Total No. of Printed Pages:02

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

[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 each section
iii) figures right indicates full marks
iv)assume suitable data if necessary

Section A

Q.1 Attempt any five questions 10

a) List out software characteristics
b) What is data flow diagram?
c) What is process framework?
d) What is COCOMO?
e) Justify the statement "s/w doesn't wear out"
f) Explain data and function modelling
g) What are the components of software?
h) Write down the phase of CMM

Q.2 a. What are the characteristics to be considered for the selection of life cycle model? 07
b. Explain the analysis and design model 08

Q.3 a. What is modularity? Explain it by giving example 07
b. What are the characteristics of good SRS? Give IEEE format of SRS document 08

Q.4 a. List out different software process models. Explain any one in detail 07
b. Describe data Modelling with suitable example 08

Q.5 a. What are the principles of UI design? Explain 07
b. Explain Top-down and bottom up programming structure 08

Section B

Q.6 Attempt five questions 10

a) 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
e) What is web app engineering process?
f) Define SCM
g) Define the term OOA and OOP
h) Write the definition of software testing?

Q.7 a. What is software project management? Explain different management activities 07
b. Explain the project scheduling with timing diagram 08

Q.8 a. What is scenario based testing? Explain in detail 07
b. What is risk management? Explain different risk management techniques 08

Q.9 a. Explain in brief requirement gathering for web app 07
b. Draw the sequence diagram to explain the working of washing machine 08

Q.10 Solve <u>any three</u> short notes 15

a) CRC cards
b) Agile planning
c) Collaboration diagram
d) Test cases
e) Web app engineering layers

Total No. of Printed Pages:02

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

[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

Section A

Q.1 Answer the following (any five) 10

1) Define quality control
2) What is volume testing?
3) Explain error guessing.
4) List the elements of SQA.
5) Differentiate between load and stress
6) How to identify test cases?
7) Explain software reliability.
8) What is Hallway testing?

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 Write a short note on (any three) 15

1) CMM
2) Unit testing
3) Quality concept
4) Condition coverage

Section B

Q.6 Answer the following (any five) 10

1) List different types of tools and skills of tester
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

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-185
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Soft Computing
(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.
iii) Assume suitable data if necessary. And state it Cleary.

Section A

Q.1	a)	Differentiate soft computing and hard computing.	05
	b)	Explain characteristics of neural networks.	05
Q.2	a)	Explain Adaline model in detail.	07
	b)	Explain pattern recognition problem.	08
Q.3	a)	Explain single layer and multilayer perceptron in detail.	07
	b)	Explain error correction and gradient decent rules in details.	08
Q.4	a)	Explain back propagation learning algorithm in details.	07
	b)	Explain pattern classification with example.	08
Q.5	a)	Explain architecture of FBNN.	07
	b)	Explain associative memory.	08

Section B

Q.6	a)	Explain pattern clustering in details	05
	b)	Explain self-organization map.	05
Q.7	a)	Explain learning vector quantization.	07
	b)	Explain fuzzy sets.	08

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

Total No. of Printed Pages:2

SUBJECT CODE NO: H-375
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Principles of Compiler Design
(REVISED)

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

Please check whether you have got the right question paper.

N.B
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? 07
Example : position = initial + rate * 60

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 : 07
$S \rightarrow aB \mid bA$
$A \rightarrow a \mid as \mid bAA$
$B \rightarrow b \mid bs \mid aBB$
Derive the string "aaabbabba" using above grammar by left most derivation and right most derivation? Also draw parse tree for both?

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 Write short note on (any three) 15

a) Input buffering
b) LALR
c) FIRST & FOLLOW with example
d) Bootstrapping

Section B

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 (<u>any three</u>)		15

a) Object programs
b) Application of DAG
c) Global data flow analysis
d) Environment of code generator.

Total No. of Printed Pages:2

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

Section A

Q.1 Answer any five from following. 10

a) Enlist any four Linux distributions.
b) Differentiate between GUI & CLI.
c) Explain use of 'cp' and 'mv' command with example.
d) Explain use of 'find' and 'locate' command with example.
e) Explain how would you add new user and password for it.
f) Explain use of 'nice' command with example in process management
g) Explain use of 'tee' command with an example.

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 Write short notes: (any three) 15

a) History of Linux
b) Regular Expressions with 'grep' command
c) Compare Linux and other O.S.
d) 'chmod' command

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

Total No. of Printed Pages:2

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

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

Please check whether you have got the right question paper.

N.B
1. Question No.1 from section A & question No.6 from section B are compulsory.
2. Solve any two from each section A & B

.

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 ls- 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 10

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

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 08

i) No. of characters in file
ii) No. of words and
iii) No of lines in file
iv) Input filename.

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

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.

N.B
1. Q.1 and Q.6 are compulsory.
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
   i) Sign Magnitude
   ii) One's complement

c) Convert following-
   i) $(9\,AC.FA)_{16} = (?)_8$
   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
$Y = (\overline{A}.\overline{B}.\overline{C}) + (A \oplus B) + (A.C)$

Q.2 a) Implement 3 input NAND gate using TTL logic. 07

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

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

Q.6 Solve any five questions: 10

a) What is Demultiplexer? Explain with any one example.
b) Explain Decimal to BCD Encoder.
c) What is PROM?
d) What is the logic symbol and truth table of T F/F?
e) Compare combinational and sequential circuits.
f) Draw logic diagram for 4 bit PIPO shift reg.
g) Draw 3 bit asynchronous counter.
h) Write excitation table of SR F/F.

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 08

i) SR F/F to JK F/F.
ii) D type F/F to JK F/F

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

Total No. of Printed Pages:2

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.

Q.2 a) What s TCODE? Explain any four TCODE in details and also explain the procedure to enable a TCODE. 08

b) Explain SAP Net weaver. And also features of SAP Net weaver. 07

Q.3 a) Explain logistic operation in detail. 08

b) Enlist and explain different basic procurement activities. 07

Q.4 a) Explain procurement of sock material. And also explain following terms: 08
i) Materials valuations
ii) Goods receipt
iii) Invoice for purchase order

b) Which are the different terminology used in vendor master and also explain vendor master data? 07

Q.5 a) What is difference between database tables and structures in SAP; do structures have primary keys in SAP? 08

b) What is the necessity to implement internal table? How we can declare an internal table? Write a code for declaring internal table. 07

Section B

Q.6 Solve any two from following: 10

1) Enlist different events used in classical report
2) Explain Foreign key
3) Types of table fields
4) Table conversion process

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

Total No. of Printed Pages:2

SUBJECT CODE NO: H-413
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Visual Modeling
(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 the remaining questions of each section
iii) Assume suitable data whenever necessary

Section A

Q.1 Solve any two 10
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
b) Explain algorithmic & object oriented decomposition 08

Q.3 a) Draw and explain notations, features/ importance guidelines for creating use case appointment system 07
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 08

Q.8 a) Explain applicability & structure of command design pattern 07
b) Explain consequences and implementation of observer design pattern 08

Q.9	a)	Explain behavioral pattern	07
	b)	Explain creational design pattern	08
Q.10	a)	Explain adaptor design pattern	07
	b)	Explain proxy design pattern	08

Total No. of Printed Pages:02

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

[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 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 : 10

1) 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 08

Q.3 a) Explain file system performance. 07

b) What are the CPU scheduling criteria's 08

Q.4 a) Explain read system call in detail. 07

b) Explain contigeous and index allocation method. 08

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	21	0
P2	3	1
P3	6	2
P4	2	3

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 Attempt any five questions from the following: 10

1) Describe page table
2) 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 08
How many page fault would occur for following page replacement algorithm assuming three frames.

i) LRU

ii) FIFO

Total No. of Printed Pages:2

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 functions used for dynamic memory allocation. 08

b) Define Data Abstraction. Explain functions necessary to create an ADT. 07

Q.3 a) Write a program for matrix multiplication. 07

b) Explain any two operations on sparse matrix. 08

Q.4 a) Evaluate the give post-fix expression using stack: 07
10, 2, 8, *, +, 3, -

b) Write C program to implement stack using static array. 08

Q.5 a) Add the following polynomials using linked representation: 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

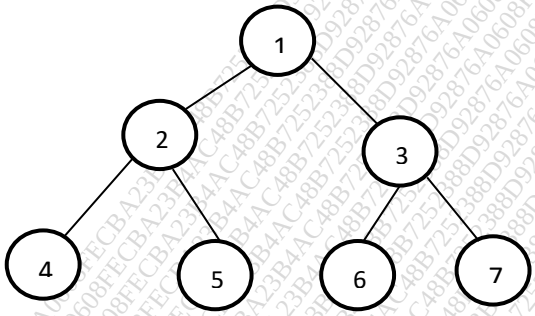
a) Construct binary tree for a given sequence of pre-order and in-order

Pre-order	a	b	d	e	c	f
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

b) Explain in order, preorder, post-order and level-order traversal for given binary tree: 08



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: 08
15, 20, 24, 10, 13, 7, 30, 36, 25.

