paper. 1. Q.No.1 from section A and Q.No.6 from section B, 10 marks each, will be compulsory. 2. From the remaining questions in Section A & B, Solve any two questions, marks each. 	
	Section A	
Q.1	Attempt any five questions: a) What is flooding b) What is LSDB? c) What are the services provided by transport layer? Explain any one. d) What is subnet addressing? e) Difference between IPV 4 & IPV 6. f) What is DHCP? List down its message types? g) Difference between Adaptive & Non-Adaptive Algorithms.	10
Q.2	a) Explain DHCP in detail.b) What are the network layer design issues? Explain them in detail.	07 08
Q.3	a) What is the need of routing algorithm? Explain in detail about Link-State Routing.b) With neat diagram, explain the operations of BGP.	07 08
Q.4	a) What is TCP? Explain the process of three-way handshaking in detail.b) Explain in detail, State-Transition Diagram in TCP.	07 08
Q.5	Write short note on: (any three) a) NAT b) ICMP c) Socket Programming d) Multiplexing & Demultiplexing e) CIDR	15
	Section B	
Q.6	Attempt any five questions: a) What is LAN emulation? b) Which are the MAC sub-layers in IEEE 802.11? c) What is WAP?	10

	d) Difference between PVC & SVC.	
	e) What are TP, VP & VC in an ATM network?	
	f) What is SMI?	
	g) What is TELNET?	
Q.7	a) Draw a neat diagram of ATM Architecture and explain it in detail.	07
	b) Explain in detail about DCF.	08
Q.8	a) Discuss the congestion control & quality of service in ATM network.	0.000
	b) What is wireless application protocol? Explain it in detail.	08
0.0	a) What is CNIMD9 Explain it in datail	
Q.9	a) What is SNMP? Explain it in detail.	07
	b) What are TELNET & SSH? Explain them in detail.	93.67.67 08
Q.10	Write short note on: (any three)	15
Q. 10	a) H. 323	33,
	b) CSMA/CA	
	c) SIP	
	d) ATM LAN's	
	e) TCP Over Wireless Network	

SUBJECT CODE NO:- H-555 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT)

Elective -I Embedded System (Revised)

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

Please check whether you have got the right question paper.

N.B 1) Q. No. 1 & Q. No. 6 are compulsory.

2) Solve any 2 questions from remaining from each section.

Section A

Q.1	Solve	any 2 questions from following:-	10
	a) b) c)	Explain assembly language vs embedded C. Explain difference between microprocessors and microcontrollers. State features of Arduino uno & Raspberry Pi.	
Q.2	a) b)	Compare RISC & CISC architecture and discuss features of ARM7 wrt. RISC/CISC. Explain communication protocols in detail.	08 07
Q.3	a) b)	Explain design metrics and its optimization in embedded system. Discuss in detail components of embedded system.	08 07
Q.4	a)	Explain following I/O devices with respect to embedded system. i) ADC ii) Keypad	08
	b)	Explain 8-bit 8051 microcontroller architecture.	07
Q.5	Solve	any 3 from following:-	15
	a) b) c) d)	State features of 8051 and ARM7. Write short note on CPSR & SPSR. Explain in detail serial communication vs. parallel communication. Explain classification of embedded system & it's characteristics.	

Section B

Q.6	Solve any 2 questions from following:	10
	 a) Discuss in detail RTOS services in contrast with traditional OS. b) Explain μ cos-II in detail. 	
	b) Explain μ cos-II in detail.c) Enlist different directories in Linux and explain in detail.	
Q.7	a) Explain in detail RTOS Kernel architecture.	07
	b) Discuss in detail the following with respect to RTOS.	08
	i) Message Queues	61 21 1000
	ii) Mailbox	12 19 19 19 19 19 19 19 19 19 19 19 19 19
Q.8	a) Explain different types of file system in Linux.	08
	b) Discuss in detail synchronization in μ cos-II.	07
Q.9	a) Explain in detail Linux Kernel.	08
	b) Discuss in detail Inter-task communication in μ cos-II.	07
Q10	Write short notes on (any 3)	15
	a) Semaphore in RTOS	
	b) Interrupt Service Routine (ISR)	
	c) TCP/IP Networking	
	d) Features of μ cos-II	

[Max.Marks:80]

Total No. of Printed Pages:2

[Time: Three Hours]

SUBJECT CODE NO:- H-172 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT)

Object Oriented Programming (REVISED)

	4	Please check whether you have got the right question paper.	
N.B		Q.No.1 and Q.No.6 are compulsory.	33,37,0
	2. \(\frac{9}{2} \)	Solve any two from each section.	
		Section A	150
Q.1	Solve	any five:	10
		What is the structure of C++ program?	
		What is the use of scope resolution operator: in C++?	
	c)	Write any four characteristics of friend function.	
	d)	Write any four rules for overloading operators.	
		How does constructor differ from normal functions?	
		When will you make a function inline? Why?	
		How to create object in C++?	
Q.2	a)	Explain the following terms of OOP.	08
₹	α,	i) Polymorphism	
		ii) Inheritance	
		iii) Data hiding	
		iv) Class & object	
	b)	Describe the concept of call by value and call by reference with an example.	07
Q.3	(a)	What is the importance of static members in C++? Explain with example.	07
	b)	Write a program to create class manager & implement concept of array of object.	08
Q.4	a)	Explain parameterized and copy constructor, with suitable example.	07
	b)	Write a program in C++ to overload unary minus operator using friend function.	08
Q.5	Write	short notes on (any three)	15
		Recursive function	
5 N S N	(b)	Type casting	
		Nesting of member function	
Se Cons	(d)	Destructor	

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Section B

Q.6	Solve any five	10
	a) What is use of 'this'?	SYNA
	b) Define pure virtual function.	\$\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\
	c) What are the generic classes in templates?	Sid Alich
	d) What is 'function overloading'?	
	e) Describe 'Try' and 'Catch' block.	
	f) List various file modes available in C++.	7000
	g) How to open and close the file?	
Q.7	a) Define inheritance and write a program to illustrate multilevel inheritance.	97 07
~		0,
	b) Write a program to implement Run Time Polymorphism in C++.	08
Q.8	a) Explain the stream classes in C++.	07
	b) Write a C++ program to read the file name and display the context of a file on screen.	08
Q.9	a) Write a program using the template concept to implement stack.	08
	b) Explain how exception handling mechanism work in C++?	07
Q.10	Write short notes on (any three)	15
	a) Template class	
	b) Virtual base class	
	c) Abstract class	
	d) Manipulators	
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	

# SUBJECT CODE NO:- H-173 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT) Computer Graphics (OLD)

[Time:	: Three Hours] [Max.Marks	: 80
N.B	Please check whether you have got the right question paper.  i. Q.no 1 and Q.no 6 is compulsory.  ii. Solve any two questions from remaining questions in each section.	
	Section A	
Q.1	Solve all of the following questions.	10
	<ul><li>a) Enlist and explain the various application areas of computer graphics.</li><li>b) Write the steps of DDA line drawing algorithm.</li></ul>	
Q.2	Solve the all following questions.	15
	<ul><li>a) What is open GL and discuss the basic operation of open GL.</li><li>b) With suitable diagram explain the architecture of Random scan display.</li><li>c) List and explain the logical classes of graphical input devise.</li></ul>	
Q.3	Solve all of the following questions.	15
	<ul><li>a) Write a short note on: Trackball and Space ball.</li><li>b) Explain the major components of Graphics pipeline and there interaction</li><li>c) Explain synthetic camera model for imaging system.</li></ul>	
Q.4	Solve all of the following questions:	15
	<ul><li>a) Explain: RGB colour model and indexed color model.</li><li>b) Write a short note on: open GL pipeline.</li><li>c) What is mean by display file? What is the function of segmenting display file?</li></ul>	
Q.5	Solve all of the following questions.	
	<ul><li>a) Explain the polygon basics and different types of polygons in open GL.</li><li>b) Write a program in open GL to draw a small box at each location on the screen, wherever the left mouse button is clicked.</li></ul>	08 07
87.0Y29	\$\\\{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha}\alpha_{\alpha}\\\\ \alpha_{\alpha}\\\ \alpha\}\}\}}}}}}}}}}}}}}}}}}}}}}}\timetintinting \tank \tank \tank \tank \tank \alpha \alpha \alpha \alpha^{\alpha_{\alpha_{\alpha_{\alpha_{\alpha_{\alpha}\alpha_{\alpha}\alpha^{\alpha_{\alpha}\}\}}}}}}}}}}}}}}}}}}}}}}} t\tank \tank \alpha \alpha^{\alpha_{\alpha}\alpha^{\alpha_{\alpha}\alpha^{\alpha_{\alpha}\alpha^{\alpha_{\alpha}\an\alpha^{\alpha_{\alpha^{\alpha_{\alpha^{\alpha_{\alpha^{\alpha_{\alpha}\an\an\an\an\an\an\an\an\an\an\an\an\an\	

			Section B	
Q.6	Solve all of all the following que	stions.		10
	a) Obtain the homogeneous	coordinat	es for :	
	,	i)	Translation	250
		ii)	Scaling	
		iii)	Rotation	
	b)write a short note on:			3770
		i)	Parallel projection &	
		ii)	Perspective projection.	) ^v
Q.7	Solve all of following questions:			15
	<ul> <li>a) Write a short note on: into</li> <li>b) Perform the counter clock (1,1).</li> <li>c) Define and explain hue, s</li> </ul>	cwise 45 ⁰	rotation of triangle A(2,3),B(5,5),C(4,3) about point	
Q.8	Solve all of following questions:			15
	a) Write a short note on : vie	wing tran	stormation	
			subdivision line clipping algorithm in details.	
	c) prove that two scaling tra			
	i.e. $S_1 * S_2 = S_2 * S_3$			
Q.9	Solve all of following question:		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	
		xplain the	e antialiasing and the various method of antialiasing.	07
	b) Show how shear transform	nation ma	y be expressed in terms of rotation and scaling.	08
Q10	Solve all the following questions	9,747 9,747,47		
2	a) Describes in details, the d	ifferent li	ght sources in open GL.	07
175	b) Distinguish between Gou	raud and p	phong shading methods.	08

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Total No. of Printed Pages:2

# SUBJECT CODE NO:- H-106 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT) Advanced JAVA (OLD)

[Time	:: Three Hours]	[Max.Marks:80]
N.B	Please check whether you have got the right question paper. i) Question No.1 and 6 are compulsory. ii) Attempt Any two questions from each section from remaining. iii) Figures to the right indicates full marks. iv) Assume Suitable data if necessary.	
	Section A	8, 9, 9 9, 9, 9, 8,
Q.1	Attempt any five questions:	10
	<ul> <li>(a) What is J2EE? Give three Layers of J2EE architecture.</li> <li>(b) Define directives.</li> <li>(c) What is http protocol?</li> <li>(d) Enlist four action tags in JSP.</li> <li>(e) What is servlet config?</li> <li>(f) Draw Model-I &amp; Model-II architecture in JSP.</li> <li>(g) What is request header?</li> <li>(h) List the types of application development of java.</li> </ul>	
Q.2	<ul><li>a) What is RMI? Explain RMI architecture with suitable example.</li><li>b) What is JSP? Explain features of JSP over other languages.</li></ul>	08 07
Q.3	<ul><li>a) Explain lifecycle of servlet in detail.</li><li>b) Write JSP code to display data from student database.</li></ul>	08 07
Q.4	<ul><li>a) Write short note on J2EE architecture.</li><li>b) Write a servlet code to read html data &amp; display data on client browser.</li></ul>	07 08
Q.5	<ul><li>a) Explain N Tier architecture in detail.</li><li>b) What are scripting elements describe with suitable example</li></ul>	08 07
	Section B	
Q.6	Attempt any five questions:  a) Enlist Java mail protocols. b) Explain struts controller. c) Enlist hibernate components. d) Enlist types of beans. e) What is MIME?	10

#### **EXAMINATION NOV/DEC 2018**

		H-106
	f) Enlist JSF lifecycle stages.	
	g) What is ORM?	
	h) Enlist facelets tags of JSF.	
Q.7	a) Explain the terms: i) UDDI ii) WSDL iii) XML iv) SOAP	08
	b) Explain following terms: i) Clauses ii) Aggregate function iii) Sub queries.	07
Q.8	a) Explain stateless and stateful session beans.	08
	b) Write a program to read mail using java mail API	07
Q.9	a) Explain what is JSF? Explain request processing lifecycle of JSF.	08
	b) Explain SOA architecture in detail.	07
Q10.	a) Explain Architecture of JSF in detail.	07
<b>(</b> -0.	b) Explain MVC? Explain struts validator framework in detail	08

[Max. Marks: 80]

Total No. of Printed Pages:2

[Time: Three Hours]

## SUBJECT CODE NO:- H-317 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT)

### Database Management System (OLD)

			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	5.VE
			Please check whether you have got the right question paper.	X E
N.B	1.	_	.1 from section A and Q.No.6 from section B are compulsory.	Spring
	2.		any two questions from remaining from section A & B.	1
	3.	Assur	me suitable data.	
			Section A	
Q.1	Attem	pt anv	five:	10
			ne a NULL value? How do you retrieve NULL values from the database?	
	2)	Store	ed Vs derived attribute.	
	3)	Expl	ain distributed database.	
	4)		t do you mean by mapping cardinalities? Explain various types of mapping cardinalities.	
	5)		t do you mean by integrity constraints?	
			out major components of DBMs environment.	
	7)		t do you mean by term data abstraction.	
	8)	What	t do you mean by instance and schema? Explain difference between them.	
Q.2	a)	Desig	gn a generalization –specialization for motor vehicle sales company. The company sells	07
	,	•	orcycle, passenger cars, vans and buses. Justify your placement of attributes at each level	
			erarchy.	
		1900 1900		
	b)	Wha	t is a type inheritance? How does superclass / subclass relationship represent type	08
	5	inher	itance?	00
0.2	2027			07
Q.3	(a)	Desc	ribe the components of DBMS.	07
8	6	Expl	ain data models with example.	08
2008		Capi		00
Q.4	a)	Expl	ain following terms:	07
3000	VOY 500	i) .	Primary key	
300	\$ 70° E	ii)	Candidate key	
		iii)	Super key	
	b)	Defii	ne and discuss the role of data administrator in detail.	08
77. 2 . 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.		323		o-
Q.5	(a)	V The all	fy the following statements.	07
PAY A	SA S	i)	Relation must have key	
3,00°	50VXX	ii)	Handling NULL values is difficult	

	b)	Define following terms: i) Simple Vs composite attribute ii) Single Vs multivalued attribute iii) Strong Vs weak entity set	08
		Section B	
Q.6	1) 2) 3) 4) 5) 6) 7)	Explain transaction states. Explain orderby and groupby clause. Define set operation in relational algebra. Define attribute closure. What is lost update anomaly? Define conflict serializability. List different types of joins. What is lossless decomposition?	10
Q.7	a)	Describe properties of relational decomposition.	07
	b)	What is Insert, Update and Delete Anomaly.	08
Q.8	a)	What is schedule? Explain serial and non-serial schedule with example.	07
	b)	Explain following terms: i) Timestamp based protocol ii) Validation based protocol	08
Q.9	a)	Define view. State the condition of updatable view.	07
	b)	Explain select, project, rename and assignment operation of relational algebra.	08
Q.10	a)	Consider following relational schema: Student (rollno, name, class) Books (bookid, bname, Author, price) Issues (rollno, bookid, date_of_issue) Write down SQL Queries for following statements. i) Display the name of student who issued book_name "Programming in Java" ii) Find out total expenditure on books. iii) Find out name of students those who have issued book "Database Management System" on date "27-Nov-2017". iv) Display the titles of book written by Author "Horowitz Sahani"	08
	b)	Describe 3NF and BCNF in detail.	07

SUBJECT CODE NO:- H-306 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT) Data Warehousing & Data Mining

Data Warehousing & Data Mining (REVISED)

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

Please check whether you have got the right question paper.