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

Total No. of Printed Pages:02

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

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

Please check whether you have got the right question paper.

N.B 1) Question .No.1 and 6 is compulsory.
2) Attempt any two questions from Q. No. 2 to Q. No. 5 and Q. No. 7 to Q. No.10 of each section.

Section A

Q.1 Attempt any five: 10

a) Explain Bus topology.
b) Why we use switching?
c) Define block coding and give its purpose.
d) What is data rate? Give data rate for LAN.
e) State difference between physical Address and Logical Address.
f) What is ISP?
g) Why we need to multiplex data? State the types of multiplexing techniques.
h) 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. 07
Messages 11010010
Polynomial 1101

Q.5 Write short notes on (Any three) 15

a. Port Address.
b. Serial transmission.
c. Analog to Digital Conversion.

d. Checksum
e. Hamming

Section B

Q.6 Attempt any five: 10

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?
e) What is the purpose of NIC?
f) What is frequency reuse pattern?
g) Give working of router.
h) Define PSK & ASK

Q.7 a) Explain inter networking concept. 08

b) Explain the IPV4 format with the help of neat diagram. 07

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 ALOHA protocol. 08

b) Explain different types of connecting devices. 07

Q.10 Write short note on (Any three) 15

a) NAT
b) Router
c) Bluetooth
d) Pooling
e) FDMA

Total No. of Printed Pages:02

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

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

Please check whether you have got the right question paper.

N.B 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 Q. No. 10 of each section

Section A

Q.1 Attempt any five 10

a) Identify five components of data communications.
b) List the types of computer networks.
c) What is data rate? Give data rate for LAN.
d) Define 1-persistent CSMA.
e) State Shannon capacity of data transmission.
f) What is slotted ALOHA?
g) What is the purpose of line coding

Q.2 i. Explain in brief wired transmission media. 08
ii. Explain line coding and decoding mechanism. 07

Q.3 i. Compare circuit switched and packet switched networks. 08
ii. Describe flow control in data link layer. 07

Q.4 i. With neat diagram explain Time division Multiplexing (TDM). 08
ii. Explain link layer addressing. 07

Q.5 i. Discuss the responsibility of physical layer and data link layer. 07
ii. Describe Internet history. 08

Section B

Q.6 Attempt any five 10

a) Enlist routing metrics
b) Define Network Address Translation
c) Define slow start in TCP congestion
d) What is connection oriented networks?
e) Define resource record
f) Define FTP
g) What is checksum?

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

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-340
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Parallel & Distributed Computing
(REVISED)

[Time: 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.

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

Section B

Q.6	a)	Explain the term logical clocks.	05
	b)	What is RPC explain in detail.	05
Q.7	a)	Explain Lamport's algorithm for mutual exclusion.	08
	b)	Explain Java RMI in detail.	07
Q.8	a)	Explain the term trashing.	07
	b)	What is Hadoop? Explain building blocks of Hadoop.	08
Q.9	a)	Differentiate between distributed computing & parallel computing.	05
	b)	Explain the term matrix clocks.	05
	c)	Explain granularity in DSM.	05

Q.10 Write short note on: 15

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

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 07
$A * (B + C * D) + E$

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

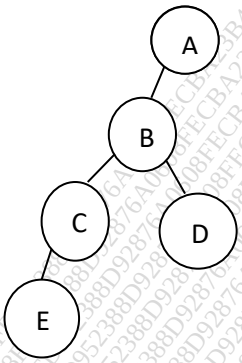
Q.5 a) Explain stack empty and stack full condition. Show the stack contents after each operation for the following sequence of PUSH & POP operation: 08
PUSH (10), PUSH (20), POP ( ), PUSH (30), PUSH (40), PUSH (50). Assume Max stack size =3.

b) Show how to represent polynomials using linked list. Perform addition of A and B. 07
$A = 10x^4 + x^2 + x + 5$
$B = x^3 + x + 2$

Section B

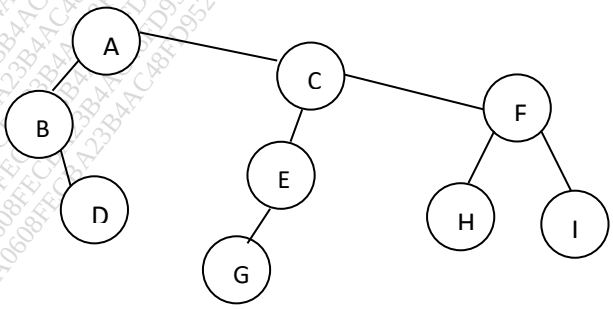
Q.6 Solve any five: 10

a) Give array representation of following binary tree



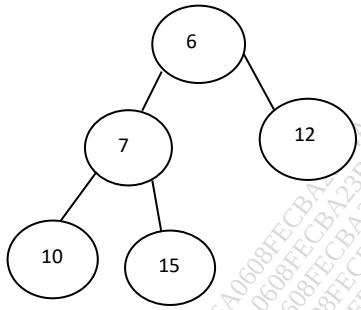
b) What are the major data structures used in following areas? Define them
i. Network data model.
ii. Hierarchical data model.

c) Traverse the tree in inorder and preorder.



d) Explain following graph terminology
   i. Cycle
   ii. Complete graph

e) Insert key 5 to the following min heap & do the necessary updations.



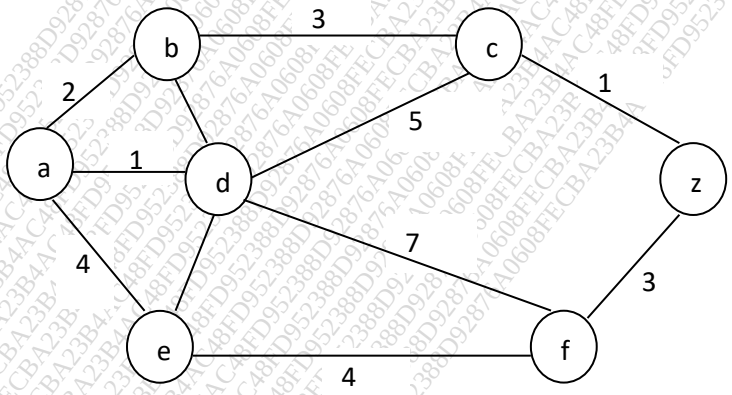
f) Differentiate between linear search and binary search.

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. 08

b) Construct AVL tree for following sequence of keys: 3, 5, 11, 8, 4, 1, 12, 7, 2. 07

Q.8 a) Find shortest path from a to z. 08



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

Q.9 a) Explain binary search method. Consider following list of keys: 08
15, 20, 25, 30, 35, 40, 45, 50
Search
i. $x = 25$
ii. $x = 60$
iii. $x = 40$

b) Apply insertion sort to arrange elements in ascending order 07
3, 7, 8, 5, 2,1, 9, 15, 4

Q.10 a) Write a program to implement selection sort. 07

b) Write a note on: 08
i. Graph representation technique
ii. Graph traversal technique

Total No. of Printed Pages:02

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

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

Please check whether you have got the right question paper.

N.B
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 Attempt any five questions: 10

a) What is JVM? Where it is used?
b) What is "public static void main " in java?
c) Explain Vectors and Arrays? Write difference between them.
d) What is naming conventions used in java?
e) Why interface is used in java?
f) Define error? Explain difference between error and bug.
g) Explain different ways to use thread class.
h) 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

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

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

Section B

Q.6 Attempt 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?
c) Differentiate between AWT and Swing.
d) Explain filter and pipe stream.
e) What is port? Give list of popular ports in system.
f) Write four JDBC drivers.
g) List types of event listeners.
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. (Take rno, fname, mname, lname, class, branch) 07

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 for employee i.e eno,ename, edept, eloc, esal,……etc). 07

Total No. of Printed Pages:2

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

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

Please check whether you have got the right question paper.

N.B i) Q.1 and Q.6 are compulsory. Solve another four questions taking two from each section.
ii) Assume suitable data wherever needed.

Section A

Q.1 Solve any Five from the following 10
(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
$F(A, B, C, D) = \Pi M(0,2,4,6,8,10,12)$
(f) Draw block diagram of 4:1 mux.
(g) Realize following expression using NOR gates only
$Y = (A + \bar{B} + C).(A + B + \bar{C})$
(h) Enlist any four Boolean laws.

Q.2 (a) Differentiate between analog signal and digital signal 07
(b) Design 2-bit comparator using logic gates. 08

Q.3 (a) Explain all the characteristics of digital ICs. 08
(b) Explain the following terms: 07
i) Race around condition
ii) Edge triggered & level triggered flip flop.

Q.4 (a) Minimize the following expression using K-map and realize it by using gates. 08
$F(A, B, C, D) = \Sigma m(0,1,2,3,4,5,13,15) + d(8,9,10,11)$
(b) Design full adder using mux. 07

Q.5 (a) Minimize following expression using Quine Mc-cluskey method 08
$F(A, B, C, D) = \Sigma m(0,2,6,7,8,10,11,12,13) + d(3,4,14)$
(b) Implement 16:1 mux using 4:1 mux. 07

Section – B

Q.6 Solve any five 10

(a) What are the types of shift register?
(b) Compare asynchronous and synchronous counter.
(c) What is resolution of ADC?
(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.

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

Total No. of Printed Pages:2

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] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
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
	b)	Explain navigation patterns in details.	08
Q.5	a)	Explain Button View & Label View in detail.	07
	b)	List & explain different cross platform application development tools.	08

Section B

Q.6	a)	When Custom Renderers used in mobile application development.	05
	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: i) Effects ii) Gestures	08
Q.10	a)	Write & explain steps of using SQLite Database.	08
	b)	How plugins are used in mobile application development.	07

Total No. of Printed Pages:02

SUBJECT CODE NO: H-242
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE/IT/ECT/EE)
Elective-II: Managing Advance Server
(REVISED)

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

Please check whether you have got the right question paper.

N.B 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 Attempt any two 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

b) What is DNS? Explain in detail. 07

SECTION – B

Q.5 Attempt any two from following questions: 10

a) Explain Domain Controller (DC).

b) Describe Security log in detail.

c) Explain IP Address & IP Classes

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

Total No. of Printed Pages:02

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

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

Please check whether you have got the right question paper.

N.B 1) Question No.1 from Section A and Question No.6 from Section B are compulsory.
2) Solve any two questions from remaining in each Section.
3) Assume suitable data if necessary.

Section A

Q.1 Attempt any five:- 10

a) What is Existential quantifier?
b) Explain Associative Laws of set.
c) What is Modus Tollens?
d) What is Universal quantifier?
e) Define probability.
f) Explain power set with example.
g) Explain basic connectives of compound proposition.
h) Explain Equality of two sets.

Q.2 a) Translate the following statements into logical expressions using predicates, quantifiers and logical connectives. 08
i) If a number is rational, then it is a real number.
ii) An equilateral triangle has three angles of $60°$ and conversely.

b) If A ={4,5,7,8,10} B={4,5,9} and C={1,4,6,9} then verify that 07
$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

Q.3 a) One card is drawn from pack of 52 cards. What is the probability that card is either red card or a king. 08

b) Prove by mathematical Induction $n^3 + 2n$ is divisible by 3 for all $n \geq 1$ 07

Q.4 a) Construct the truth table for the following statement to determine tautology or contradiction. 08
$(p \wedge (\sim p \vee r)) \wedge \sim r$

b) State $\sim p \vee \sim q$ is a valid conclusion from premise $(p \wedge q) \rightarrow r, r \rightarrow s, \sim s$ 07

Q.5 a) Write converse and contrapositive of following:- 08
1) If Jay is a poet, then he is rich.
2) If she works, she will earn money.

b) Show that $(r \wedge s) \rightarrow q \Leftrightarrow \neg(r \wedge s) \vee q$ 07

Section B

Q.6 Solve any five:- 10

a) Explain the Cartesian product of two sets.
b) Define Relation with an example.
c) Explain cyclic group.
d) Explain Directed graph.
e) Explain Range and Domain of a function.
f) Explain Ring and its properties.
g) Explain zero-one matrices.
h) Define Parity-check code with example.

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 $A = \{1,2,3\}$; $R_1 = \{(1,1),(2,2),(3,3)\}$; $R_2 = \{(1,1),(2,2),(3,3),(1,3)\}$ 08
$R_3 = \{(1,1),(3,3),(1,3),(3,1)\}$ $R_4 = \{(1,2),(2,1),(1,3),(3,1)\}$
Determine whether above relations are symmetric, reflexive, transitive and antisymmetric.

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. 08

$$\begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

1) Find the generator matrix
2) Find the code word for the data bit 101.

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-505
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Elective-II: Data Science
(REVISED)

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

Please check whether you have got the right question paper.

N.B 1) Q .No. 1 and Q.No.6 are compulsory.
2) Solve any two questions from the remaining questions in each Section.

Section A

Q.1	A) What is data science? Explain data science involvement.	05
	B) Compare and contrast between business intelligence and Data science.	05
Q.2	A) With a suitable diagram explain data science life cycle.	08
	B) Explain i) Association rule mining ii) Market basket analysis	07
Q.3	A) What is a recommendation engine? Explain it's working.	08
	B) What is a recommender system? How it is built? Explain	07
Q.4	A) What is text mining? Explain why we need it.	07
	B) Explain i) Text mining algorithms ii) Sentiment analysis	08
Q.5	Write short notes on the following (Any three)	15

i) Tools of data science
ii) Recommendation use case
iii) Big data
iv) TF-IDF

Section B

Q.6	What is time series data, explain time series variables and time series data components.	10
Q.7	A) What is ARIMA model? How it is implemented for forecasting.	08
	B) What is tableau? Explain tableau concept.	07
Q.8	A) What is deep learning? Explain biological neural networks.	08
	B) How artificial neural networks are useful in deep learning? Explain how ANN model is built.	07
Q.9	A) With respect to data visualization explain i) Filters ii) Charts	08
	B) With suitable example explain reinforcement learning use cases.	07

Q.10 Write short notes on the following (Any three) 15

i) Exponential smoothing models
ii) Dashboards
iii) Important terminologies of ANN
iv) Box plot

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-504
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Elective-I: Data Analytics with R
(REVISED)

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

Please check whether you have got the right question paper.

N.B
1. Q.no.1 and Q.no.6 are compulsory
2. Attempt any two questions from the remaining in each section.

Section A

Q.1	Write short notes on (any two)		
	a)	Inferential statistics	05
	b)	Head and Tail functions	05
	c)	Hypothesis Testing	05
Q.2	a)	Explain in detail about Binomial probability distribution.	08
	b)	Explain in detail about Range, Inter Quartile Range, variance & standard deviation.	07
Q.3	a)	Explain in detail about built in functions in R. along with some examples.	08
	b)	Find the mean median and Range of	07
		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.	
Q.4	a)	Explain in detail how to read and write a CSV file.	08
	b)	Mention and brief on some functions used for manipulation of data in R.	07
Q.5	a)	What is a sample? Explain in detail various sampling techniques.	08
	b)	What is variable? Explain in detail about Dependent and Independent variables.	07

Section – B

Q.6	Write short notes on (any two)		
	a)	K – means	05
	b)	Classification	05
	c)	Adjusted R- squared	05
Q.7	a)	What is Hierarchical clustering? Explain in detail various distance measures.	08
	b)	Briefly differentiate between K-means and fuzzy c- means clustering.	07
Q.8	a)	Explain in detail about various categories of Machine learning algorithms.	08
	b)	What is linear Regression? Explain in detail about linear Regression.	07

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 Residuals.	08
	b)	What is logistic Regression? Explain in detail.	07

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-554
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT)
Elective –I: Digital Image Processing
(REVISED)

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

Please check whether you have got the right question paper.

N.B
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

Q.1 Solve any five:- 10

a) What is digital image?
b) Define neighbors of pixel.
c) What is Image Negative?
d) What is need of image transform? Define DFT.
e) What is unsharp masking? Give its expression.
f) What is mean filter? Why it is known as a linear spatial filter.
g) Define source encoder.
h) What is fidelity criterion?

Q.2 a) 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] 08
   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.

b) What is image filtering? Explain basic steps for filtering in frequency domain. 07

Q.3 a) Elaborate the components of digital image processing along with its block diagram. 08

b) What is connectivity in digital image processing? Explain different types of connectivity. 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) Data Redundancy
b) Sampling and quantization
c) Log and power-law transformation
d) Binary image compression standards.

Section B

Q.6 Solve any five:- 10

a) What is mean by discontinuity?
b) Write applications of segmentation.
c) Define gradient operator.
d) Define multilevel thresholding.
e) What is color complement?
f) Define image opening and closing.
g) Define signature.
h) Define image description.

Q.7 a) Explain three types of discontinuities in digital images. 07

b) Define thresholding and explain the various methods of thresholding with suitable example. 08

Q.8 a) Explain RGB color model. 07

b) The input picture and structuring element as shown below. Perform the erosion and dilation of the input image/picture. 08

0	0	0	0	0	0	0
0	0	0	0	1	1	0
0	0	1	1	0	1	0
0	0	1	1	0	0	0
0	0	0	1	1	0	0
0	0	0	0	0	0	0

Input picture

0	1	0
0	(1)	0
0	1	0

Structuring element

Q.9 a) Explain the different types of region descriptors required in image description step. 07

b) What is representation? What is role of chain code & polygonal approximation in representation process? 08

Q.10 Write short note on:- (Any three) 15

a) Pattern and pattern classes.
b) Applications of gray scale morphology.
c) Region split and merge technique.
d) Skeletonization.