N.B

Q.4

- 1. Q.1. and Q.6. are compulsory.
- 2. Solve any two from questions 2,3,4,5 and any two from question 7, 8, 9, 10.

Section A

Q.1 a) Define Data warehouse? Explain the need for data warehouse. 03 b) What is KDD? Explain various components of KDD. 03 c) Explain various steps in data cleaning. 04 Q.2 a) What is an attribute? Explain all types of attributes. 07 b) What is data mining? What kind of patterns can be mined with data mining? Explain in detail. 08 Q.3 a) Consider the following data: 36, 30,50,47,52,56,52,60. Find mean, median, mode, variance 07 and standard deviation. b) Explain proximity measure for nominal, binary and ordinal attributes with example. 08

200	A	A_2
X_1	1.5	1.7
X_2	275	1.9
X_3	1.6	1.8
X_4	1,2	1.5
X	015	1.0

a) Consider the following 2-D dataset

Compute Euclidean distance, Manhattan distance, minkowski distance & cosine similarity Between A_1 and A_2 .

b) What are the different method for handling missing values in the tuples.

07

08

08

- Q.5 a) What is OLAP? Explain various operation that can be performed on data cube.
 - b) Find chi square value for following contingency table for two attributes gender & reading type 07

168935	Male	Female	Total
Action	300	400	700
Non-fiction	100	800	900
500000000000000000000000000000000000000	400	1200	1600

- \		- C-11	4:41- 7 4		(00) - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
a)	Transaction	Item-bought	set with / trans	sactions. (Let min-su	p=60% and min-coef=80%)
	101	I_1,I_2,I_5	_	2000 2000	
	101	I ₁ ,I ₂ ,I ₅ I ₂ ,I ₄		2000 00 00 00 00 00 00 00 00 00 00 00 00	
	103	I_{2},I_{4} I_{2},I_{3}			1, 20 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	104	I_{1},I_{2},I_{4}			
	105	I_1, I_2, I_3	- SSA	7 7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	
	106	I ₁ ,I ₂ ,1 ₃			1, 2, 2, 2, 3, 4, 4, 4, 4, 2, 9, 9, 4,
	107	I_1,I_2			
		all frequent item	set with MSC		
	т) гіна	an neducin nen	i serwinianisc		
a)	2) Find Explain rule Consider the (2,4,8,10,12 And K=2 th	the strongest ass based classifier e following data ,3,20,30,11,13,2 en determine two	with example item in cluster 5) o cluster using	. K-mean clustering.	
a)	2) Find Explain rule Consider the (2,4,8,10,12 And K=2 th Draw and ex	the strongest ass based classifier e following data ,3,20,30,11,13,2 en determine two xplain BI archite	with example item in cluster 5) o cluster using cture with all	K-mean clustering.	
a)	2) Find Explain rule Consider the (2,4,8,10,12 And K=2 th Draw and ex	the strongest asses based classifier to be following data 3,20,30,11,13,2 en determine two kplain BI archite ecision tree (ID3)	ociation rules with example item in cluster 5) o cluster using cture with all its algorithm or	: K-mean clustering. its components.	-
a) b)	2) Find Explain rule Consider the (2,4,8,10,12 And K=2 th Draw and explain the disconnection of the disconnection	the strongest asset based classifier to be following data 1,3,20,30,11,13,2 then determine two plain BI archite the ecision tree (ID3). Experience	with example item in cluster 5) o cluster using cture with all is algorithm or Salary	: K-mean clustering. its components. following dataset a Qualification	Post
a) b)	2) Find Explain rule Consider the (2,4,8,10,12 And K=2 th Draw and explain the discourse of the consideration of t	the strongest asses based classifier to be following data 1,3,20,30,11,13,2 to determine two explain BI archites the ecision tree (ID3 Experience 6	item in cluster ocluster using cture with all solutions or Salary 70000	K-mean clustering. its components. a following dataset a Qualification M.E	Post Associate
a) b)	2) Find Explain rule Consider the (2,4,8,10,12 And K=2 th Draw and explain the description of the descriptio	the strongest asset based classifier to based classifier to be following data (3,20,30,11,13,2) and determine two explain BI archite to be ecision tree (ID3 Experience 6 5	item in cluster 5) o cluster using cture with all 3) algorithm or Salary 70000 30000	K-mean clustering, its components. a following dataset a Qualification M.E B.E	Post Associate Assistant
a) b)	2) Find Explain rule Consider the (2,4,8,10,12 And K=2 th Draw and explain the discourse of the consideration of t	the strongest asset based classifier to be following data 1,3,20,30,11,13,2 to determine two explain BI archite the ecision tree (ID3 Experience 6 5 6	item in cluster (5) o cluster using cture with all (5) algorithm or Salary (7000) (3000) (4000)	K-mean clustering. its components. a following dataset a Qualification M.E B.E B.E B.E	Post Associate Assistant Assistant
a) b)	2) Find Explain rule Consider the (2,4,8,10,12 And K=2 th Draw and ex Apply the d Name Manish Nisha Rutu Rahul	the strongest asses based classifier to be following data 1,3,20,30,11,13,2 to determine two explain BI archites the ecision tree (ID3 Experience 6 5 6 4	item in cluster 5) o cluster using cture with all 3) algorithm or Salary 70000 30000 40000 50000	K-mean clustering, its components. a following dataset a Qualification M.E B.E B.E M.E	Post Associate Assistant Assistant Assistant
a) b)	2) Find Explain rule Consider the (2,4,8,10,12 And K=2 th Draw and explain the Apply the d Name Manish Nisha Rutu Rahul Seema	the strongest asset based classifier to based classifier to be following data 1,3,20,30,11,13,2 ten determine two explain BI archite the ecision tree (ID3 Experience	item in cluster 5) o cluster using cture with all solution or Salary 70000 30000 40000 50000 35000	K-mean clustering. its components. a following dataset a Qualification M.E B.E B.E M.E B.E B.E	Post Associate Assistant Assistant Assistant Assistant Assistant
a) b) a)	2) Find Explain rule Consider the (2,4,8,10,12 And K=2 th Draw and ex Apply the d Name Manish Nisha Rutu Rahul Seema Rushi	the strongest asses based classifier to be following data 1,3,20,30,11,13,2 to determine two explain BI archites the ecision tree (ID3 Experience 6 5 6 4	item in cluster (5) o cluster using cture with all (7) algorithm or (8) al	K-mean clustering. its components. a following dataset a: Qualification M.E B.E B.E M.E B.E M.E B.E M.E B.E	Post Associate Assistant Assistant Assistant

[Max.Marks: 100]

Total No. of Printed Pages:2

[Time: Three Hours]

SUBJECT CODE NO:- H-279 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT) Computer Graphics (REVISED)

) (), (~) ~
N.B		Please check whether you have got the right question paper. i. Q.No.1 from section A and Q.No.6 from section B are compulsory. ii. Attempt any two questions from the remaining questions in each section iii. Assume suitable data, if necessary. iv. Figures to the right indicate full marks.	
		Section A	
Q.1	Attem	ppt any five:	10
	2) 3) 4) 5)	Define random scan, raster scan displays. What is aspect ratio? Distinguish between convex &concave polygon. Define frame buffer. How to draw parallel lines using OpenGL? What is animation?	
		Enlist application of computers graphics. Define API.	
Q.2		What is display list? Give suitable example in OpenGL. Rasterize the line with end points (2, 3) (12, 8) using DDA line algorithm.	08 07
Q.3	1999 1999	Write OpenGL code to draw following primitives- i. Line loop ii. Polygon With neat block diagram explain display processor.	08 07
Q.4	a)	Write down & explain midpoint circle algorithm. How to define menu in OpenGL? Give suitable example.	08 07
Q.5	Where	short notes on (any three)	15
	2. 3. 4.	Logical classification of i/p devices. RGB color model. Flood fill algorithm. GUI in OpenGL. Major areas of concern in the application of computer graphics.	

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Section B

Q.6	Attem	pt any five.	10
	1)	What is GLU & GLUT?	
	2)	What do you mean by co-ordinate system?	
	3)	Define pivot point for rotation.	3,50
	4)	What is viewing?	
	5)	Define composite transformation.	170
	6)	What is orthographic projection?	3
	7)	What is visible surface determination?	
	8)	Differentiate uniform & differential scaling.	
Q.7	a)	With example explain the terms-	08
	ŕ	i) Projection	
		ii) Center of projection	
		iii) Direction of projection	
	b)	Explain how rotation, translation &scaling is considered in OpenGL.	07
Q.8	a)	Prove that multiplication of transformation matrices for two successive rotations is commutative.	08
	b)	Define window and viewport, also derive window to viewport transformation.	07
Q.9	a)	Clip a line between $P_1(70,20)$ & $P_2(100,40)$ using Cohen-Sutherland algorithm against a window with lower left corner (50, 10) and upper right corner (80, 40).	08
	b)	Explain Z- buffer algorithm.	07
Q.10	Write	short note on (any three)	15
	290	Back face removal.	
	- C	Viewing in computer graphics.	
		Homogenous co-ordinates	
.00		Clipping operations.	
5,0		Computer imaging.	
V 1 V	JULAP AD "A	> \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	

SUBJECT CODE NO: H-280 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT)

Object Oriented Programming Using C++ (OLD)

[Time:	Three	e Hours]	Max.Marks:80]
N.B		Please check whether you have got the right question paper. i) Q.No.1 from section A and Q.No.6 from section B are compulsory. ii) Solve any two questions from the remaining from each section. iii) Assume suitable data, if necessary.	
		Section A	LEST EN
Q.1		any five.	10
		What are the different types of constructors?	
	,		7
	e)	Describe purpose of protected access specifier in C++?	
	f)	What do you mean by cascading of I/O operators?	
	g)	What is the structure of C++ program?	
	h)	State characteristic of static data member.	
Q.2	a) b)		07 nming 08
	2)	example.	g
Q.3	a)	Write a program to swap two numbers using call by reference.	07
	b)	What is a conversion function? How is it created? Explain its Syntax.	08
Q.4	a)	Create a class FLOAT that contains one float data member. Overload all four art operators so that they operate on the objects of FLOAT.	thmetic 08
ي.	b)	What is the significance of static members in C++? Explain with example.	07
Q.5	a)	What is destructor? Explain with programming example.	07
	b)	Write a program to demonstrate use of multiple inheritances.	08

	Section B	
Q.6	Solve any five.	10
	a) Define exception.	VA S
	b) How parameters are passed to base class constructor?	255
	c) How to open and close file?	
	d) What is container?	900
	e) What do you mean by function? What is the prototype of function?	3,30
	f) What is abstract class?	200
	g) What is function overriding?	3770
	h) What is input stream and output stream?	
Q.7	a) Explain vector template class.	07
	b) Explain I/O Manipulators in detail.	08
Q.8	a) Write a program to implement hybrid inheritance.	07
	b) Write a program to read and write objects on file.	08
Q.9	a) Explain functions seekg, seekp, tellg, tellp. Give proper example which show how they are used for setting pointers during file operation.	10
	b) Write short note on exception handling.	05
Q.10	a) What is virtual function? Write a program to demonstrate virtual function.	08
	b) Differentiate between static and dynamic binding with example.	07

SUBJECT CODE NO:- H-296 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT) Software Engineering

Software Engineering (OLD)

[I IIII	e: 1nre	ee nours]	viarks: 80]
N.B		Please check whether you have got the right question paper. i) Q.No.1 and Q.No.6 are compulsory. ii) attempt any two questions from each section iii) figures right indicates full marks iv) assume suitable data if necessary Section A	
Q.1	Attem a) b) c) d) e) f) g) h)	List out software characteristics What is data flow diagram? What is process framework? What is COCOMO? Justify the statement "s/w doesn't wear out" Explain data and function modelling What are the components of software? Write down the phase of CMM	10
Q.2	a. b.	What are the characteristics to be considered for the selection of life cycle model? Explain the analysis and design model	07 08
Q.3		What is modularity? Explain it by giving example What are the characteristics of good SRS? Give IEEE format of SRS document	07 08
Q.4	N. V.	List out different software process models. Explain any one in detail Describe data Modelling with suitable example	07 08
Q.5	AXX (7 A V	What are the principles of UI design? Explain Explain Top-down and bottom up programming structure	07 08