Total No. of Printed Pages:02

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

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

Please check whether you have got the right question paper.

N.B
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 management a. Block size b. 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), 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?	07
	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 system?	08
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

H-530

Total No. of Printed Pages:3

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.

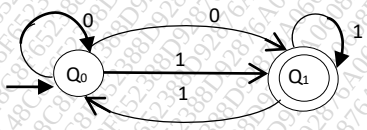
N.B i) Q.No.1 and Q.No.6 are compulsory.
ii) Attempt any two questions from Q.No.2 to Q.No.5 and from Q.No.7 to Q.No.10 of each section.
iii) Figures to the right indicate full marks.

Section A

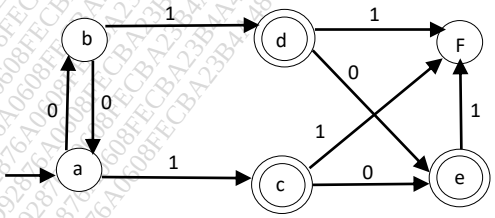
Q.1 Attempt any five Questions from following. 20

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 08
b) Convert following NFA to its Equivalent DFA. 07

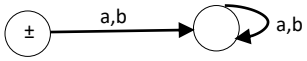


Q.3 a) Minimize following DFA 07

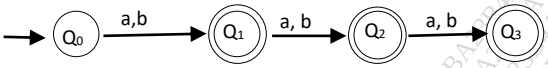


b) Attempt following 08

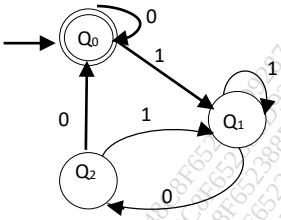
1) Find regular expression for a language containing set of all strings over {0,1} ending with "011"
2) Find regular expression of a given Language L(r)={$\epsilon, a, aa, aaa, aaaa, aaaaa$}
3) For given DFA, find Regular expression



4) For given DFA, find Regular expression



Q.4 a) Find out the Regular expression from given DFA by Arden's theorem. 08



b) Prove that L = { a^n | n is prime} not in Regular 07

Q.5 a) Explain Chomsky classes for Grammar 08

b) Consider the following Grammar 07

$S \rightarrow 0B|1A$

$A \rightarrow 0|0S|1AA$

$B \rightarrow 1|1S|0BB$

for a string "00110101" find leftmost and rightmost derivations.

Section B

Q.6 Attempt any five Questions from following 10

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.
g) Halting problem of TM.
h) Define universal TM.

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 07

$S \rightarrow SB|AB$
$A \rightarrow CC$
$B \rightarrow b$
$C \rightarrow c$

Q.8 a) Explain multitape and multitrack variants of TM. 08

b) Design TM that read a binary string and replace every occurrence of 111 by 101 07

Q.9 a) Design a TM to accept all strings of even numbers of 1's 08

b) Show that $L = \{a^n b^n c^n | n \geq 1\}$ is not in CFL 07

Q.10 a) State and explain post correspondence problem and prove that following Domino's are undecidable 08

	A	B
1	10	101
2	011	11
3	101	011

b) Construct PDA even numbers of a's and b's. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-537
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT)
Database Management System
(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 from remaining from Section A and Section B from each.
3. Assume suitable data.

Section A

Q.1 Attempt any five questions: 10

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

b) Differentiate 08
i) Entity Versus Relationship
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 tables and files. 07

Section B

Q.6 Attempt any five questions: 10

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?
vi) What is order by clause in SQL?
vii) What is selection and projection in relational algebra?
viii) What is natural Join?

Q.7 a) Explain Boyce-Codd normal form (BCNF) with example. 08

b) 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

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

b) What is transaction? Explain ACID properties of transaction. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-544
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT)
Programming In Java
(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. Attempt any two questions from remaining questions of each section.
3. Assume suitable data wherever necessary.

Section A

Q.1 Solve any two: 10
a) List out wrapper classes in Java
b) Explain features of java
c) Define class, object.

Q.2 a) Differentiate between abstract class and interface. 07
b) How to create user defined package? 08

Q.3 a) What is exception handling? How to handle multiple exceptions. 07
b) 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
a) Define stream.
b) Explain thread priority
c) How to perform action on control component

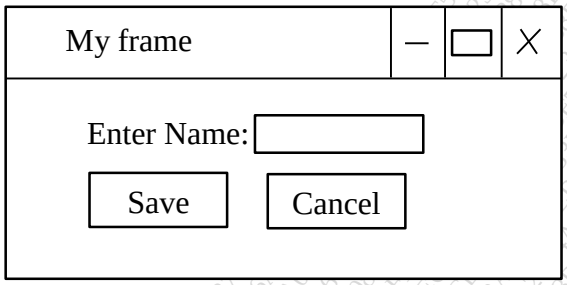
Q.7 a) Write a java program to demonstrate object serialization. 07
b) Explain thread life cycle. 08

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

Total No. of Printed Pages:2

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]**

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, 10 marks each, will be compulsory.
2. From the remaining questions in Section A & B, Solve any two questions, 15 marks each.

Section A

Q.1 Attempt any five questions: 10
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.

Q.2 a) Explain DHCP in detail. 07
b) What are the network layer design issues? Explain them in detail. 08

Q.3 a) What is the need of routing algorithm? Explain in detail about Link-State Routing. 07
b) With neat diagram, explain the operations of BGP. 08

Q.4 a) What is TCP? Explain the process of three-way handshaking in detail. 07
b) Explain in detail, State-Transition Diagram in TCP. 08

Q.5 Write short note on: (any three) 15
a) NAT
b) ICMP
c) Socket Programming
d) Multiplexing & Demultiplexing
e) CIDR

Section B

Q.6 Attempt any five questions: 10
a) What is LAN emulation?
b) Which are the MAC sub-layers in IEEE 802.11?
c) What is WAP?

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. 07
b) What is wireless application protocol? Explain it in detail. 08

Q.9 a) What is SNMP? Explain it in detail. 07
b) What are TELNET & SSH? Explain them in detail. 08

Q.10 Write short note on: (any three) 15
a) H. 323
b) CSMA/ CA
c) SIP
d) ATM LAN's
e) TCP Over Wireless Network

Total No. of Printed Pages:02

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) Explain assembly language vs embedded C.
b) Explain difference between microprocessors and microcontrollers.
c) State features of Arduino uno & Raspberry Pi.

Q.2 a) Compare RISC & CISC architecture and discuss features of ARM7 wrt. RISC/CISC. 08
b) Explain communication protocols in detail. 07

Q.3 a) Explain design metrics and its optimization in embedded system. 08
b) Discuss in detail components of embedded system. 07

Q.4 a) Explain following I/O devices with respect to embedded system. 08
i) ADC ii) Keypad

b) Explain 8-bit 8051 microcontroller architecture. 07

Q.5 Solve any 3 from following:- 15

a) State features of 8051 and ARM7.
b) Write short note on CPSR & SPSR.
c) Explain in detail serial communication vs. parallel communication.
d) 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.
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
   ii) Mailbox

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

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: 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 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:- 08
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

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

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-465
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Elective-I: Cloud Computing
(REVISED)

[Time: 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 from remaining questions from each section.

Section A

Q.1 Write short notes on any two. 10

a) Grid computing
b) Monitoring –as-a-service
c) 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

b) Explain in detail about SOAP, WSDL and UDDI web-service. 07

Section B

Q.6 Write short notes on any two:- 10

a) MEMS
b) Security challenges in cloud
c) Pig

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

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-466
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Elective-I: Multicore Computing
(REVISED)

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

Please check whether you have got the right question paper.

N.B
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. 10 of each Section.
3) Figures to the right indicates full marks.

Section A

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
	b)	Explain sequential and concurrency model with suitable example?	07

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	a)	What are possible overheads in parallel programming? Explain with example how to estimate each?	08
	b)	Explain the mapping techniques for load balancing?	07

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?	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

Total No. of Printed Pages:2

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]**

Please check whether you have got the right question paper.

N.B Attempt any two questions from each section.