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		Section B	
Q.6	Attempt fiv	ve questions	10
	_	What is use case analysis?	
	b)	List out the attributes of web based system	
	c)	Explain the term project scheduling	
	d)	State the objectives of testing	40° 0.40°
	e)	What is web app engineering process?	SYL DO SOLL
	f)	Define SCM	33877
	<i>U</i> ,	Define the term OOA and OOP	
	h)	Write the definition of software testing?	
Q.7	a. Wh	at is software project management? Explain different management activities	07
		plain the project scheduling with timing diagram	08
Q.8	a. Wh	at is scenario based testing? Explain in detail	07
	b. Wh	at is risk management? Explain different risk management techniques	08
Q.9	a. Exp	plain in brief requirement gathering for web app	07
		w the sequence diagram to explain the working of washing machine	08
Q.10	Solve any t	hree short notes	15
	a)	CRC cards	
	b)	Agile planning	
	c)	Collaboration diagram	
	d)	Test cases	
	e)	Web app engineering layers	

SUBJECT CODE NO:- H-268 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT) Software Testing and Ovelity Assurance

Software Testing and Quality Assurance (OLD)

		(OCD)	10,800,800
[Time:	Three H	fours]	ax. Marks: 80
N.B		Please check whether you have got the right question paper. i) Q.No.1 from section A and Q.No.6 from section B are compulsory. ii) Attempt any two questions from the remaining questions in each section A	tion
Q.1	1) 2) 3) 4) 5) 6) 7)	Define quality control What is volume testing? Explain error guessing. List the elements of SQA. Differentiate between load and stress How to identify test cases? Explain software reliability. What is Hallway testing?	10
Q.2	a)	Explain in detail McCall's factor model	07
	b)	Explain performance testing in detail.	08
Q.3	a) (Explain any two S/W development models.	07
	(b)	Explain equivalence partitioning & BVA	08
Q.4	(a)	Explain unit testing	07
	b)	What is black box testing? Explain any one black box testing method.	08
Q.5	1) 2) 3)	a short note on (any three) CMM Unit testing Quality concept Condition coverage	15

	Section B	
Q.6	Answer the following (any five)	10
	1) List different types of tools and skills of tester	2 2 2 V A V S
	2) What are the important factors of test plan	
	3) Define testing strategies.	
	4) What is the impact of severity &priority in a project.	
	5) Explain any one automation testing tools with respect to it's features.	
	6) Differentiate between test reporting & defect reporting.	
	7) What are the benefits of test documentation?	
	8) State functional and regression testing tools	
Q.7	a) Explain context sensitive & analog mode of winRunner in detail	08
	b) Explain testing strategies.	07
Q.8	a) Explain test case template with two examples.	08
	b) Explain defect lifecycle in detail.	07
Q.9	a) What are the advantages and disadvantages of using testing tools.	07
	b) Explain qualitative and quantitative analysis in detail.	08
Q.10	Write short notes on (any three)	15
	1) Dynamic testing tool	
	2) Defect management tool	
	3) Test Data	
	4) Strategic test management	
	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	

SUBJECT CODE NO:- H-185 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE) Soft Computing

Soft Computing (REVISED)

[Time:	Three	Hours]	[Max.Marks: 80]
N.B		Please check whether you have got the right question pape i) Q.No.1 from section A and Q.No.6 from section B are computii) Attempt any two questions from the remaining. iii) Assume suitable data if necessary. And state it Cleary. Section A	
Q.1		Differentiate soft computing and hard computing. Explain characteristics of neural networks.	05 05
Q.2		Explain Adaline model in detail. Explain pattern recognition problem.	07 08
Q.3		Explain single layer and multilayer perceptron in detail. Explain error correction and gradient decent rules in details.	07 08
Q.4		Explain back propagation learning algorithm in details. Explain pattern classification with example.	07 08
Q.5		Explain architecture of FBNN. Explain associative memory.	07 08
A PARTY		Section B	
Q.6		Explain pattern clustering in details Explain self-organization map.	05 05
Q.7		Explain learning vector quantization. Explain fuzzy sets.	07 08

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Q.8	a) Explain fuzzification and defuzzification to crisp sets.b) Explain fuzzy relational data models in details.	07 08
Q.9	a) Explain properties of membership function.b) Explain competitive learning.	07 08
Q.10	a) Explain working principle of genetic algorithm.b) Explain application of fuzzy control.	07 08

SUBJECT CODE NO:- H-186 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (IT) Big Data Analytics (REVISED)

[Time: Three Hours]		urs] [Max.Mai	[Max.Marks:80]	
N.B		Please check whether you have got the right question paper. i) Q.No.01 and Q.No.06 are compulsory. ii) Attempt any other two Questions from each section from Remaining.		
		Section A		
Q.1	a) b)	What are real time & non-real time requirements in Big Data? What is Virtualization? Explain how it supports distributed computing?	05 05	
Q.2	a) b)	What is Big Data? Explain its types? Explain in detail about NoSQL database management in Big Data?	08 07	
Q.3	a) b)	What is hypervisor? The Role of Hypervisor in virtualization Explain? What is text Analytics? Discuss different techniques for Analysis of Extraction	08 07	
Q.4	,	Explain in detail layers of Big Data Stack Define Business Intelligence? Explain the Role of Business Intelligence in Big Data Analytics.	08 07	
Q.5	a) b) c)	Any three (5 marks each) Graph Databases Text Analytics tools for Big Data Operational Databases Scope & Applications of Big Data	15	
S		Section B		
Q.6		What is hadoop Compare it with other distributed file systems? Explain the command line interface used in Hadoop file system.	05 05	
Q.7		Explain in detail HDFS Architecture with a suitable diagram What is Map Reduce. Write a Program for Map Reduce Word Count.	08 07	
Q.8		What is HBase? Explain its Architecture with a suitable diagram. What is the role of distcp in Hadoop Distributed file system?	08 07	
Q.9		Discuss the case study: Hadoop usage at last Fm. Explain following Map Reduce concepts in detail: Job Tracker and Task Tracker	08 07	

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Q.10 Solve any three (Five marks Each) 15

- a) Hadoop Pipesb) Pig Latin
- c) Hive
- d) Zookeeper

SUBJECT CODE NO: H-375 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE)

Principles of Compiler Design (REVISED)

[Time:	Three I	Hours] [Max.Marl	ks:80
N.B		Please check whether you have got the right question paper. i. Q. No.01 and 06 are compulsory. ii. Attempt any other two question from each section. iii. Assume suitable data if necessary.	
		Section A	
Q.1	a)	Differentiate between parse tree and syntax tree?	05
	b)	What are translators? Explain compilation and execution process?	05
Q.2	a)	What is compiler? For the following statement write the output after every phase of compilation? Example: position = initial + rate * 60	07
	b)	Discuss the structure of LEX program? Write a LEX program to recognize letters, digits, white spaces & numbers?	08
Q.3	a)	Calculate the following Grammar: $S \rightarrow aB \mid bA$ $A \rightarrow a \mid as \mid bAA$ $B \rightarrow b \mid bs \mid aBB$ Derive the string "aaabbabba" using above grammar by left most derivation and right moderivation? Also draw parse tree for both?	07 est
É	b)	What is top – down parsing? What are the problem with top down parsing?	08
Q.4	a)	Explain the specifications of tokens?	07
	b)	What is Automatic parser generator yaac? Write a yaac program for simple desk calculator?	08
Q.5	a) b) c)	Input buffering LALR FIRST & FOLLOW with example Bootstrapping	15
30 80 V	2,5,79,9		

		Section B	3,70
Q.6	a)	Explain machine independent optimization with suitable example?	05
	b)	Explain loop unrolling and loop jamming?	05
Q.7	a)	Give the all forms of cut immediate codes for following expression? $(p+q)*(r-s)+(p-q)$.	07
	b)	Give SDT scheme for desk calculator? Illustrate the scheme for the i/p "12 + 3 * 5" along with its parse tree.	08
Q.8	a)	Discuss the design issues in code generator?	07
	b)	Explain the characteristics of peephole optimization?	08
Q.9	a)	What is DAG? Construct DAG for following basic block. $a:=b*c$ $d:=b$ $e:=d*c$ $b:=e$ $f:=b+c$ $g:=f+d$	07
	b)	Write short note on type checking and type conversion?	08
Q .10	Write	short note on (any three)	15
	b) c)	Object programs Application of DAG Global data flow analysis Environment of code generator.	

SUBJECT CODE NO:- H-376 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (IT)

Geographical Information System (REVISED)

[Time:	ree Hours]	Max.Marks: 8
N.B	Please check whether you have got the right question paper. i. Q.No.1 from section A and Q.No.6 from section B are compulii. Attempt any two questions from the remaining questions in ea iii. Figure to the right indicate full marks.	
	Section A	1, 40 Ct. 20
Q.1	Define GIS , explain- i) Components of GIS. ii) Sources of spatial data.	10
Q.2	 a) What is spatial data? Explain spatial data models? b) Explain- i) Modeling surfaces ii) Modeling third & fourth dimensions 	07 08
Q.3	a) What is data editing in GIS? How it is done? Explain.b) With the help of suitable diagram. Explain computer worlds.	08 07
Q.4	a) With a suitable diagram explain any one application of GIS.b) Explain web GIS.	08 07
Q.5	rite short note on the following (any three)	15
	 i) Map and their influence on the characters of spatial data. ii) Spatial data structures. iii) Developments of databases. iv) Thematic characters. 	

		VO, 2
	Section B	200
Q.6	Explain in detail measurements in GIS.	10
Q.7	 a) With a suitable example explains the concept of buffering and neighborhood functions. b) Explain – i) Spatial interpolation ii) Network analysis. 	08 07
Q.8	a) What is analytical modeling? Explain physical and environmental process modeling.b) How the modeling of decision making process is done in GIS? Explain.	08 07
Q.9	 a) Write a short note on maps as output. b) Explain – i) Spatial multimedia. ii) Non- cartographic output. 	07 08
Q.10	Write short note on the following (any three) i) A case study on remote sensing. ii) Elements of remote sensing. iii) Working of remote sensing. iv) Applications of remote sensing.	15

SUBJECT CODE NO:- H-398 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT) Linux Operating System

Linux Operating System (REVISED)

[Time:	Time: Three Hours] [Max. Mai		k. Marks: 80]
N.B		Please check whether you have got the right question paper. Q.No.1 from section A and Q.No.6 from section B are compulsory. Solve any two remaining questions from each section.	
		Section A	
Q.1	a)b)c)d)		10
Q.2	a)	Explain features of Linux in detail.	07
	b)	Explain seven attributes of file in Linux O.S.	08
Q.3	a)	Describe command structure. Explain how to get help about a command in Linux	O.S. 07
	b)	Explain command mode and Insert mode of 'vi-editor'.	08
Q.4	a)	Explain 'ps' command with all its options.	07
	(b)	What is process? Explain how to set priorities on process in Linux.	08
Q.5	a) b) c)	short notes: (any three) History of Linux Regular Expressions with 'grep' command Compare Linux and other O.S. 'chmod' command	15

		H-398
	Section B	
Q.6	Answer any five from following.	10
	a) Explain 'ping' command with suitable example.	
	b) Describe static IP address.	
	c) Explain use of httpd and ftp network services.	
	d) Explain use of 'echo' and 'read' command.	
	e) Explain use of 'expr' command in shell script.	
	f) Explain use of 'free' and 'du' command.	
	g) Explain the need of data backup.	
Q.7	a) Explain working of SAMBA Server in detail.	07
	b) Explain working of Web Server in detail.	08
Q.8	a) Write a shell script to demonstrate use of FOR LOOP.	07
	b) Explain If-Else and Nested If-Else statements in shell script with example.	08
Q.9	a) Explain use of 'tar' and 'cpio' commands with example.	07
	b) Explain purpose of 'log' file and describe content in it.	08
Q.10	Write short notes: (any three)	15
	a) Linux firewall	
	b) Various backup media	
	c) Case statement in shell script	
	d) FTP Server	

SUBJECT CODE NO:- H-397 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT)

Unix & Shell Programming (OLD)

	(OLD)	39,796,120
[Time:	Three Hours]	Iax.Marks: 80
N.B	Please check whether you have got the right question paper. 1. Question No.1 from section A & question No.6 from section compulsory. 2. Solve any two from each section A & B	tion B are
	Section A	
Q.1	Solve any five from following	10
	 i) What is pipe? Give an example? ii) wc- command iii) chown – command iv) Shell variable v) Zombie vi) Who vii) Kernel 	
Q.2	a) Explain UNIX file system.	07
	b) Explain 1s- command with its option.	08
Q.3	a) What do you mean by links? Explain different types of links.	08
	b) Explain working of vi- editor with different modes	07
Q.4	a) Explain different standard files for redirection in UNIX.	07
	b) Explain job- control facilities in detail.	08
Q.5	a) What is process? Explain ps command with its option & example.	08
	b) What are different activities performed by shell in its interpretive cycle.	07

	Section B	
Q.6	Solve any five from following i) Head and tail ii) Set- command iii) Shift-command iv) Chomp- function v) Keys and values – function vi) Logical operators in shell vii) Pr – command	10
Q.7	a) Explain grep command with BRE and ERE.	08
	b) Explain awk script structure with an awk script.	07
Q.8	a) Write a shell script to implement case command.	08
	b) Explain positional parameter with suitable example.	07
Q.9	 a) Write a shell to accept filename input from user and display following i) No. of characters in file ii) No. of words and iii) No of lines in file iv) Input filename. 	08
	b) Explain associative array in Perl	07
Q.10	a) Write a Perl script to implement split and join function.	08
	b) Explain splice and substr function in Perl.	07

07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-433 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT) **Digital Electronics** (REVISED)

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

Please check whether you have got the right question paper.

- 1. Q.1 and Q.6 are compulsory. N.B
 - 2. Solve any two questions from Q.2 to Q.5 and any two questions from Q.7 to Q.10.