Section A

Q.1 A) Explain 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) 10

- 192.168.1.0 /27
- 172.16.0.0 /24
- 171.16.0.0 /19

B) Write short note on following 10

I. PING

II. What is Function of Router?

Q.3 A) Explain About the following. 10

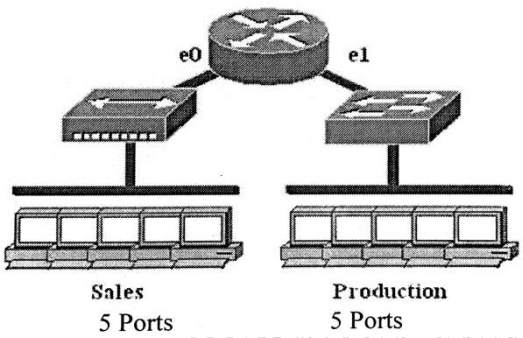
i. Console Port

ii. Serial Port

iii. Auxiliary Port

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
	B) What is difference in between OSPF and EIGRP.	10

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-471
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE/IT)
Elective-I: Internet of Things
(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) Solve any two questions from remaining in each section.

Section A

Q.1	a)	What are different components required in IoT device.	05
	b)	Give brief overview of IoT.	05
Q.2	a)	What is relation between WSN & IoT. Explain with example.	08
	b)	What effect will the IoT have in healthcare? Explain with any one example of smart device.	07
Q.3	a)	What is requirement of IoT protocol standardization. Explain with architecture.	08
	b)	What is role of cloud computing and Big Data in IoT.	07
Q.4	a)	Explain layered architecture of IoT.	07
	b)	Explain with example MQTT protocol. What is role of MQTT protocol in IoT?	08
Q.5	Write short note (any three)		15

a) Zigbee
b) Characteristics of IoT
c) COAP
d) IoT Analytics
e) Vision of IoT

Section B

Q.6	a)	Explain architecture standardization for WoT	05
	b)	Explain cloud of things in detail.	05
Q.7	a)	Why we need of IoT security.	08
	b)	Describe physical security in IoT.	07
Q.8	a)	Explain IoT application & deployment scenario in different domain.	07
	b)	Explain in detail with block diagram application of IoT in healthcare.	08

Q.9	a)	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)	15
	a)	Trust for IoT	
	b)	Smart City in IoT	
	c)	Web of Things	
	d)	Issues in IoT	
	e)	IoT strategic research & Innovation	

Total No. of Printed Pages:2

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.Marks:80]**

Please check whether you have got the right question paper.

N.B 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. 07
b) What is GOTS? Explain its characteristics. 08

Q.3 a) What are the advantages of vendor hosted platform? 07
b) Explain features of CrMS in detail. 08

Q.4 a) Differentiate among synchronous and asynchronous e-learning. 07
b) Explain functionalities provided by LMS. 08

Q.5 a) Explain virtual learning environment. 07
b) Explain return on investment with example in context of LMS. 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. 07
(b) How to integrate video conferencing in LMS? List its advantages. 08

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
	b)	What are the different administrative tasks that can be performed in Moodle?	08

Total No. of Printed Pages:2

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 have got the right question paper.

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
a) What are the components of Digital Image Processing System?
b) What are different arithmetic & logical operations applicable to images?
c) What is fidelity criteria?
d) What is difference between spatial and frequency domain?
e) What is meant by path?
f) 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
a) Data redundancy
b) Image sensing and Acquisition
c) Distance measures
d) Order statistic filter

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.
c) Explain line detection.
d) What is difference between full color image processing and pseudo color image processing?
e) Write a mask of sobel operator and Laplacian operator.
f) What is threshold?
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

Total No. of Printed Pages:02

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

[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.

SECTION A

Q.1 Attempt any five 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. Explain differentiated services in detail. 08

Q.5 Write a short note on any three. 15
a. Network layer design issues.
b. Fragmentation and tunneling
c. QoS in switched networks.
d. ATM layers.

SECTION B

Q.6 Attempt any five questions. 10
a. What is maximum size of TCP header?
b. What are the operational phases in TCP?
c. What is process to process delivery?
d. Compare primary and secondary server?
e. What is resolution?
f. What is DNS?
g. What is FTP?

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.

H-149

Total No. of Printed Pages:2

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]**

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) Attempt any two questions from the remaining questions in each section.
3) Assume suitable data wherever necessary.

Section- A

Q.1 Solve any two. 10
a) Explain applications of mobile communication.
b) Explain near & far terminals.
c) Explain FDMA.

Q.2
a) Explain code division multiplexing. 08
b) Explain spread spectrum. 07

Q.3
a) Explain mobility management. 08
b) Explain cellular system in detail. 07

Q.4
a) Explain multiple access with collision avoidance. 08
b) Explain protocol architecture of GSM. 07

Q.5
a) Explain different handover procedures. 08
b) Explain GPRS. 07

Section- B

Q.6 Solve any two . 10
a. Explain VOIP.
b. Explain XML.
c. Explain IP-in-IP.

Q.7
a. Explain function of lang library of WML script. 07
b. Explain phone.com extensions. 08

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

H-138

Total No. of Printed Pages:02

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

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

Please check whether you have got the right question paper.

N.B
1. Questions no.1 from section A and question no. 6 from section B (carrying 10 marks each) are compulsory.
2. Attempt any two questions from the remaining question in each section (carrying 15 marks each)

Section A

Q.1 Attempt any five of the following 10

1. What is the function of segment register of 8086?
2. How 8086 microprocessor generates 20 bit physical address?
3. Comment on memory paging mechanism
4. Which are the three buses used in computer system? Write their functions.
5. Write the functions of interrupt flag and TRAP flag of 8086 microprocessor.
6. Give the function of selector and descriptor in protected mode memory addressing
7. What is flat mode memory addressing?
8. Draw simplified diagram for write bus cycle of 8086 microprocessor.

Q.2
a) Explain internal block diagram of 8086 microprocessor 09
b) Explain rotate instruction with suitable examples. 06

Q.3
a) Write an assembly language program for addition of two BCD numbers 07
b) Explain logical instructions of 8086 microprocessor 08

Q.4
a) What are conditional Jump instructions? Explain these instructions based on the flags being tested 08
b) Write an assembly language program for division of 16 – bit number by 8- bit number. 07

Q.5
a) Explain shift instructions with suitable examples. 07
b) Write an assembly language program to check whether the entered number is even number or odd number 08

Section B

Q.6 Attempt any five of the following 10

a) What is the function of A_1 and A_0 pins of 8255 PPI?
b) Explain the function of 'Ready' pin of 8086 microprocessor.
c) Why the data and address buses of 8086 microprocessor are multiplexed?
d) Differentiate between minimum mode and maximum mode operation of 8086 microprocessor.
e) Comment on non- maskable interrupts.
f) Enlist the components required for fully buffered 8086 microprocessor system
g) Draw control word format for bit set reset mode of 8255 PPI
h) 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

Q.8 a) With suitable diagram explain how to insert 'wait' state in the timing diagram of 8086 microprocessor 07
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 explain bus buffering & latching 08
b) Explain different modes of operation of 8254. 07

Q.10 a) With suitable diagram explain the interfacing of 8284A clock generator with 8086 microprocessor. 08
b) With suitable example, explain how to generate square wave using 8254. 07

Total No. of Printed Pages:2

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]**

Please check whether you have got the right question paper.

N.B i) Q.1 & Q.6 are compulsory.
ii) Solve any two questions from the remaining each section.

SECTION A

Q.1 Solve any five questions: 10
a) Define an algorithm & write an algorithm for linear search.
b) What is performance measurement of an algorithm?
c) Explain any one tree traversal technique with an example.
d) Write any two characteristics of greedy method.
e) Explain space complexity.
f) What is job sequencing with deadline?

Q.2 a) Explain quick sort using the given data and comment on its time complexity 08
{50, 50, 60, 60, 40, 40, 30, 30, 20, 20}

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. 07
20, 10, 30, 50, 60, 20, 35, 40, 50, 25, 80 & perform heap sort.

Q.4 a) Explain Strassen's matrix multiplications. 08
b) Explain optimal merge patterns. 07

Q.5 a) Explain Huffman coding with suitable example. 08
b) Write an algorithm to find smallest & largest number in an array. 07

SECTION B

Q.6 Solve <u>any five</u> questions: 10

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.

Q.7 a) Determine optimal binary search tree for n=4, (a1, a2, a3, a4) = (do, if, int, while) 10
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. 05

Q.8 a) Solve 4-queries problem using backtracking method. 08

b) Write algorithm for single source shortest path. 07

Q.9 a) Explain multistage graph problem and write steps to solve it using dynamic programming. 08

b) Explain FIFO branch & bound with suitable example. 07

Q.10 a) Solve 15-puzzle problem using branch & bound. Initial arrangement is: 09

$$\begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & & 8 \\ 9 & 10 & 7 & 11 \\ 13 & 14 & 15 & 12 \end{bmatrix}$$

b) Explain graph coloring problem and its application. 06

H-119

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-119
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE/IT)
Computer System Security and Laws (CSE/IT)
(REVISED)

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

Please check whether you have got the right question paper.

N.B 1) Q. No. 1 and Q. No. 6 are compulsory.
2) From the remaining question in Section A and B students are supposed to solve any two questions from each section.

Section A

Q.1 a) What are the system security goals? Explain why balance among different goals is needed. 05
b) Differentiate between active attack & passive attack. 05

Q.2 a) How does Kerberos work? Explain with example? 08
b) Explain RSA algorithm in details along with suitable example? 07

Q.3 a) Explain working of AES algorithm in details. 08
b) Explain cryptographic Hash function. 07

Q.4 a) Draw and explain Network Security Model. 08
b) What is Biometrics? State its importance? Explain different types of Biometrics. 07

Q.5 Write a short note on:- 15

a) Digital Signature
b) User Name and Password
c) Extensible Authentication Protocol [EAP]

Section B

Q.6 a) List & Explain different types of incident. 05
b) List & Explain different types of Computer forensic tools. 05

Q.7 a) How does PGP achieve confidentiality and authentication in Email? 08
b) Why Secure Socket Layer (SSL) is needed? What are the different features SSL provides? Explain how SSL works? 07

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

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-246
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Elective-II: Hadoop Technology
(REVISED)

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

Please check whether you have got the right question paper.

N.B 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

a) NoSQL
b) Advantages of Hive
c) Advantages of pig.

Q.2 a) What is Big data? Explain different characteristics of big data with examples. 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 Hive. 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

b) Explain in detail about read and write operation in pig Latin. 07

Section B

Q.6 Write short notes on any two:- 10

a) Steps required to configuring HBase.
b) Flume
c) Sqoop

Q.7 a) What is HBase? Explain different ACID properties used in HBase. 08

b) Explain various shell commands used in HBase. 07

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

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-245
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Elective-II: I- Phone Programming
(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 section

.

Section A

Q.1 Solve any two question 10
- a) Explain similarities and differences between C and C++ of objective – C
- b) Write and explain structure of objective – C program with example
- c) Explain and list ANSI C, Next step related data types

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

Section B

Q.6 Solve any two questions 10
- a) What is UI alert? Explain with example
- 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
- b) Explain the use of UITable view controller 07

Q.9	a)	How to create UITable view, UITable base application in ios	08
	b)	Write ios application for image picker	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

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-244
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE)
Elective-II: Network Infrastructure Management
(REVISED)

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

Please check whether you have got the right question paper.

N.B
1. Q.no.1 and Q.no.6 are compulsory
2. Attempt any two from remaining question from each section

Section A

Q.1 Solve any two 10
a) Explain network addressing
b) Which technique are used to avoid Routing and switching loop
c) 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 Write short note on any three 15
a) VTP
b) Ether channel
c) Virtual LAN
d) STP

Section B

Q.6 Solve any two 10
a) FLAT based Architecture
b) What do you mean by performance management
c) Protocol specification of SNMP

Q.7
a) What is fault management 07
b) How tools are used in network management 08

Q.8
a) Flat based SLB versus NAT based SLB 07
b) Explain global server load balancing and firewall load Balancing 08

Q.9 a) What is the role of SMI and MIB in network management 07

b) Explain SNMP V_2 and SNMPV_3 08

Q.10 Write short note on any three 15

a) Security management
b) MIB
c) Remote network monitoring
d) NAT based SLB

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-241
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (CSE/IT)
Elective-II: Agile Methodology
(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.5 from section A & B respectively are compulsory
2. Solve any two question from each section remaining
3. Assume suitable data if required

Section A

Q.1 Attempt any five 10
- a) What is Agile
- b) What does the user story describe?
- c) What is scrum?
- d) What are the benefits of Agile software development
- e) Explain Agile turn –up and turn – down chart
- f) Mention the key difference between sprint backlog & product backlog
- g) What is Refactoring?

Q.2
- a) Explain the Agile software engineering life cycle. 08
- b) What is user acceptance testing who perform UAT? When is UAT testing done? 07

Q.3
- a) Explain Agile manifesto principle 08
- b) What are the three main roles in scrum 07

Q.4
- a) Why exploratory testing is important in Agile projects 08
- b) What is the effective regression testing in Agile development 07

Section B

Q.5 Attempt any five 10
- a) List benefits of agile
- b) What is continuous integration
- c) What is Agile version control
- d) What is sprint level regression testing?
- e) Who is stakeholder in Agile project management?
- f) What are goals in Agile marketing?
- g) For what purpose is team member in Agile project management responsible

Q.6
- a) The Liskov substitution principle is an extension of open – closed principle explain? 07
- b) Explain Interface segregation principle 08

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

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]**

Please check whether you have got the right question paper.

N.B 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

Q.1	a)	Explain terms: i) Modifiability and Reusability ii) Portability.	05
	b)	Write a short note on Green Washing.	05
Q.2	a)	Explain term server in data centre IT infrastructure.	08
	b)	What is Green IT? Explain holistic approach to greening IT.	07
Q.3	a)	Explain term ideal efficiency in software energy efficiency technique.	08
	b)	Draw & explain the states of mechanical hard disk drives in detail.	07
Q.4	a)	What is the difference between Green IT 1.0 & Green IT 2.0?	07
	b)	Explain term context awareness in software energy efficiency technique.	08
Q.5	a)	Write a short note on: i) Vectorization ii) Efficient Algorithms.	08
	b)	State & explain energy management techniques for hard disk.	07

SECTION B

Q.6	a)	Explain routing information protocol cost in detail.	05
	b)	Write a short note on SOA.	05
Q.7	a)	Explain core components in green networking.	08
	b)	Describes the features of Cloud enabling Green Computing.	07
Q.8	a)	Explain the categories of information systems in greening enterprise.	08
	b)	Explain objectives of green computing.	07
Q.9	a)	Write a note on: IAAS Provider.	08
	b)	Write a short note on EMIS.	07
Q.10	a)	Describe Green IT: A Megatrend.	08
	b)	Explain Cloud Computing deployment models	07

Total No. of Printed Pages:4

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

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

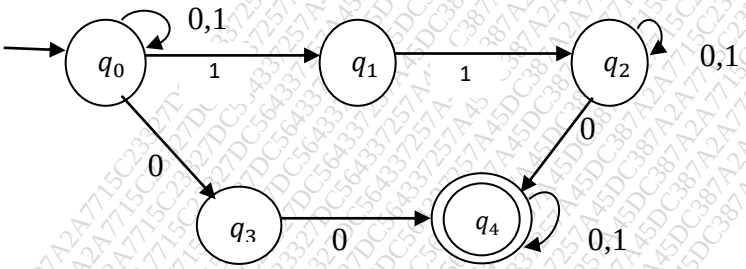
Please check whether you have got the right question paper.

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 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 any five 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 $\epsilon - NFA$ 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}.

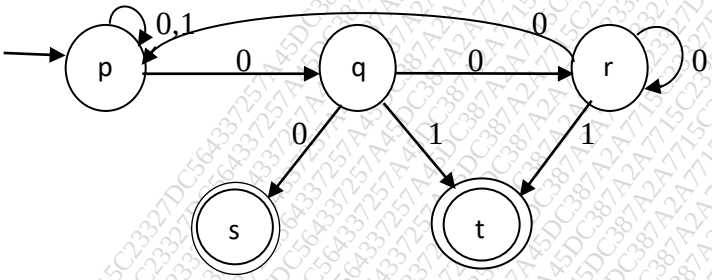
Q.2 a) Construct a finite automata equivalent to the regular expression $(0+1)^*00+11(0+1)^*$. 07

b) Consider the following $\epsilon - NFA$: 08

δ	ϵ	a	b
$\rightarrow p$	$\{r\}$	$\{q\}$	$\{q,r\}$
q	$\emptyset$	$\{p\}$	$\emptyset$
$*r$	$\{p,q\}$	$\{r\}$	$\{p\}$

i) Compute $\epsilon - closure$ of each state.
ii) Convert the automata to a DFA.