Section A

- Q.1 Solve any five questions:
 - 10 a) State and prove De-Morgan's theorem.
 - b) Represent $(-33)_{10}$ in
 - Sign Magnitude
 - One's complement ii)
 - c) Convert following-
 - $(9 AC.FA)_{16} = (?)_8$
 - ii) $(19.625)_{10} = (?)_2$
 - d) Design a 4 i/p NAND gate by using 2 i/p NAND gates only.
 - e) What is mean by self-complementing codes?
 - f) Reduce following using k map. $F(A, B, C) = \sum m (1,2,3,7)$
 - g) Perform following binary arithmetic operations
 - i) (111 0101)/ (1001)
 - ii) (1001) * (1101)
 - h) Realize the following expression using logic gates $Y = (\overline{A}.\overline{B}.\overline{C}) + (A \oplus B) + (A.C)$
- 0.2 a) Implement 3 input NAND gate using TTL logic.
 - b) Differentiate between analog signal and digital signal. 08
- Q.3 a) Define weighted codes, excess-3 code, BCD and define gray code. Explain with example. 07
 - b) Use NOR gate to produce AND, OR, NOT, NAND, X-OR and X-NOR gates. 08

1

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Q.4	a)	Design binary to gray code converter.	07
	b)	What is digital signal? Explain its different characteristics.	08
Q.5	a)	Design a BCD to 7 segment decoder.	07
	b)	Design a 4 bit adder with look ahead carry.	08
		Section B	SKA
Q.6	a) b) c) d) e) f)	any five questions: What is Demultiplexer? Explain with any one example. Explain Decimal to BCD Encoder. What is PROM? What is the logic symbol and truth table of T F/F? Compare combinational and sequential circuits. Draw logic diagram for 4 bit PIPO shift reg. Draw 3 bit asynchronous counter. Write excitation table of SR F/F.	10
Q.7	a)	Design and implement circuit for 2 bit comparator using 4 line to 16 line decoder and multi input OR gates.	08
	b)	Draw and explain NAND implementation of 1 bit memory cell.	07
Q.8	a)	Design 16:1 multiplexer using two 8:1 multiplexer and logic gates. Explain working.	08
	b)	Draw logic diagram of 4 bit SISO right shift register. Explain it.	07
Q.9	a)	Convert i) SR F/F to JK F/F. ii) D type F/F to JK F/F	08
COLD COLD	b)	Design and explain MOD-10 ripple counter.	07
Q.10	a)	Explain designing of n bit comparator using IC.	08
	b)	Explain working of 4 bit universal shift register.	07

SUBJECT CODE NO:- H-457 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT/ECT/EE)

Elective-I: Advanced Business Application Programming-I (REVISED)

[Time: Three Hours] [Max.Marks: 80] Please check whether you have got the right question paper. N.B i. Q.No.1 from section A and Q.No.6 from section B are compulsory. ii. Attempt any two questions from the remaining questions in each section. iii. Assume suitable data wherever necessary. Section A Q.1 Solve any two from following: 10 1) Explain customer relationship management. 2) Explain modularization. 3) Enlist and explain SAP modules. 4) Explain subroutines. a) What s TCODE? Explain any four TCODE in details and also explain the procedure to 08 Q.2 enable a TCODE. b) Explain SAP Net weaver. And also features of SAP Net weaver. 07 Q.3 Explain logistic operation in detail. 08 b) Enlist and explain different basic procurement activities. 07 a) Explain procurement of sock material. And also explain following terms: 08 Q.4 Materials valuations i) ii) Goods receipt Invoice for purchase order iii) b) Which are the different terminology used in vendor master and also explain vendor master 07 data? Q.5 a) What is difference between database tables and structures in SAP; do structures have primary 08 keys in SAP? b) What is the necessity to implement internal table? How we can declare an internal table? 07 Write a code for declaring internal table.

Section B

Q.6	Solve any two from following:		
	1)	Enlist different events used in classical report	200
	2)	Explain Foreign key	
	3)	Types of table fields	355
	4)	Table conversion process	300
Q.7	a)	What are the different events used for generating a classical report for single table and also write ABAP code for it.	08
	b)	Explain program calls and memory management in SAP ABAP.	07
Q.8	a)	What is open SQL? And explain how to read multiple database tables.	08
	b)	What is ABAP dictionary? And also explain different levels of ABAP dictionary.	07
Q.9	a)	What is difference between transparent pooled and cluster tables in SAP?	08
	a)	What is Active and Inactive dictionary objects? And differentiate between Active and Inactive dictionary objects.	07
Q.10	a)	Explain how to setup GUI title, GUI status. And also create simple GUI status.	08
	b)	What is the search help? Also explain different types of search helps? And also write how to implement search helps.	07

SUBJECT CODE NO: H-413 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE)

Visual Modeling (REVISED)

	(REVISED)	0,0
[Tin	e: Three Hours] [Max.Marks:	80
N.B	Please check whether you have got the right question paper. i) Q. No. 1 and Q. No. 6 are compulsory ii) Attempt any two questions from the remaining questions of each section iii) Assume suitable data whenever necessary	
	The Assume suitable data wherever necessary	
	Section A	
Q.1	Solve any two	1(
_	a) Explain five attributes of complex system	
	b) Explain software modeling	
	c) Explain software architectural design	
Q.2	a) Explain multiple views of software architecture	07
C	b) Explain algorithmic & object oriented decomposition	08
Q.3	a) Draw and explain notations, features/importance guidelines for creating use case appointment	07
	system	0.0
	b) Draw CRC card for patient appointment with class diagram	08
Q.4	a) Explain elements, syntax, steps to build sequence diagram	07
	b) Draw and explain communication diagram to place order for CD/DVD from music shop	08
Q.5	a) Draw and explain essential elements of deployment diagram	07
	b) Explain notation, features, guideline for creating activity diagram	08
	Section B	
Q.6	Solve any two	10
	a) What is design pattern?	
	b) How do we describe design pattern?	
	c) Explain organizing the catalog	
Q.7	a) Explain abstract factory design pattern in detail	07
	b) Explain prototype design pattern in detail	90
Q.8	a) Explain applicability & structure of command design pattern	07
7870	b) Explain consequences and implementation of observer design pattern	08

		Н-413
Q.9	a) Explain behavioral patternb) Explain creational design pattern	07 08
Q.10	a) Explain adaptor design patternb) Explain proxy design pattern	07 08

2

SUBJECT CODE NO: H-414 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (IT)

E-Business Management (REVISED)

	(KEVISED)	TOPO.
[Tin	ne: Three Hours] [Max.Man	rks: 80]
N.B	Please check whether you have got the right question paper. i) Assume suitable data if required ii) Q. No. 1 from section A and Q. No. 6 from section B are compulsory iii) Solve two questions from each section from remaining iv) Figures to the right side indicate full marks Section A	
Q.1	a) What are the inhibitors as e-businessb) Define CRM. What its use in e-business?	05 05
Q.2	a) What is e-business model? Explain value web business model.b) Explain core CRM competencies with neat and clean diagram.	07 08
Q.3	a) How do you build CRM infrastructure? What are the components that you integrate for building CRM infrastructure?b) What are the levels of e-business strategy? Explain strategy for supply chain.	08 07
Q.4	a) Define selling chain management. Why it is important in e-business?b) What is e-business model? Explain cybermediaries business models?	07 08
Q.5	Write shorts notes on (any three) i) Strategic alignment ii) Fast moving competitors iii) Strategies positioning iv) Selling chain infrastructure	15
	Section B	
Q.6	a) How will you decide to buy, build or rent ERP for your business?b) What are the impacts as e-market emergence?	05 05
Q.7	a) Explain knowledge managementb) Explain types as business process	07 08
10	A Y N T ALT MY AN L N AN ANY ANY ANY	

		H-414
a) Explain reliability and quality considerati	on in e-business	07
b) What are the capabilities as COTS ERP s	olution	08
		01.67.0 21.00.11
a) Discuss six sigma		07
,		08
· •		79,96
,	epeat to knowledge management	
Write short notes on (any three)		15
i) E-supply chain fusion		
ii) Business process integration		
iii) Corporate procurement portal	X	
iv) E- market	\$\&\&\&\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
))	 b) What are the capabilities as COTS ERP so a) Discuss six sigma b) Explain: i) Data organization and collection ii) Analysis and segmentation with re Write short notes on (any three) i) E-supply chain fusion ii) Business process integration iii) Corporate procurement portal 	 b) What are the capabilities as COTS ERP solution a) Discuss six sigma b) Explain: i) Data organization and collection ii) Analysis and segmentation with repeat to knowledge management Write short notes on (any three) i) E-supply chain fusion ii) Business process integration iii) Corporate procurement portal

08

07

08

07

08

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-421 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT) Operating System

		(OLD)	14,10.
[Time:	Three	Hours] [Max. Mark	s: 80]
N.B		Please check whether you have got the right question paper. i) Q. No. 1 and Q. No 6 are compulsory. ii) Attempt any two questions from Q. No.2 to Q. No 5 and Q. No 7 to Q. No 1 each section iii) Figures to the right indicate full marks.	0 of
		Section A	
Q.1		apt any five questions from following:	10
	,	Define OS	
	2)	What is multiprocessing	
	3)	What is microkernel?	
	4)	What is the use of scheduler?	
	5)	Define throughput & turnaround time.	
	6)	Define race condition.	
	7)	List files organization methods.	
	8)	What is the role of basic I/O supervisor in file system architecture?	
Q.2	a)	Draw layered view of OS.	07
		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	

b) Explain reader writers problem with solution

b) Explain contigeous and index allocation method.

a) Explain file system performance.

a) Explain read system call in detail.

b) What are the CPU scheduling criteria's

Q.3

Q.5 a) What is directory? Explain directory operation in detail.

07

b) Consider following process with length of CPU burst time in milliseconds:

08

Process	Burst Time Arrival time
P1	
P2	
Р3	
P4	

i) Draw Gantt chart illustrating execution of these processes for pre-emptive shortest Job first scheduling.

ii) Calculate average waiting time.

		Section B	
Q.6	Attem	pt any five questions from the following:	10
		Describe page table What is worst fit memory allocation?	
	3)	What is demand paging?	
	4)	What is the role of device controller?	
	5)	What is DMA?	
	6)	What is resource allocation graph?	
	7)	How to prevent deadlock?	
	8)	What is compaction?	
Q.7	a)	What is fragmentation? Explain in detail.	07
	b)	Explain any four functions of device independent I/O s/w.	08
Q.8	a)	Explain deadlock avoidance using Banker's algorithm.	07
	(b)	Explain paging with TLB.	08
Q.9	a)	Discuss the following disk scheduling algorithms i) SCAN ii)C-SCAN	08
	b)	Explain architecture of windows 7	07
Q.10	a)	Explain RAID levels in detail.	07
	b)	Consider the page reference string 1 2 3 2 1 5 2 1 6 2 5 6 3 1 3 6 1 2 4 3 How many page fault would occur for following page replacement algorithm assuming three frames.	08

ii)

FIFO

SUBJECT CODE NO:- H-363 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT)

Data Structures using C (OLD)

[Time: Three Hours] [Max.Marks: 80] Please check whether you have got the right question paper. N.B 1. Q.No.1 from section A and Q.No.6 from section B are compulsory. 2. Solve any two questions from each section from remaining questions. Section A Q.1 Solve any five of the following. 10 a) Define space complexity. b) Explain self-referential structure. c) Show that pointers can be dangerous. d) Differentiate between arrays & structures. e) What is the disadvantage of simple queue? How to overcome it. f) Design a circular linked list for four nodes. g) What is multiple stack? Q.2 a) What are the advantages of dynamic memory allocation over static? Explain various 08 functions used for dynamic memory allocation. b) Define Data Abstraction. Explain functions necessary to create an ADT. 07 Q.3 Write a program for matrix multiplication. 07 b) Explain any two operations on sparse matrix. 08 a) Evaluate the give post-fix expression using stack: 07 Q.4 10, 2, 8, *, +, 3, b) Write C program to implement stack using static array. 08 a) Add the following polynomials using linked representation: Q.5 08 $A = 3x^4 - 6x^2 + 2x + 4$ $B = 5x^5 + 4x^3 - 3x^2 + 6$ b) Write an ADT for queue. 07

Section B

Q.6 Solve any five of the following:

10

a) Construct binary tree for a given sequence of pre-order and in-order

Pre-order

a

b

d

e

c

f

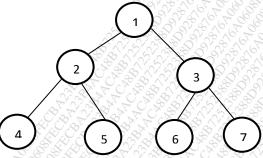
Pre-order	a	b	d	e	c	f
In-order	d	b	e	a	f	C.

- b) Give 2 properties of binary tree.
- c) Define Fibonacci heap.
- d) Explain weighted biased leftist tree.
- e) Construct distinct binary search trees for: 40, 10, 20.
- f) Give properties of red-black tree.
- g) Define height balanced tree.
- Q.7 a) Define graph. Write an ADT for graph.

07

08

b) Explain in order, preorder, post-order and level-order traversal for given binary tree:



- Q.8 a) Define pairing heap. Explain all operations on pairing heap with example.

07

b) Define selection tree. Explain winner and loser tree.

08

Q.9 a) Construct AVL tree for the following keys: 15, 20, 24, 10, 13, 7, 30, 36, 25.

08

b) Explain bottom-up splay-tree with example.