Q.3 a) Construct a DFA equivalent to the NFA given below: 08



b) Define ambiguity in grammar? Show that the grammar S → SbS|a is an ambiguous grammar. 07

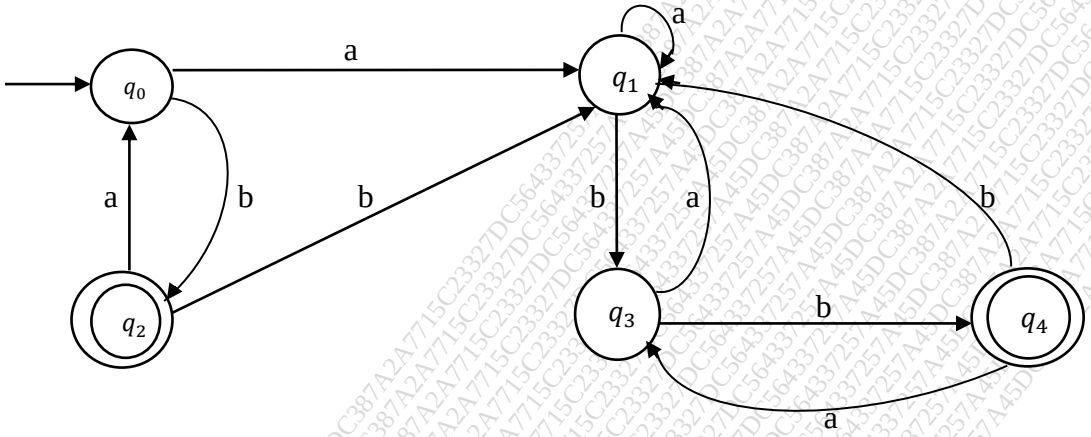
Q.4 a) Construct Moore machine equivalent to the following Mealy Machine. 08

Present State	**Next State**			
	$a=0$		$a=1$	
	State	Output	State	Output
$\rightarrow q_1$	q_3	0	q_2	0
q_2	q_1	1	q_4	0
q_3	q_2	1	q_1	1
q_4	q_4	1	q_3	0

b) State and prove Arden's Theorem. 07

Q.5 a) Let G be the grammar:- 07
S → 0B | 1 A , A → 0|0S|1AA , B → 1|1S|0BB for the string 110010 , find:
i) Leftmost derivation
ii) Rightmost derivation
iii) Parse tree

b) Find out minimal DFA for following DFA: 08



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:-

$S \rightarrow a\ Aa|\ b\ B\ b\ |C, A\ \rightarrow C|a\ , B \rightarrow C|b, C \rightarrow CDE|\in, D \rightarrow A|B|ab.$
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		
	b	0	1
$\rightarrow q_1$	$1L\ q_2$	$0R\ q_1$	-
q_2	$bR\ q_3$	$0L\ q_2$	$1L\ q_2$
q_3	-	$bR\ q_4$	$b\ R\ q_5$
q_4	$0R\ q_5$	$0R\ q_4$	$1R\ q_4$
$*(q_5)$	$0L\ q_2$	-	-

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 $L = \{a^p | P\ is\ prime\}$ is not context free language. 07

Q.9 a) Consider $G = (V_N, \Sigma, P, S)$ be given by $S \rightarrow AB\ , A \rightarrow a, B \rightarrow b, B \rightarrow C, E \rightarrow a$. Find reduced grammar. 07

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, 07
$A = (\{q_0, q_1\}, \{a, b\}, \{z, z_0\}, \delta, q_0, z_0, \emptyset)$
And δ is given by-
$\delta(q_0, b, z_0) = \{(q_0\ , z\ z_0)\}$
$\delta(q_0, \wedge, z_0) = \{(q_0\ , \wedge)\}$
$\delta(q_0, b, z) = \{(q_0\ , z\ z)\}$
$\delta(q_0, a, z) = \{(q_1\ , z)\}$
$\delta(q_1, b, z) = \{(q_1, \wedge)\}$
$\delta(q_1, a, z_0) = \{(q_0\ ,\ z_0)\}$

b) Construct a 3-track TM to determine whether a given number is prime or not. 08

Total No. of Printed Pages:02

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

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

Please check whether you have got the right question paper.

N.B
1) Q.1 & 6 are compulsory.
2) Solve any two from remaining in each section.
3) Assume suitable data with justification.

Section A

Q.1 Solve any five 10

i) What is pipelined architecture?
ii) Identify which segment registers are used in MOVSB instruction?
iii) How 20 bit physical address is generated in 8086?
iv) Define Macro with example.
v) What is use of $\overline{BHE}$ / S7 pin in 8086.
vi) What is address bus in 8086?
vii) Enlist any four types of main memory.

Q.2 a) For the following instructions draw the read and write cycles. Also explain how 8086 executes this instruction. 10
MOV AX, [BX]
MOV [BP], CX

b) Explain the flags of 8086 with effect of sample instruction on them? 05

Q.3 a) Write interactive program to convert two digit hex number into BCD number? 08

b) Draw the pin diagram of 8088 microprocessor? And explain the difference between 8086 and 8088 microprocessor. 07

Q.4 a) What is TSR? Write a program to demonstrate the TSR? 05

b) Explain the role of IVT in executing ISR? 05

c) Draw and explain timing diagram of INTR instruction. 05

Q.5 Write short notes (<u>any three</u>) 15

i) Five services of Int 21 h with example.
ii) PSP
iii) Near and Far procedure with example
iv) Directives
v) Addressing modes of 8086
vi) Memory segmentation

Section B

Q.6 Solve any five 10

1) Define the term computer architecture?
2) Enlist functional components of computer.
3) What is Latency and throughput?
4) Enlist any two differences between SRAM & DRAM?
5) What is COM port?
6) What is control memory?
7) What is CISC?

Q.7 a) Explain classification of computers in detail? 08

b) Explain different parameters used to measure the performance of computer? 07

Q.8 a) Explain behavior of CPU operation using flow chart? 07

b) Explain instruction cycle in detail? 04

c) Describe hardwired control unit design in detail? 04

Q.9 a) What is parallel port? Explain printer port in detail? 05

b) Explain PCI and SCSI bus in detail? 05

c) Explain I/O interface with suitable example. 05

Q.10 Write short notes (Any three) 15

1) Memory subsystem
2) Output Devices
3) Data Path in a CPU
4) V^{th} Generation of computers
5) RISC Vs. CISC.

Total No. of Printed Pages:2

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

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

Please check whether you have got the right question paper.

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

Section A

Q.1 Solve any five: 10
a) What is the structure of C++ program?
b) 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.
e) How does constructor differ from normal functions?
f) When will you make a function inline? Why?
g) How to create object in C++?

Q.2 a) Explain the following terms of OOP. 08
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
a) Recursive function
b) Type casting
c) Nesting of member function
d) Destructor

Section B

Q.6 Solve any five 10

a) What is use of 'this'?
b) Define pure virtual function.
c) What are the generic classes in templates?
d) What is 'function overloading'?
e) Describe 'Try' and 'Catch' block.
f) List various file modes available in C++.
g) How to open and close the file?

Q.7 a) Define inheritance and write a program to illustrate multilevel inheritance. 07

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

Total No. of Printed Pages:2

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

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

Please check whether you have got the right question paper.

N.B
i. Q.no 1and 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

a) Enlist and explain the various application areas of computer graphics.
b) Write the steps of DDA line drawing algorithm.

Q.2 Solve the all following questions. 15

a) What is open GL .and discuss the basic operation of open GL.
b) With suitable diagram explain the architecture of Random scan display.
c) List and explain the logical classes of graphical input devise.

Q.3 Solve all of the following questions. 15

a) Write a short note on: Trackball and Space ball.
b) Explain the major components of Graphics pipeline and there interaction
c) Explain synthetic camera model for imaging system.

Q.4 Solve all of the following questions : 15

a) Explain: RGB colour model and indexed color model.
b) Write a short note on: open GL pipeline.
c) What is mean by display file? What is the function of segmenting display file?

Q.5 Solve all of the following questions.

a) Explain the polygon basics and different types of polygons in open GL. 08
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. 07

Section B

Q.6 Solve all of all the following questions. 10

a) Obtain the homogeneous coordinates for :
   i) Translation
   ii) Scaling
   iii) Rotation.

b)write a short note on:
   i) Parallel projection &
   ii) Perspective projection.

Q.7 Solve all of following questions: 15

a) Write a short note on: interior & exterior clipping.
b) Perform the counter clockwise 45^0 rotation of triangle A(2,3),B(5,5),C(4,3) about point (1,1).
c) Define and explain hue, saturation and lightness.

Q.8 Solve all of following questions: 15

a) Write a short note on : viewing transformation.
b) Explain the Sutherland and Cohen subdivision line clipping algorithm in details.
c) prove that two scaling transformations commute,
   i.e. $S_1 * S_2 = S_2 * S_1$.

Q.9 Solve all of following question :
a) What is aliasing effect? Explain the antialiasing and the various method of antialiasing. 07
b) Show how shear transformation may be expressed in terms of rotation and scaling. 08

Q10 Solve all the following questions.
a) Describes in details, the different light sources in open GL. 07
b) Distinguish between Gouraud and phong shading methods. 08

H-106

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]**

Please check whether you have got the right question paper.

N.B 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

Q.1 Attempt any five questions: 10

(a) What is J2EE? Give three Layers of J2EE architecture.
(b) Define directives.
(c) What is http protocol?
(d) Enlist four action tags in JSP.
(e) What is servlet config?
(f) Draw Model-I & Model-II architecture in JSP.
(g) What is request header?
(h) List the types of application development of java.