07

Q.10 Write short notes on any three:

15

- a) Disjoint set union
- b) Threaded binary tree
- c) Max-Heap and Min-Heap
- d) Binary search tree

SUBJECT CODE NO:- H-328 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT) Computer Networks-I (OLD)

[Tim	e: Thre	ee Hours]	[Max. Marks: 80]
N.B		Please check whether you have got the right question paper. 1) Question .No.1 and 6 is compulsory. 2) Attempt any two questions from Q. No. 2 to Q. No. 5 and Q. No each section.	. 7 to Q. No.10 of
		Section A	0, 2, 00, 00, 41,
Q.1	Attem	pt any five:	10
	b) c) d) e) f)	Explain Bus topology. Why we use switching? Define block coding and give its purpose. What is data rate? Give data rate for LAN. State difference between physical Address and Logical Address. What is ISP? Why we need to multiplex data? State the types of multiplexing techniques. Define line coding and give its purpose.	
Q.2	a)	Explain frequency hopping spread spectrum.	08
	b)	Distinguish Between Synchronous and statistical TDM.	07
Q.3	a)	Compare connection oriented & connection less services in detail.	08
	b)	Explain Bipolar Line Coding Schemes.	07
Q.4	(a)	Give Connection types & topologies of computer Networks.	08
	b)	Calculate CRC for following. Messages 11010010 Polynomial 1101	07
Q.5	Write	short notes on (Any three)	15
	b.	Port Address. Serial transmission. Analog to Digital Conversion.	

d. Checksume. Hamming

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	Section B	
Q.6	Attempt any five:	10
Q.o	a) In what way TDMA differ from CDMA?	
	b) Define Roaming concept.	
	c) Change this IPV4 address to binary notation: 111.56.45.78	
	d) What is Active Hub and Passive Hub?	9 55 75 75 CB
	e) What is the purpose of NIC?	7000 00 E.
	f) What is frequency reuse pattern?	10 Z00
	g) Give working of router.	
	h) Define PSK & ASK	5),
Q.7	a) Explain inter networking concept.	08
	b) Explain the IPV4 format with the help of neat diagram.	07
0.0		00
Q.8	a) What is mean by standard Ethernet? Explain with categories.	08
	b) Explain logical Addressing.	07
Q.9	 a) Using a suitable flow chart explain the procedure of channel access for pure ALOH protocol. 	A 08
	biologon	
	b) Explain different types of connecting devices.	07
Q.10	Write short note on (Any three)	15
- (2) F	a) NAT	
1 50 C	b) Router	
70,0 L	c) Bluetooth	
87.7p	d) Pooling	
	e) FDMA	
13 25 C	D. L. B. C. L. C. C. C. C. L. L. C.	

SUBJECT CODE NO:- H-329 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT) Computer Networks

Computer Networks (REVISED)

[Tim	e: Three	[Max. Marks:80]	
N.B		Please check whether you have got the right question paper. i) Question No.1 and 6 is compulsory. ii) Attempt any two questions from Q. No 2 to Q. No. 5 and from Q. No.7 to of each section	Q. No. 10
		Section A	5 9 5th
Q.1	a) b) c) d) e) f)	Identify five components of data communications. List the types of computer networks. What is data rate? Give data rate for LAN. Define 1-persistent CSMA. State Shannon capacity of data transmission. What is slotted ALOHA? What is the purpose of line coding	10
Q.2	i. ii.	Explain in brief wired transmission media. Explain line coding and decoding mechanism.	08 07
Q.3	i. ii.	Compare circuit switched and packet switched networks. Describe flow control in data link layer.	08 07
Q.4	i. ii.	With neat diagram explain Time division Multiplexing (TDM). Explain link layer addressing.	08 07
Q.5	i. ii.	Discuss the responsibility of physical layer and data link layer. Describe Internet history.	07 08
000		Section B	
Q.6	a) b) c) d) e) f)	Enlist routing metrics Define Network Address Translation Define slow start in TCP congestion What is connection oriented networks? Define resource record Define FTP What is checksum?	10

			2 4 4 5 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6 7 6
Q.7	i. ii.	Define congestion. Explain general principles of congestion control. Explain static web documents.	08
Q.8	i. ii.	Explain in brief major function performed by transport layer. What is user agent? Explain its usage in internet.	08 07
Q.9	i. ii.	Explain the process of three way handshake for TCP connection establishment. Describe forwarding of IP packet based on destination address.	08 07
Q.10	i. ii.	How domain name is resolved to IP address? How inter networking is handled in virtual circuit networks?	07 08

SUBJECT CODE NO:- H-340 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE)

Parallel & Distributed Computing (REVISED)

[Time	. Three l	(KEVISED)	TIME MELLSOOT
Lime	: Three	Hours	[Max.Marks: 80]
		Please check whether you have got the right question paper.	
N.B		1) Question No.1 & 6 are compulsory.	
		2) Attempt any two questions from each section.	
		3) Figures right indicates full marks.	
		4) Assume Suitable data if necessary.	10 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
		Section A	
Q.1	a)	Explain Moore's Law in detail.	05
	b)	Explain the term data decomposition with suitable example.	05
Q.2	a)	Explain the term recursive decomposition with suitable example.	08
	b)	How to improve memory latency using caches.	07
Q.3	a)	Explain CUDA program structure.	08
	b)	Write a short note on OpenMP library functions.	07
Q.4	a)	Explain communication cost in parallel machines.	08
	b)	What is thread? Explain POSIX thread API.	07
Q.5	a)	Draw & explain CUDA device memory model in detail.	08
	b)	Explain UMA & NUMA shared address space in detail.	07
	SAL S	Section B	
Q.6	a)	Explain the term logical clocks.	05
(0) S	b)	What is RPC explain in detail.	05
Q.7	a)	Explain Lamport's algorithm for mutual exclusion.	08
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	(b)	Explain Java RMI in detail.	07
Q.8		Explain the term trashing.	07
	2 2 b)	What is Hadoop? Explain building blocks of Hadoop.	08
Q.9	a)	Differentiate between distributed computing & parallel computing.	05
43.43	(b)	Explain the term matrix clocks.	05
X 20 30	(c)	Explain granularity in DSM.	05

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15

Q.10 Write short note on:

- a) Strict consistency model.
- b) Sequential consistency model.
- c) Causal consistency model.

2

H-340

H-464

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-464 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE)

Elective-I: Artificial Intelligence (REVISED)

[Time: 7	Three Hours]	[Max.Marks: 80
N.B	Please check whether you have got the right question paper. 1) Question no. 1 & 6 are compulsory. 2) Attempt any two questions from remaining each section. 3) Assume suitable data, if necessary. Section A	
Q.1	Answer any two:-	10
	a) Explain production system.b) Explain Intelligent agent.c) Explain Representation of Facts.	
Q.2	a) Explain how AI Techniques applied for Tic-Tac-Toe game.	08
	b) Explain problem characteristics.	07
Q.3	a) Write & Explain A* Algorithm.	08
	b) Explain Inheritable knowledge using Baseball player.	07
Q.4	a) Explain Truth maintenance system.	08
	b) Explain Heuristic search.	07
Q.5	 a) Represent following facts using predicate logic:- 1) Marcus was a man 2) All pompeians were romans 3) All romas were either loyal to Caesar or hated him 4) Everyone is loyal to someone 	08
	b) Discuss procedural v/s Declarative Knowledge.	07

	Section B	
Q.6	Answer any two:-	10
	a) Write & explain the steps in NLP process.b) Explain Expert system applications.c) Explain min-max search.	
Q.7	a) Explain components of planning system.	08
	b) Explain Rote learning.	07
Q.8	a) Explain with neat block diagram components of expert system.	08
	b) Explain hierarchical planning.	07
Q.9	a) Explain alpha-beta pruning.	08
	b) Explain Inductive learning.	07
Q10	a) Explain in detail semantic analysis.	08
	b) Explain goal stack planning.	07

SUBJECT CODE NO:- H-465 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE)

Elective-I: Cloud Computing (REVISED)

[Time:	Three H	Hours]	arks: 8
N.B		Please check whether you have got the right question paper. 1. Question No. 1 & 6 are compulsory. 2. Attempt any two from remaining questions from each section.	
			3/8/2
		Section A	57
Q.1	Write	short notes on any two.	10
	b)	Grid computing Monitoring –as-a-service Storage Virtualization	
Q.2	a)	Explain in detail storage-as-a-service. What are the benefits, drawbacks of it?	08
	b)	What is Web-service? Compare between SOAP and REST web-services.	07
Q.3	a)	Explain in detail Paas. What are the benefits and drawbacks?	08
	b)	Explain a user view of GAE with suitable block schematic.	07
Q.4	a)	Explain in detail about parallel and distributed computing.	08
	b)	What is Hypervisor? What is the difference between process, host and native VMMs.	07
Q.5	(a)	Explain in detail about SAAS.	08
4) VA 8)	b)	Explain in detail about SOAP, WSDL and UDDI web-service.	07
		Section B	
Q.6	a) b)	short notes on any two:- MEMS Security challenges in cloud Pig	10

		H-46
Q.7	a) Define privacy. Explain in detail about data-life cycle phases.	08
	b) Explain in detail about types of mobile devices used to access mobile web services.	07
Q.8	a) Explain in detail about Big-Table and Dynamo databases.	08
	b) What is Map-Reduce? Explain in detail about Map-Reduce Model with an example.	07
Q.9	a) Define WAP. Explain in detail different WAP protocol stack used for Mobile devices.	08
	b) Explain in detail about Infrastructure security at Host level.	07
Q.10	a) Explain and derive parallel efficiency of parallel computing.	08
	b) Brief on Relational operation using Map-Reduce.	07

SUBJECT CODE NO:- H-466 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE)

Elective-I: Multicore Computing (REVISED)

[Time: 7	Three Hou	urs] [Max.Mai	rks: 8
N.B		Please check whether you have got the right question paper. 1) Q. No. 1 and Q. No. 6 are compulsory. 2) Attempt any two questions from Q. No. 2 to Q. No. 5 and Q. No. 7 to Q. No. each Section. 3) Figures to the right indicates full marks. Section A	10 of
Q.1	a)	What is SMP scheduling? Explain its pros & cons.	05
	b)	Differentiate symmetric and asymmetric multiprocessing?	05
Q.2	a)	Explain multi-kernel architecture with suitable diagram.	08
	b)	Compare single core and multicore processor.	07
Q.3	a)	Explain challenges of concurrency in term of software development?	08
	b)	Explain parallel programming with suitable example?	07
Q.4	a)	What are issues a programmer has to consider for multicore architecture?	08
	b)	Discuss the impact of memory latency and bandwidth over parallel processing.	07
Q.5	(a)	Explain multicore architecture with its design issues?	08
A. A. C.	(b)	Explain sequential and concurrency model with suitable example?	07
	of the long of	Section B	
Q.6	(a)	What are the performance metrics for parallel systems? Explain in detail.	05
	b)	What is decomposition? Explain any two techniques of decomposition?	05
Q.7		What are possible overheads in parallel programming? Explain with example how to estimate each?	08
	(b)	Explain the mapping techniques for load balancing?	07

		H-46
Q.8	a) How inter process communication occurs in parallel programming?	08
	b) What is task dependency graph? Explain its significance in parallel algorithm design	n? 07
Q.9	a) Explain the principle of parallel algorithm design?	08
	b) What is asymptotic analysis of parallel programming?	07
Q.10	a) Explain the windows O.S. supporting multicore architecture & its architecture?	08
	b) Differentiate between multicore O.S. and multi-processor O.S.?	07

SUBJECT CODE NO:- H-467 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (IT)

Elective-I: Artificial Neural Network & Fuzzy Logic (REVISED)

[Time: Three Hours] [Max.Marks: 80] Please check whether you have got the right question paper. N.B 1) Q.1 & Q.6 are compulsory. 2) Attempt any two questions from the remaining questions from each Section. 3) Assume data if necessary & state it clearly. Section A 10 **Q.1** Attempt any two of following:a) Explain various types of soft computing techniques & give its applications. b) Explain different topologies used in ANN. c) How ANN is used for pattern recognition task? Explain. a) Describe ANN basic learning laws, differentiate between supervised & unsupervised 07 Q.2 learning laws. b) Realise the working of OR gate using MP neuron. 08 Q.3 What is linearly separable problems? How to solve X-OR problem. 08 Explain perceptron learning algorithms for pattern classification with example. 07 Q.4 a) What is Hopfield network? Explain Hopfield network to store & recall a set of bipolar 07 patterns. b) Train a hetero associative memory network using Hebb rule to store input row vector 08 $S = (S_1, S_2, S_3, S_4)$ to output row vector $t = (t_1, t_2)$. The vector pairs are given in the Table:-Input Target S_1 S_2 S_3 S_4 t_1 t_2 1 1 0 0 0 1 2nd 0 0 1 1 0 1

Q.5 Write a short note on (any three)

15

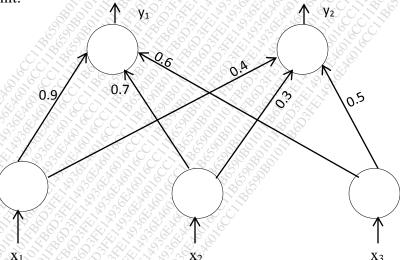
- 1) Bidirectional associative memory.
- 2) Topologies of ANN
- 3) Error correction & gradient decent rule

- 4) Basic functional units of ANN
- 5) Hard computing Vs Soft computing.

Section B

Q.6 Answer the following:- (any two) 10

- a) Differentiate between crisp set and fuzzy set.
- b) What are imprecise queries? Explain with example.
- c) Explain pattern clustering network.
- Q.7 a) What is feature mapping network? What are the silent features of the Kohonen's self 07 organizing feature map learning algorithm?
 - b) Consider a Kohonen network with two cluster units and 3 input units. The weight vector 08 for the cluster units are [0.9,0.7,0.6] and [0.4,0.3,0.5]. Find the winning cluster unit for the input vector [0.4,0.2,0.1]. Use learning rate of 0.2. Find the new weights for the winning unit.



- Q.8
- a) Consider two fuzzy sets

Consider two fuzzy sets
$$A = \left\{ \frac{1}{1.0} + \frac{0.75}{1.5} + \frac{0.3}{2.0} + \frac{0.15}{2.5} + \frac{0}{3} \right\}$$

$$B = \left\{ \frac{1}{1.0} + \frac{0.6}{1.5} + \frac{0.2}{2.0} + \frac{0.1}{2.5} + \frac{0}{3} \right\}$$
Find in ALL B. Since $A = B$

- Find i) AUB
- iii) \bar{B} iv) $\overline{A \cup B}$
- b) Explain fuzzification & defuzzification to crisp set with example.

07

08

a) Explain different operations in fuzzy relational data model with example.

08

b) What is difference between similarity & possibility based approaches of fuzzy databases? What are the advantages & disadvantages of these approaches?

07

Q.9

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15

Q.10 Write short note on (any three)

- Genetic Algorithm Fuzzy if then rules i)
- ii)
- Numerical Vs linguistic variables. Learning vector quantization. Self-organizing map. iii)
- iv)
- v)

3

SUBJECT CODE NO:- H-468 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (IT)

Elective-I: Compiler Construction (REVISED)

[Time:	Three F	Iours] [Max.Marks	s:80]
N.B		Please check whether you have got the right question paper. i) Question no.1&6 are compulsory. ii) Attempt any others two questions from each section. iii) Assume suitable data if necessary.	
		Section A	
Q.1		What are translators? Explain compilation and execution process Differentiate between Parse tree & Syntax tree.	05 05
Q.2	a)	Consider the following Grammar $E \rightarrow TE'$ $E' \rightarrow TE' / \in T \rightarrow FT'$ $T' \rightarrow *FT' / \in F \rightarrow (E)/id$ Construct the predictive parsing table for the grammar given above. Verify whether the input string id+id*id is accepted by the grammar or not	07
	b)	Explain the use of look ahead operator with illustrative example.	08
Q.3	a)	Explain the Grammar & SDT scheme for Translation of Boolean expression using control flow method.	07
	b)	Consider the following expression $(p+q) * (r-s) + (p-q)$. Give all forms of intermediate codes for this expression.	08
Q.4		With suitable diagram explain the structure of compiler Discuss the structure of LEX program. Write a LEX program to recognize letters, digits, white spaces & numbers.	07 08
Q.5		What is the role of lexical analyzer? Also discuss about lexical analysis versus parsing. What is syntax directed definition? Explain inherited and synthesized attributes.	07 08
		Section-B	
Q.6		How is error handling done in each phase of compiler? Explain in brief. Explain machine dependent optimization technique with suitable example.	05 05
Q.7	a) b)	Explain machine independent optimization technique with suitable example What is runtime storage management? Explain the role of Activation Records.	07 08

		H-468
Q.8	a) Explain the characteristics of peephole optimization.	07
	b) Explain panic mode of recovery and error recovery MLR parsing.	08
Q.9	a) Explain various problem in code generation.	07
	b) Explain Register allocation and assignments.	08
Q.10	Write short note on (any three)	15
	a) Loop Invariant variables	
	b) Object programs	
	c) Environment of code generator	
	d) Data Flow equation	STORY CONTRACTOR

H-469

08

07

Total No. of Printed Pages:2 **SUBJECT CODE NO:- H-469** FACULTY OF SCIENCE AND TECHNOLOGY **B.E.** (**IT**) Elective-I: Object Oriented Analysis & Modeling (REVISED) [Time: Three Hours] [Max.Marks:80] Please check whether you have got the right question paper. i) Question No.1 and 6 are compulsory from each section. N.B ii) Attend any 2 questions from each section from remaining. iii) Assume suitable data whenever necessary. Section A 10 Q.1 Attend any two (a) Define engineering as a science and an art. (b) Explain elements of inherent complexity. (c) Define OOM, OOA, OOD. Q.2 a) Explain notation, guideline & importance of class diagram 08 b) Draw and explain the class diagram for hospital system. 07 a) How to identity classes & objects? 08 Q.3 b) Explain module diagram & its importance. 07 a) Draw & explain state transition diagram for courseware management system. Q.4 08 b) Explain importance, notation, guidelines for use case diagram. 07 a) Explain the benefits and risks of OOD. Q.5 08 b) Explain quality assurance and its metrics. 07 Section B Q.6Attend any two 10 a) Explain elements of design pattern b) How do you describe pattern. c) Explain creational design pattern.

Q.7

a) Explain abstract factory in detail

b) Explain singleton design pattern in detail.

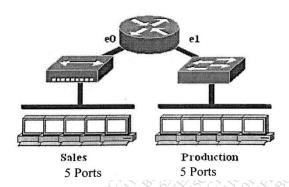
		H-469
Q.8	a) Explain consequences, implementation of Decorator design pattern.b) Explain consequences, implementation of proxy design pattern	08 07
Q.9	a) Explain behavioural design patternb) Explain embellishing the user interface.	07 08
Q.10	a) Explain strategy design pattern in detail.b) Explain command design pattern in detail.	07

SUBJECT CODE NO:- H-470 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT/ECT/EE)

Elective-I: Inter Connection Networks (REVISED)

[Time:	Three Hours] [Max.Marks	:80]
N.B	Please check whether you have got the right question paper. Attempt any two questions from each section.	
	Section A	T
Q.1	A) Explain the AT&T Colour Code for Straight cable & Cross Cable. & When we use Straight Cable & Cross Cable?	10
	B) What is Routing? What are different types of Routing?	10
Q.2	 A) Write sub network No. Valid host & Broadcast address for following (any two) 192.168.1.0 /27 172.16.0.0 /24 	10
	 171.16.0.0/19 B) Write short note on following I. PING II. What is Function of Router? 	10
Q.3	A) Explain About the following. i. Console Port ii. Serial Port iii. Auxiliary Port	10
	B) How many Collision Domain & Broadcast Domain In Diagram.	10

Section B



Q.4	A) What is WAN encapsulation protocol? Explain PPP and HDLC protocol.	10
	B) Write the features of switch. Differentiate Hub and Switch	10
Q.5	A) What is trucking in switches? Explain its types.	10
	B) What is VLSM? Give difference in between VLSM and FLSM.	10
Q.6	A) Write note on clock rate.	10
Q. .0	B) What is difference in between OSPF and EIGRP.	10

SUBJECT CODE NO:- H-471 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT)

Elective-I: Internet of Things (REVISED)

[Time:	Three H	[Max.Marks:	:80]
N.B		Please check whether you have got the right question paper. 1) Q.1 & Q.6 are compulsory. 2) Solve any two questions from remaining in each section.	3,17
		Section A	
Q.1		What are different components required in IoT device. Give brief overview of IoT.	05 05
Q.2		What is relation between WSN & IoT. Explain with example. What effect will the IoT have in healthcare? Explain with any one example of smart device.	08 . 07
Q.3		What is requirement of IoT protocol standardization. Explain with architecture. What is role of cloud computing and Big Data in IoT.	08 07
Q.4		Explain layered architecture of IoT. Explain with example MQTT protocol. What is role of MQTT protocol in IoT?	07 08
Q.5	Write	short note (any three)	15
		Zigbee	
	,	Characteristics of IoT	
		COAP	
		IoT Analytics Vision of IoT	
£.}.		Section B	
Q.6		Explain architecture standardization for WoT	05
	(b)	Explain cloud of things in detail.	05
Q.7		Why we need of IoT security.	08
	(b)	Describe physical security in IoT.	07
Q.8		Explain IoT application & deployment scenario in different domain. Explain in detail with block diagram application of IoT in healthcare.	07 08

		H-471
Q.9	Explain Role of IoT for increased autonomy and agility in collaborative production environment.	08
	b) Explain multitier WoT architecture.	07
Q.10	Write short note (any three) a) Trust for IoT b) Smart City in IoT c) Web of Things	15
	d) Issues in IoT e) IoT strategic research & Innovation	11 12 18 18 18 18 18 18 18 18 18 18 18 18 18

SUBJECT CODE NO:- H-472 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT/ECT/EE)

Elective-I: Learning Management System (REVISED)

[Time:	: Three Hours] [Max.Mark	s:80]
N.B	Please check whether you have got the right question paper. i) Q. No.1 & Q. No.6 are compulsory. ii) Attempt any two questions from Section A and Section B from the remaining questions.	
	Section A	
Q.1	Attempt any one question	10
	a) Explain the three learning domains in detail.b) Explain the learning goals managed by LMS.c) What is system environment? Explain the development, test & production environment.	
Q.2	a) What is authoring tool? Explain any one authoring tool in detail.b) What is GOTS? Explain its characteristics.	07 08
Q.3	a) What are the advantages of vendor hosted platform?b) Explain features of CrMS in detail.	07 08
Q.4	a) Differentiate among synchronous and asynchronous e-learning.b) Explain functionalities provided by LMS.	07 08
Q.5	a) Explain virtual learning environment.b) Explain return on investment with example in context of LMS.	07 08
	Section B	
Q.6	Attempt any one question	10
	(a) Explain the requirements of LMS in terms of ease of use of administrators & learners.(b) What is data analytics? How it helps effective utilization of LMS?(c) Explain the applications of LMS in Corporate.	
Q.7	(a) Write a note on Delivery Architecture of LMS.(b) How to integrate video conferencing in LMS? List its advantages.	07 08

		H-4/2
Q.8	(a) Explain content brokering system in detail.	07
	(b) Explain Registration and Enrollment functions and workflows in LMS.	08
Q.9	a) Write a case study of Moodle implementation in a training organization.	07
	b) What are the different parameters on which an LMS can base its adaptations?	08
Q.10	a) Explain integration of Digital Libraries with LMS.	07
Q.10		7 / 25 (20,07)
	b) What are the different administrative tasks that can be performed in Moodle?	08

SUBJECT CODE NO:- H-489 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE)

Digital Image Processing (OLD)

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

Please check whether you ha	ave got the right question paper.
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- N.B 1. Q.No.1 and Q.No.6 are compulsory.
 - 2. Attempt any two questions from the remaining questions from each section.
 - 3. Assume suitable data if necessary.

Section A

Q.1	Answer	the following: (any five)	10
C		What are the components of Digital Image Processing System?	
	,	What are different arithmetic & logical operations applicable to images?	
		What is fidelity criteria?	
		What is difference between spatial and frequency domain?	
		What is meant by path?	
		Explain the purpose of image enhancement.	
	g) '	What is entropy?	
	h)]	Define sampling & quantization.	
Q.2	a) '	What is connectivity? Explain different types of adjacency.	08
	b)]	Explain Huffman coding with example.	07
Q.3	a)	Differentiate between linear smoothing filter and nonlinear smoothing filter.	08
	b)]	Explain different types of image compression standards.	07
Q.4	a)	Use LZW coding algorithm to encode 7 bit ACII string 'aaaaaaaaaaa'.	08
	b)]	Explain about image compression model.	07
Q.5	Write short notes on: (any three)		15
926	a)]	Data redundancy Data redundancy	
7,196	(b)	Image sensing and Acquisition	
POLE	(c)	Distance measures	
	d) (Order statistic filter	
~		9 A 1 087 AV AV B 1 187 (AV AV	

Section B

Q.6	Answer the following: (any five)		10
	a)	What is the role of seed point in region growing process?	
	b)	Differentiate between objective & subjective fidelity criteria.	0,0
	c)	Explain line detection.	33
	d)	What is difference between full color image processing and pseudo color image processing?	\$ 65°
	e)	Write a mask of sobel operator and Laplacian operator.	200
	f)	What is threshold?	130
	g)	What is need of structuring element?)
	h)	What is pruning?	
Q.7	a)	How can hit or miss transformation is used for extracting specific pixel configuration in an image? Give example.	08
	b)	Explain CMY color model used in Digital Image Processing.	07
Q.8	a)	Explain Morphological reconstruction.	07
	b)	Explain RGB and HSI color models in brief.	08
Q.9	a)	Explain simple boundary and region descriptors.	08
	b)	What is image texture? What are different approaches to describe texture?	07
Q.10	Write	short notes on:	15
	a)	Boundary representation techniques	
	b)	Color transformations	
	c)	Applications of image segmentation	

SUBJECT CODE NO: H-161 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT)

Computer Networks - II (OLD)

[Time:	Three	e Hours] [Max.Marks	s: 80
		Please check whether you have got the right question paper.	
N.B		i) Q.No.1 from section A and Q.No.6 from section B are compulsory.	1200
		ii) Attempt any two questions from the remaining questions in each section.	3
		SECTION A	P
Q.1	Atten	npt <u>any five</u> questions.	10
	a.	What are the different routing algorithms.	
	b.	What is internetworking?	
	c.	What is ATM?	
	d.	What is flooding?	
	e.	What is assured forwarding?	
	f.	What is tunneling?	
	g.	What is DHCP?	
Q.2	a.	What are the service call() of QoS in ATM?	07
	b.	What are the different congestion control techniques to improve QoS?	08
Q.3	a.	Explain network address translation in detail.	07
	b.	What are different integrated services? Explain in detail.	08
Q.4	a.	Explain the header formats in ATM with neat diagram.	07
	b.		08
Q.5	Write	a short note on any three.	15
	a.	Network layer design issues.	
ک,	b.	Fragmentation and tunneling	
17,7	c	QoS in switched networks.	
VED'E	d.	ATM layers.	
C) 30 V		SECTION B	
Q.6	Attem	pt <u>any five</u> questions.	10
250	a.	What is maximum size of TCP header?	
NA POST	b.	What are the operational phases in TCP?	
	S co	What is process to process delivery?	
B. 20, 25	\\\\\\d.	Compare primary and secondary server?	
J. 17 30	, e.	What is resolution?	
6	f.	What is DNS?	
	g.	What is FTP?	

			H-10
Q.7	a.	Explain DNS in internet.	07
	b.	What are the different elements of transmission control protocol?	08
Q.8	a.	Explain SNMP in detail?	07
	b.	What is dynamic domain name system(DDNS)? Explain in detail.	08
Q.9	a.	Explain SIP in detail.	07
	b.	What is UDP? How it is different than TCP/IP?	08
Q.10	Write	a short note on <u>any three</u> .	15
	a.	Network management system.	
	b.	File transfer protocol.	
	c.	Connection oriented services.	
	d.	Process to process delivery.	