Q.2 a) What is RMI? Explain RMI architecture with suitable example. 08
b) What is JSP? Explain features of JSP over other languages. 07

Q.3 a) Explain lifecycle of servlet in detail. 08
b) Write JSP code to display data from student database. 07

Q.4 a) Write short note on J2EE architecture. 07
b) Write a servlet code to read html data & display data on client browser. 08

Q.5 a) Explain N Tier architecture in detail. 08
b) What are scripting elements describe with suitable example 07

Section B

Q.6 Attempt any five questions: 10

a) Enlist Java mail protocols.
b) Explain struts controller.
c) Enlist hibernate components.
d) Enlist types of beans.
e) What is MIME?

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)	Explain MVC? Explain struts validator framework in detail	08

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-317
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT)
Database Management System
(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 remaining from section A & B.
3. Assume suitable data.

Section A

Q.1 Attempt any five: 10

1) Define a NULL value? How do you retrieve NULL values from the database?
2) Stored Vs derived attribute.
3) Explain distributed database.
4) What do you mean by mapping cardinalities? Explain various types of mapping cardinalities.
5) What do you mean by integrity constraints?
6) List out major components of DBMs environment.
7) What do you mean by term data abstraction.
8) What do you mean by instance and schema? Explain difference between them.

Q.2 a) Design a generalization –specialization for motor vehicle sales company. The company sells motorcycle, passenger cars, vans and buses. Justify your placement of attributes at each level of hierarchy. 07

b) What is a type inheritance? How does superclass / subclass relationship represent type inheritance? 08

Q.3 a) Describe the components of DBMS. 07

b) Explain data models with example. 08

Q.4 a) Explain following terms: 07
- i) Primary key
- ii) Candidate key
- iii) Super key

b) Define and discuss the role of data administrator in detail. 08

Q.5 a) Justify the following statements. 07
- i) Relation must have key
- ii) Handling NULL values is difficult

b) Define following terms: 08
   i) Simple Vs composite attribute
   ii) Single Vs multivalued attribute
   iii) Strong Vs weak entity set

Section B

Q.6 Attempt any five: 10
1) Explain transaction states.
2) Explain orderby and groupby clause.
3) Define set operation in relational algebra.
4) Define attribute closure.
5) What is lost update anomaly?
6) Define conflict serializability.
7) List different types of joins.
8) What is lossless decomposition?

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: 08
   i) Timestamp based protocol
   ii) Validation based protocol

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: 08
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”

b) Describe 3NF and BCNF in detail. 07

Total No. of Printed Pages:02

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

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

Please check whether you have got the right question paper.

N.B
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 and standard deviation. 07
b) Explain proximity measure for nominal, binary and ordinal attributes with example. 08

Q.4 a) Consider the following 2-D dataset 08

	A_1	A_2
X_1	1.5	1.7
X_2	2	1.9
X_3	1.6	1.8
X_4	1.2	1.5
X_5	1.5	1.0

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

Q.5 a) What is OLAP? Explain various operation that can be performed on data cube. 08
b) Find chi square value for following contingency table for two attributes gender & reading type 07

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

Section B

Q.6 a) Define classification, prediction, clustering and regression. 05

b) What is market basket analysis? Explain. 05

Q.7 a) Consider the following dataset with 7 transactions. (Let min-sup=60% and min-coef=80%) 10

Transaction	Item-bought
101	I_1,I_2,I_5
102	I_2,I_4
103	I_2,I_3
104	I_1,I_2,I_4
105	I_1,I_2,I_3
106	I_1,I_3
107	I_1,I_2

1) Find all frequent item set with MSC=2.
2) Find the strongest association rules.

b) Explain rule based classifier with example. 05

Q.8 a) Consider the following data item in cluster. 08
(2,4,8,10,12,3,20,30,11,13,25)
And K=2 then determine two cluster using K-mean clustering.

b) Draw and explain BI architecture with all its components. 07

Q.9 a) Apply the decision tree (ID3) algorithm on following dataset and find decision tree 10

Name	Experience	Salary	Qualification	Post
Manish	6	70000	M.E	Associate
Nisha	5	30000	B.E	Assistant
Rutu	6	40000	B.E	Assistant
Rahul	4	50000	M.E	Assistant
Seema	5	35000	B.E	Assistant
Rushi	7	80000	M.E	Associate

b) Explain business-process-response support model. 05

Q.10 a) Explain linear and non-linear regression in detail. 08

b) Write a note “transaction processing versus analytics processing.” 07

Total No. of Printed Pages:2

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

[Time: Three Hours] **[Max.Marks: 100]**

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, if necessary.
iv. Figures to the right indicate full marks.

Section A

Q.1 Attempt any five: 10

1) Define random scan, raster scan displays.
2) What is aspect ratio?
3) Distinguish between convex &concave polygon.
4) Define frame buffer.
5) How to draw parallel lines using OpenGL?
6) What is animation?
7) Enlist application of computers graphics.
8) Define API.

Q.2
a) What is display list? Give suitable example in OpenGL. 08
b) Rasterize the line with end points (2, 3) (12, 8) using DDA line algorithm. 07

Q.3
a) Write OpenGL code to draw following primitives- 08
i. Line loop
ii. Polygon
b) With neat block diagram explain display processor. 07

Q.4
a) Write down & explain midpoint circle algorithm. 08
b) How to define menu in OpenGL? Give suitable example. 07

Q.5 Where short notes on (any three) 15

1. Logical classification of i/p devices.
2. RGB color model.
3. Flood fill algorithm.
4. GUI in OpenGL.
5. Major areas of concern in the application of computer graphics.

Section B

Q.6 Attempt any five. 10

1) What is GLU & GLUT?
2) What do you mean by co-ordinate system?
3) Define pivot point for rotation.
4) What is viewing?
5) Define composite transformation.
6) What is orthographic projection?
7) What is visible surface determination?
8) Differentiate uniform & differential scaling.

Q.7 a) With example explain the terms- 08
   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

1) Back face removal.
2) Viewing in computer graphics.
3) Homogenous co-ordinates
4) Clipping operations.
5) Computer imaging.

Total No. of Printed Pages:2

SUBJECT CODE NO: H-280
FACULTY OF SCIENCE AND TECHNOLOGY
S.E. (CSE/IT)
Object Oriented Programming Using C++
(OLD)

[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) Solve any two questions from the remaining from each section.
iii) Assume suitable data, if necessary.

Section A

Q.1 Solve any five. 10

a) What are the different types of constructors?
b) Define reference variable.
c) When the memory is allocated to an object? How?
d) What are the features of OOP?
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) Explain recursive function. Write a program to demonstrate recursive function. 07
b) What do you mean by function with default parameters? Explain it with programming example. 08

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 arithmetic operators so that they operate on the objects of FLOAT. 08
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.
b) How parameters are passed to base class constructor?
c) How to open and close file?
d) What is container?
e) What do you mean by function? What is the prototype of function?
f) What is abstract class?
g) What is function overriding?
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

Total No. of Printed Pages:02

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

[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 each section
iii) figures right indicates full marks
iv)assume suitable data if necessary

Section A

Q.1 Attempt any five questions 10

a) List out software characteristics
b) What is data flow diagram?
c) What is process framework?
d) What is COCOMO?
e) Justify the statement "s/w doesn't wear out"
f) Explain data and function modelling
g) What are the components of software?
h) Write down the phase of CMM

Q.2 a. What are the characteristics to be considered for the selection of life cycle model? 07
b. Explain the analysis and design model 08

Q.3 a. What is modularity? Explain it by giving example 07
b. What are the characteristics of good SRS? Give IEEE format of SRS document 08

Q.4 a. List out different software process models. Explain any one in detail 07
b. Describe data Modelling with suitable example 08

Q.5 a. What are the principles of UI design? Explain 07
b. Explain Top-down and bottom up programming structure 08

Section B

Q.6 Attempt five questions 10

a) 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
e) What is web app engineering process?
f) Define SCM
g) Define the term OOA and OOP
h) Write the definition of software testing?

Q.7 a. What is software project management? Explain different management activities 07
b. Explain the project scheduling with timing diagram 08

Q.8 a. What is scenario based testing? Explain in detail 07
b. What is risk management? Explain different risk management techniques 08

Q.9 a. Explain in brief requirement gathering for web app 07
b. Draw the sequence diagram to explain the working of washing machine 08

Q.10 Solve <u>any three</u> short notes 15

a) CRC cards
b) Agile planning
c) Collaboration diagram
d) Test cases
e) Web app engineering layers

Total No. of Printed Pages:02

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

[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

Section A

Q.1 Answer the following (any five) 10

1) Define quality control
2) What is volume testing?
3) Explain error guessing.
4) List the elements of SQA.
5) Differentiate between load and stress
6) How to identify test cases?
7) Explain software reliability.
8) What is Hallway testing?

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 Write a short note on (any three) 15

1) CMM
2) Unit testing
3) Quality concept
4) Condition coverage

Section B

Q.6 Answer the following (any five) 10

1) List different types of tools and skills of tester
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