SUBJECT CODE NO:- H-149 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT)

Mobile Computing (CSE/IT) (REVISED)

[Time:	Three	Hours]	Max.Marks: 80
N.B		Please check whether you have got the right question paper. 1) Q.No.1 from section A and Q.No.6 from section B are compulsor 2) Attempt any two questions from the remaining questions in each 3) Assume suitable data wherever necessary. Section- A	
Q.1	a)	any two. Explain applications of mobile communication. Explain near & far terminals. Explain FDMA.	10
Q.2	a) b)		08 07
Q.3		Explain mobility management. Explain cellular system in detail.	08 07
Q.4		Explain multiple access with collision avoidance. Explain protocol architecture of GSM.	08 07
Q.5	2 × 1 = × 1 × ×	Explain different handover procedures. Explain GPRS.	08 07
O O O O		Section-B	
Q.6	a. b.	any two . Explain VOIP. Explain XML. Explain IP-in-IP.	10
Q.7	a. b.		07 08

EXAMINATION NOV/DEC 2018

		H-149
Q.8	a. Explain the creating table in WML with exampleb. Explain reverse tunneling & tunneling in detail.	08 07
Q.9	a. Write a WML program to receive inputs from user.b. Explain CDPD in detail.	08 07
Q.10	a. Explain WAP architecture in detail.b. Explain IP –snooping in detail.	08 07

SUBJECT CODE NO:- H-138 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT) Microprocessors (OLD)

[Time:	Three l	Hours] [Max. Marks	: 80
N.B		 Please check whether you have got the right question paper. 1. Questions no.1 from section A and question no. 6 from section B (carrying 10 m each) are compulsory. 2. Attempt any two questions from the remaining question in each section (carryin marks each) Section A 	
Q.1	Attem	pt <u>any five</u> of the following	10
	2. 3. 4. 5. 6. 7.	What is the function of segment register of 8086? How 8086 microprocessor generates 20 bit physical address? Comment on memory paging mechanism Which are the three buses used in computer system? Write their functions. Write the functions of interrupt flag and TRAP flag of 8086 microprocessor. Give the function of selector and descriptor in protected mode memory addressing What is flat mode memory addressing? Draw simplified diagram for write bus cycle of 8086 microprocessor.	
Q.2	a) b)	Explain internal block diagram of 8086 microprocessor Explain rotate instruction with suitable examples.	09 06
Q.3	- V	Write an assembly language program for addition of two BCD numbers Explain logical instructions of 8086 microprocessor	07 08
Q.4		What are conditional Jump instructions? Explain these instructions based on the flags being tested Write an assembly language program for division of 16 – bit number by 8- bit number.	08 07
Q.5		Explain shift instructions with suitable examples. Write an assembly language program to check whether the entered number is even number or odd number.	07 r 08

Section B

Q.6	Attem	pt any five of the following	10
		What is the function of A_1 and A_0 pins of 8255 PPI?	Z 20 Z
		Explain the function of 'Ready' pin of 8086 microprocessor.	6,0,7
	c)	Why the data and address buses of 8086 microprocessor are multiplexed?	
	d)	Differentiate between minimum mode and maximum mode operation of 8086	\$3.57
	,	microprocessor.	25,70
	e)	Comment on non- maskable interrupts.	
	f)	Enlist the components required for fully buffered 8086 microprocessor system	2,00
	g)	Draw control word format for bit set reset mode of 8255 PPI	V.
	<i>U</i>	Briefly explain 'hand shaking'.	
Q.7	a)	Explain mode 0 and mode 1 operation of 8255 with suitable example.	08
	b)	Briefly explain the hardware interrupts.	07
	ŕ		
Q.8	a)	With suitable diagram explain how to insert 'wait' state in the timing diagram of 8086	07
		microprocessor	
	b)	What is PPI? Explain its blocks with suitable diagram.	08
Q.9	a)	When it is required to demultiplex the multiplexed buses of 8086? with suitable diagram	08
	,	explain bus buffering & latching	
	b)	Explain different modes of operation of 8254.	07
	ŕ		
Q.10	a)	With suitable diagram explain the interfacing of 8284A clock generator with 8086	08
	200	microprocessor.	
	(b)	With suitable example, explain how to generate square wave using 8254.	07
	V 45 6	v XT 101 401 037 GE X01 04 GV XO XO XO XV XV XV XV XO YGS	

SUBJECT CODE NO: H-126 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT)

Design & Analysis of Algorithms (OLD)

[Time:	Three	Hours] [Max.Marks	:80]
N.B		Please check whether you have got the right question paper. i) Q.1 & Q.6 are compulsory. ii) Solve any two questions from the remaining each section. SECTION A	
Q.1	a)b)c)d)	any five questions: Define an algorithm & write an algorithm for linear search. What is performance measurement of an algorithm? Explain any one tree traversal technique with an example. Write any two characteristics of greedy method. Explain space complexity. What is job sequencing with deadline?	10
Q.2	a)	Explain quick sort using the given data and comment on its time complexity {50, 50, 60, 60, 40, 40, 30, 30, 20, 20}	08
	b)	Explain time complexity of binary search method in best, worst and average case for successful and unsuccessful search.	07
Q.3	a)	Find an optimal placement for 13 programs on three tapes To, T1 & T2 where the programs are of lengths: {12, 5, 8, 32, 7, 5, 18, 26, 4, 3, 11, 10, 6}	08
	b)	Construct heap tree for following list of numbers. 20, 10, 30, 50, 60, 20, 35, 40, 50, 25, 80 & perform heap sort.	07
Q.4		Explain Strassen's matrix multiplications. Explain optimal merge patterns.	08 07
Q.5		Explain Huffman coding with suitable example. Write an algorithm to find smallest & largest number in an array.	08 07

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	SECTION B	
Q.6	Solve any five questions: a) Define multistage graph. b) Define implicit & explain constraints. c) What is branch & bound method? d) State 8-queens problem. e) Define chromatic number of a graph. f) Explain dead-node and live-node.	10
Q.7	 a) Determine optimal binary search tree for n=4, (a1, a2, a3, a4) = (do, if, int, while) P(1:4) = (3,3,1,1) q(0:4) = (2,3,1,1,1) b) Write an algorithm for all pairs shortest path problem. 	10 05
Q.8	a) Solve 4-queries problem using backtracking method.b) Write algorithm for single source shortest path.	08 07
Q.9	a) Explain multistage graph problem and write steps to solve it using dynamic programmingb) Explain FIFO branch & bound with suitable example.	g. 08 07
Q.10	a) Solve 15-puzzle problem using branch & bound. Initial arrangement is: $\begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 8 \\ 9 & 10 & 7 & 11 \\ 13 & 14 & 15 & 12 \end{bmatrix}$	09
	b) Explain graph coloring problem and its application.	06

SUBJECT CODE NO:- H-119 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT)

Computer System Security and Laws (CSE/IT) (REVISED)

[Time: '	Thre	e Hours] [Max. Marks:	80]
N.B		Please check whether you have got the right question paper. 1) Q. No. 1 and Q. No. 6 are compulsory. 2) From the remaining question in Section A and B students are supposed to solv any two questions from each section. Section A	e
Q.1		What are the system security goals? Explain why balance among different goals is needed. Differentiate between active attack & passive attack.	05 05
Q.2		How does Kerberos work? Explain with example? Explain RSA algorithm in details along with suitable example?	08 07
Q.3		Explain working of AES algorithm in details. Explain cryptographic Hash function.	08 07
Q.4		Draw and explain Network Security Model. What is Biometrics? State its importance? Explain different types of Biometrics.	08 07
Q.5	W ₁	ite a short note on:-	15
	b)	Digital Signature User Name and Password Extensible Authentication Protocol [EAP]	
		Section B	
Q.6		a) List & Explain different types of incident.b) List & Explain different types of Computer forensic tools.	05 05
Q.7		a) How does PGP achieve confidentiality and authentication in Email?b) Why Secure Socket Layer (SSL) is needed? What are the different features SSL provides? Explain how SSL works?	08 07

EXAMINATION NOV/DEC 2018

		H-119
Q.8	a) What is the purpose of incident response plan & elaborate its goals.	08
	b) Give reason for Birth of the IT Act 2000. Explain IT Act 2000.	07
Q.9	a) What is Cybercrime? List & Explain different types of cyber-crime.	08
	b) What is Cyber forensics? Explain procedure of cyber forensics.	07
Q.10	Write a short note:-	15
	a) Security in 3 G	
	b) Investigative incident Response action.	
	c) Wireless Application Protocol	

SUBJECT CODE NO:- H-247 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (IT)

Elective-II: Image processing & Pattern Recognition (REVISED)

[Time:	Three Hours] [Max.Mar	ks: 80]
N.B	Please check whether you have got the right question paper. i) Q.No.1 and Q.No.6 are compulsory. ii) Attempt any two questions from the remaining in each from each section. iii) Assume suitable data if necessary. Section A	\$ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\
Q.1	Answer the following (any five) a. Define image negative. b. What is a median spatial filter? c. Define image compression. d. What is meant by image acquisition? e. Give expression for sobel filter mask. f. Define high boost filtering.	10
Q.2	a) Elaborate following image enhancement techniques.1. Log transformations.2. Gray level slicing.	08
	b) Explain image digitization through image sampling and quantization.	07
Q.3	a) Describe linear and non-linear smoothing spatial filters. b) Explain the D_4 and D_8 distance measures with example.	08 07
Q.4	a) What is the significance of singular value decomposition in DIP? Explain.b) Explain Walsh hadamard transform in detail.	08 07
Q.5	a) Elaborate the 2D discrete cosine transform give its application.b) Describe different types of connectivity with suitable example.	08 07
	Section B	
Q.6	Answer the following (any five) a. What is pattern? b. Define image opening. c. Give any two simple regional descriptors. d. What is Thresholding? e. Define an edge. f. Give any two line detection marks.	10

		H-247
Q.7	a) Explain pixel based segmentation using multivariable Thresholding.	08
	b) Describe image segmentation using morphological watersheds.	07
Q.8	a) Describe Bayes decision theory for pattern recognition.	08
	b) Discuss any one statistical pattern recognition based application.	07
Q.9	a) Differentiate between 2D DFT and 2D DCT.	08
	b) Elaborate use of first order derivatives for edge detection purpose.	07
Q.10	a) Explain following regional descriptors:1. Topological descriptors2. Textures	08
	b) Elaborate the boundary descriptors in detail.	07

SUBJECT CODE NO:- H-246 FACULTY OF SCIENCE AND TECHNOLOGY **B.E.** (**CSE**)

Elective-II: Hadoop Technology (REVISED)

[Time: T	hree Hou	rs]	[Max.Marks: 80
N.B		Please check whether you have got the right question paper. 1) Question No. 1 & Question No.6 are compulsory. 2) Solve any two questions from remaining in each section. Section A	
Q.1	Write	short notes on any two:-	10
	b)	NoSQL Advantages of Hive Advantages of pig.	
Q.2	a)	What is Big data? Explain different characteristics of big data with example	les. 08
	b)	Explain in detail about pig Execution modes.	07
Q.3	a)	Explain the architecture of Hive along with the shell commands used in Hi	ive. 08
	b)	Explain in detail about External tables and managed tables.	07
Q.4	a)	Explain with an example some HQL operations used in Hive.	08
	b)	Explain in detail about primitive and collection data types of Hive.	07
Q.5	a)	Depict pig architecture in detail. Explain pig execution modes in detail.	08
. O. S.	b)	Explain in detail about read and write operation in pig Latin.	07
7 4 V		Section B	
Q.6	Write s	short notes on any two:-	10
	(b)	Steps required to configuring HBase. Flume Sqoop	
Q.7	a)	What is HBase? Explain different ACID properties used in HBase.	08
	b)	Explain various shell commands used in HBase.	07
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		30 6 7 6
Q.8	a) Explain with Query transferring an entire table subset of the table and to a target directory.	08
	b) Explain the concept of incremental importing of mutable data into Hadoop cluster.	07
Q.9	a) Explain the concepts of Oozie and Zookeeper.	08
	b) Explain in detail how hadoop will run on cloudera CDH.	07
Q.10	a) Explain the Schema design in Hbase along with the concept of data model.	08
	b) How YARN outperforms. Map-Reduce processing of Big-Data on Hadoop Cluster.	07

SUBJECT CODE NO:- H-245 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE)

Elective-II: I- Phone Programming (REVISED)

	(REVISED)	
[Time:	Three Hours]	[Max.Marks:80
	Please check whether you have got the right question paper.	
N.B	1. Question No.1 and 6 are compulsory	
	2. Attempt any two questions from the remaining sec	tion
	Section A	
Q.1	Solve any two question	10
	a) Explain similarities and differences between C and C++ of objective – C	4, 2, 2 1, 3, 0
	b) Write and explain structure of objective – C program with example	NA AX
	c) Explain and list ANSI C, Next step related data types	TO STATE OF THE PARTY OF THE PA
Q.2	a) Explain categories in objective C with sample objective –C program.	07
	b) Explain protocols in objective – C with sample objective – C program	08
Q.3	a) Write a application to show use of basic controls	07
	b) Explain memory management in objective –C	08
Q.4	a) Explain NSString, NSMutable with sample snippet	07
	b) Explain NSRange, NSArray with program in objective-C	08
Q.5	a) Write a program in objective –C to perform mathematical operations	08
	b) Explain any three ios layer	07
اح	Section B	
Q.6	Solve any two questions	10
Sylver	a) What is UI alert? Explain with example	
3 2 7	b) Explain keyboard inputs	
	c) Draw and explain cocoa architecture for OSX	
Q.7	a) Create single view application in iphone to perform arithmetic operation	08
	b) Create single view application in iphone by using web view	07
Q.8	a) Write a iphone application to show alert	08
5 6	b) Explain the use of UITable view controller	07

Q.9	a) How to create UITable view, UITable base application in iosb) Write ios application for image picker	08 07
Q.10	Write the ios application to register (name , password, confirm password) and login using name of password with the help of SQLite.	15

SUBJECT CODE NO:- H-244 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE)

Elective-II: Network Infrastructure Management (REVISED)

		(REVISED)	
[Time:	Three I	Hours]	arks: 80
N.B		Please check whether you have got the right question paper. 1. Q.no.1 and Q.no.6 are compulsory 2. Attempt any two from remaining question from each section	
		Section A	\$2.0
Q.1	Solve	any two	10
Q.1		Explain network addressing	10
		Which technique are used to avoid Routing and switching loop	
		What is VLAN? How to configure.	
Q.2	a)	Explain NAS connectivity options	07
	b)	Architecture of SAN	08
Q.3	a)	Which software component are used in SAN	07
	b)	How we Integrate SAN and NAS	08
Q.4	a)	What do you mean by port security? How it implement in CISCO switch	07
	b)	Explain spanning tree operation.	08
Q.5		short note on any three	15
	,	VTP 2003 A TAXA COMMON TO	
	~)	Ether channel	
	7_0.01	Virtual LAN	
	(d)		
		Section B	
Q.6	Solve	any two	10
0,40		FLAT based Architecture	
	b)	What do you mean by performance management	
	(c)	Protocol specification of SNMP	
Q.7		What is fault management	07
00000	b)	How tools are used in network management	08
Q.8	~ 4 1 0_/. /	Flat based SLB versus NAT based SLB	07
	b)	Explain global server load balancing and firewall load Balancing	08
377	(25,9)	\\\^\\\\^\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	

			H-24
Q.9	 a) What is the role of SMI and MIB in netw b) Explain SNMP V₂ and SNMPV₃ 	vork management	07 08
Q.10	Write short note on any three		15.
	a) Security management		
	b) MIB		170000000000000000000000000000000000000
	c) Remote network monitoring		
	d) NAT based SLB		

SUBJECT CODE NO:- H-241 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT)

Elective-II: Agile Methodology (REVISED)

[Time	: Thre	e Hours]	[Max.M	arks:80]
N.B			om section A & B respectively are compulsory tion from each section remaining	
		Secti	on A	
Q.1	a)b)c)	what is Agile What does the user story describe? What is scrum? What are the benefits of Agile software de Explain Agile turn –up and turn – down of Mention the key difference between sprin What is Refactoring?	hart	10
Q.2	a) b)	Explain the Agile software engineering li What is user acceptance testing who perfo		08 07
Q.3	a) b)	Explain Agile manifesto principle What are the three main roles in scrum		08 07
Q.4	. 1	Why exploratory testing is important in A What is the effective regression testing in		08 07
۷.		Sec	tion B	
Q.5	a) b) c) d)	List benefits of agile What is continuous integration What is Agile version control What is sprint level regression testing? Who is stakeholder in Agile project mana What are goals in Agile marketing? For what purpose is team member in Agil		10
Q.6	a) b)	The Liskov substitution principle is an ex Explain Interface segregation principle	tension of open – closed principle explain?	07 08

Q.7	a) Explain why Agile can work well unit distributed teamsb) Explain why Agile Design practices important	H-241 07 08
Q.8	a) What are the practical challenges which constraints the use of Agile methodologyb) How can cloud computing enhance Agile software development	08 07

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Total No. of Printed Pages:01

SUBJECT CODE NO: H-240 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT)

Elective-II: Green IT (CSE/IT) (REVISED)

[Time:	Three Hours]	[Max.Marks:80]
N.B	Please check whether you have got the right question paper i) Question No.1 and 6 are compulsory. ii) Attempt any two questions remaining from each section. iii) Figures right indicate full marks. iv) Assume Suitable data if necessary. SECTION A	er.
Q.1	a) Explain terms: i) Modifiability and Reusability ii) Portability.b) Write a short note on Green Washing.	05 05
Q.2	a) Explain term server in data centre IT infrastructure.b) What is Green IT? Explain holistic approach to greening IT.	08 07
Q.3	a) Explain term ideal efficiency in software energy efficiency techniqueb) Draw & explain the states of mechanical hard disk drives in detail.	08 07
Q.4	a) What is the difference between Green IT 1.0 & Green IT 2.0?b) Explain term context awareness in software energy efficiency technic	07 que. 08
Q.5	a) Write a short note on: i) Vectorization ii) Efficient Algorithms.b) State & explain energy management techniques for hard disk.	08 07
	SECTION B	
Q.6	a) Explain routing information protocol cost in detail.b) Write a short note on SOA.	05 05
Q.7	a) Explain core components in green networking.b) Describes the features of Cloud enabling Green Computing.	08 07
Q.8	a) Explain the categories of information systems in greening enterprise.b) Explain objectives of green computing.	08 07
Q.9	a) Write a note on: IAAS Provider.b) Write a short note on EMIS.	08 07
Q.10	a) Describe Green IT: A Megatrend.b) Explain Cloud Computing deployment models	08 07

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Total No. of Printed Pages:01

SUBJECT CODE NO: H-240 FACULTY OF SCIENCE AND TECHNOLOGY B.E. (CSE/IT)

Elective-II: Green IT (CSE/IT) (REVISED)

[Time:	Three Hours]	[Max.Marks:80]
N.B	Please check whether you have got the right question paper i) Question No.1 and 6 are compulsory. ii) Attempt any two questions remaining from each section. iii) Figures right indicate full marks. iv) Assume Suitable data if necessary. SECTION A	er.
Q.1	a) Explain terms: i) Modifiability and Reusability ii) Portability.b) Write a short note on Green Washing.	05 05
Q.2	a) Explain term server in data centre IT infrastructure.b) What is Green IT? Explain holistic approach to greening IT.	08 07
Q.3	a) Explain term ideal efficiency in software energy efficiency techniqueb) Draw & explain the states of mechanical hard disk drives in detail.	08 07
Q.4	a) What is the difference between Green IT 1.0 & Green IT 2.0?b) Explain term context awareness in software energy efficiency technic	07 que. 08
Q.5	a) Write a short note on: i) Vectorization ii) Efficient Algorithms.b) State & explain energy management techniques for hard disk.	08 07
	SECTION B	
Q.6	a) Explain routing information protocol cost in detail.b) Write a short note on SOA.	05 05
Q.7	a) Explain core components in green networking.b) Describes the features of Cloud enabling Green Computing.	08 07
Q.8	a) Explain the categories of information systems in greening enterprise.b) Explain objectives of green computing.	08 07
Q.9	a) Write a note on: IAAS Provider.b) Write a short note on EMIS.	08 07
Q.10	a) Describe Green IT: A Megatrend.b) Explain Cloud Computing deployment models	08 07

N.B

SUBJECT CODE NO: H-196 FACULTY OF SCIENCE AND TECHNOLOGY T.E. (CSE/IT) Theory of Computation (OLD)

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

Please check whether you have got the right question paper.

i) Q. No. 1 and Q. No.6 are compulsory.

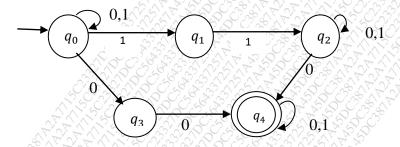
- ii) Attempt any two questions from Q. No.2 to Q. No.5 and two questions from
- Q.No.7 to Q. No.10 of each section.
- iii) Figure to the right indicate full marks.

SECTION - A

Q.1 Attempt <u>any five</u> questions from the following:-

10

a) Determine whether the following NFA accepts the string 0100 or not.



- b) State decision properties of regular languages.
- c) Define ambiguous grammar with suitable example.
- d) Why is finite automata used in lexical analysis? Justify your answer.
- e) Classify the languages as per Chomsky Hierarchy.
- f) Define ϵNFA with suitable example.
- g) Find regular expression representing Set of all strings over $\{a, b\}$ containing "ab ab" as a substring.
- h) Construct context free grammar for palindromes over alphabet {0,1}.

08

08

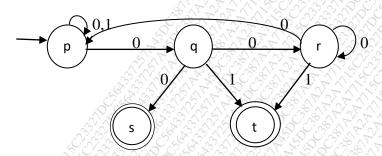
07

07

- Q.2 a) Construct a finite automata equivalent to the regular expression (0+1)*00+11(0+1)*. 07
 - b) Consider the following ϵNFA :

_ δ	ϵ	a	b	
$\rightarrow p$	{ <i>r</i> }	{ <i>q</i> }	$\{q,r\}$	
q	Ø	$\{p\}$	Ø	
* r	$\{p,q\}$	{ <i>r</i> }	$\{p\}$	

- i) Compute ϵ *closure* of each state.
- ii) Convert the automata to a DFA.
- Q.3 a) Construct a DFA equivalent to the NFA given below:



- b) Define ambiguity in grammar? Show that the grammar $S \rightarrow SbS|a$ is an ambiguous grammar. 07
- Q.4 a) Construct Moore machine equivalent to the following Mealy Machine.

Present State	V 5 2 V	Next State	·
	a		= 1
	State	Output State	Output
$\Rightarrow q_1 $	q_3	$0 q_2$	0
q_2	q_1	q_4	0
q_3	q_2	q_1	1
q_4	q_4	q_3	0

- b) State and prove Arden's Theorem.
- Q.5 a) Let G be the grammar:-

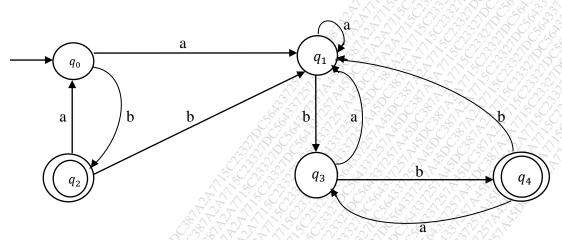
 $S \rightarrow 0B \mid 1 \text{ A}$, $A \rightarrow 0 \mid 0S \mid 1AA$, $B \rightarrow 1 \mid 1S \mid 0BB$ for the string 110010, find:

- i) Leftmost derivation
- ii) Rightmost derivation
- iii) Parse tree

2

08

b) Find out minimal DFA for following DFA:



SECTION B

Q.6 Attempt <u>any five</u> questions from the following:

10

- a) Illustrate the model of linear bounded automata.
- b) Design a TM to recognize all strings of even number of 1's.
- c) How to convert a grammar into Chomsky normal form?
- d) Consider the following grammar:-

 $S \to a \ Aa \ | \ b \ B \ b \ | C, A \to C \ | \ a \ , B \to C \ | \ b, C \to CDE \ | \in \ , D \to A \ | \ B \ | \ ab.$ Determine an equivalent grammar without null productions.

- e) Define PDA & explain the acceptance by null store.
- f) Explain instantaneous description for turing machine with suitable example.

g) Draw transition diagram for the following TM:

Present State		Tape Symbol	10 10 10 10 10 10 10 10 10 10 10 10 10 1
	b	0 5503	
		\$\f\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
$\rightarrow q_1$	$1L q_2$	$0R q_1$	
q_2	$bR q_3$	$0L q_2$	$1L q_2$
q_3	-	$bR q_4$	$b R q_5$
q_4	$0R q_5$	$0R q_4$	$1R q_4$
* (q5)	0L q ₂		

- Q.7 a) Construct a PDA to accept all strings with equal number of a's and b's over $\{a, b\}$. 08
 - b) Discuss the different types of turing machine with examples. 07
- Q.8 a) Reduce the following grammar into Chomsky normal form:- 08 $S \rightarrow aAD$, $A \rightarrow aB | bAB$, $B \rightarrow b$, $D \rightarrow d$
 - b) Show that $L = \{a^p | P \text{ is prime}\}$ is not context free language.
- Q.9 a) Consider $G = (V_N, \Sigma, P, S)$ be given by $S \to AB$, $A \to a$, $B \to b$, $B \to C$, $E \to a$. Find reduced 07 grammar.
 - b) Consider the following grammar:- 08 $S \rightarrow AA|a$, $A \rightarrow SS|b$. Find equivalent grammar into Greibach normal form.
- Q.10 a) Construct a CFG which accepts N(A) where, $A = (\{q_0, q_1\}, \{a, b\}, \{z, z_0\}, \delta, q_0, z_0, \emptyset)$ And δ is given by- $\delta(q_0, b, z_0) = \{(q_0, z_0)\}$

$$\delta(q_0, b, z_0) = \{(q_0, z z_0) \}$$

$$\delta(q_0, h, z_0) = \{(q_0, h)\}$$

$$\delta(q_0, b, z) = \{(q_0, z z)\}$$

$$\delta(q_0, a, z) = \{(q_1, z)\}$$

$$\delta(q_1, b, z) = \{(q_1, h)\}$$

$$\delta(q_1, a, z_0) = \{(q_0, z_0)\}$$

b) Construct a 3-track TM to determine whether a given number is prime or not.

SUBJECT CODE NO:- H-207 FACULTY OF SCIENCE AND TECHNOLOGY S.E. (CSE/IT)

Microprocessor & Computer Organization (REVISED)

[Time:	Three Hou	irs]	Aax. Marks: 80
N.B		Please check whether you have got the right question paper. 1) Q.1 & 6 are compulsory. 2) Solve <u>any two</u> from remaining in each section. 3) Assume suitable data with justification. Section A	
Q.1	Solve an	ny five	10
	i) ii) iii) iv) v) vi) vii)	What is pipelined architecture? Identify which segment registers are used in MOVSB instruction? How 20 bit physical address is generated in 8086? Define Macro with example. What is use of \overline{BHE} / S7 pin in 8086. What is address bus in 8086? Enlist any four types of main memory.	B. C.
Q.2	e: N	For the following instructions draw the read and write cycles. Also explain ho xecutes this instruction. MOV AX, [BX] MOV [BP], CX	w 8086 10
	b) E	Explain the flags of 8086 with effect of sample instruction on them?	05
Q.3	a) W	Vrite interactive program to convert two digit hex number into BCD number?	? 08
		Oraw the pin diagram of 8088 microprocessor? And explain the difference beto 086 and 8088 microprocessor.	tween 07
Q.4	a) V	What is TSR? Write a program to demonstrate the TSR?	05
	b) É	Explain the role of IVT in executing ISR?	05
	c) E	Draw and explain timing diagram of INTR instruction.	05

				\$ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\
Q.5	Write short notes (any three)			15
	i) ii) iii) iv) v) vi)	Five services of Int PSP Near and Far proced Directives Addressing modes of Memory segmentation	dure with example of 8086	
			Section B	
Q.6	Solve an	y five		10
	2) E 3) W 4) E 5) W 6) W	Define the term computed in the term computed what is Latency and the collist any two difference what is COM port? What is control memory what is CISC?	onents of computer. roughput? ces between SRAM & DRAM?	y
Q.7	a) Explain classification of computers in detail?			08
	b) E	xplain different param	neters used to measure the performance of computer?	07
Q.8	a) E	a) Explain behavior of CPU operation using flow chart?		07
	b) E	Explain instruction cyc	le in detail?	04
	c) D	Describe hardwired cor	ntrol unit design in detail?	04
Q.9	a) V) What is parallel port? Explain printer port in detail?		05
	b) E	b) Explain PCI and SCSI bus in detail?		
	c) E	Explain I/O interface w	vith suitable example.	05
Q.10	Write short notes (Any three)			15
	2) C 3) D 4) V	Memory subsystem Output Devices Oata Path in a CPU 7 th Generation of comp RISC Vs. CISC.	puters	