Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1081
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem IV)
Computer Network
[OLD]

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

Please check whether you have got the right question paper.

N.B i) Q.No.1 and 6 are compulsory.
ii) Attempt any two questions from remaining questions from each section.

Section A

Q.1 Attempt any five. 10
a. Define: Computer Network.
b. Write layers of OSI model.
c. Multiplexing is …
d. What is Half duplex transmission?
e. Define: Network Throughput.
f. Define: Topology
g. Jitter is ……..

Q.2 a. Describe OSI model. 08
b. Explain Different topologies. 07

Q.3 a. Write short note on Network criteria. 08
b. Explain Channelization. 07

Q.4 a. Explain Point to Point protocol. 08
b. Write a note on Go Back N-ARQ protocol. 07

Q.5 a. Explain Pure & Slotted ALOHA. 08
b. Explain different Framing methods. 07

Section B

Q.6 Attempt any five. 10
a. What is the use of SNMP?
b. Enlist the Bridge types.
c. What is Congestion?
d. Define: Cryptography.
e. Write two features of UDP.
f. VPN is ……..
g. What is the use of DNS?

Q.7	a.	Write short note on CSMA.	08
	b.	Describe Congestion in detail.	07
Q.8	a.	Explain IPV6 scheme.	08
	b.	Describe Router & Switch.	07
Q.9	a.	Differentiate: TCP – UDP.	08
	b.	Describe ICMP.	07
Q.10	a.	Write a short note on Secret key algorithm.	08
	b.	Describe HTTP.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1082
FACULTY OF SCIENCE AND TECHNOLOGY
S .Y B.Tech. (CSE) CBC & Grading System (Sem IV)
Computer Organization
[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 remaining questions from each section.

Section A

Q.1 Attempt any five: 10
a) Define: Computer Architecture.
b) Subtract -2 & -6 using 2's complement subtraction.
c) Draw the flowchart of Booth's algorithm.
d) Draw the diagram of Micro programmed control unit.
e) CISC is ……
f) Enlist the Processor elements.
g) Draw the CPU with internal BUS architecture.

Q.2 a) Write short note on 2's complement addition &subtraction. 08
b) Explain Pentium processor. 07

Q.3 a) Write short note on processor organization. 08
b) Explain Booth's algorithm. 07

Q.4 a) Perform Multiplication of -2 (Multiplicand) and 3 (Multiplier) using Booth's. 08
b) Write a note on Instruction cycle. 07

Q.5 a) Explain Hardwired Control unit. 08
b) Write a note on RISC. 07

Section B

Q.6 Attempt any five: 10
a) What is Cache miss?
b) Enlist advanced processors.
c) Draw 4 stage pipelining mechanism
d) Define: MMU
e) Enlist Pipeline hazards
f) Why virtual memory is required?
g) Draw Memory Hierarchy.

Q.7	a)	Write a note on Dual core processor.	08
	b)	Describe Virtual memory.	07
Q.8	a)	Explain Cache memory mapping techniques.	08
	b)	Explain memory hierarchy.	07
Q.9	a)	Describe data hazard with suitable example.	08
	b)	Write advantaged & disadvantages of pipelining.	07
Q.10	a)	Write a short note on Cache memory.	08
	b)	Explain performance of pipelining.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H_1132
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y. B.Tech. (CSE) CBC & Grading System (Sem IV)
Elective-I Human Computer Interaction
[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 remaining questions in each section.

Section A

Q.1 Attempt any five 10

a) What impact does cognition has on HCI?
b) What is role of haptic computer interaction?
c) Classify usability metrics.
d) Define proto typing in interaction design.
e) What is socio-technical model?
f) Define anthropometrics with example.
g) Enlist four types of textual communication.

Q.2 a) Describe how usability motivation can be applied in user interface design. 08

b) E-commerce has been very successful in some retail areas like travel, services, food etc. however in some retail areas, like clothes shopping e-commerce has been less successful. Why? 07

Q.3 a) What is persona? Develop an example of persona using washing machine. 08

b) Explain Shneiderman's eight golden rules of interface design. 07

Q.4 a) What is participatory design? Explain the methods used in participatory design process. 08

b) Explain the process of task analysis with example. 07

Q.5 a) Explain the linguistic models-BNF & Task Action Grammar in detail. 08

b) Explain the significance of 7 (+ or -2) for human computer interaction. 07

Section B

Q.6 Attempt any five 10

a) What is direct manipulation?
b) Identify interaction tasks of pointing devices
c) What is the impact of response time in interface design?
d) What do you mean by computer mediated communication?
e) Give applications of ubiquitous computing
f) Write the features of 3D interfaces.
g) What is mean by natural language in computing?

Q.7 a) Explain the interaction tasks applicable for pointing devices. 08

b) Describe the important goals for language design in HCI. 07

Q.8 a) Describe the strategies for searching in textual documents & database querying. 08

b) Explain the response time guidelines for improving user experience. 07

Q.9 a) Explain the role of meeting & decision support systems in interface design. 08

b) Describe the virtual reality technology as a user interface. 07

Q.10 a) Explain the different application areas of hyper media. 08

b) Describe the different elements for form filling design. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1164
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y. B.Tech. (CSE) (Sem-IV)
Software Engineering
[Old]

[Time: Two Hours] **[Max.Marks:40]**

Please check whether you have got the right question paper.

N.B i) Question No. 1 & 5 are compulsory.
ii) Solve any two questions from question No.2 to 4.
iii) Solve any two questions from question no. 6 to 8.

Section A

Q.1 Solve any three. 06

1. Define software process Model. Write its types.
2. Identify which type of myth is this-
   "Once we write the program & get if work, our job is done".
3. Give example of functional & Nonfunction requirement.
4. How to represent functional & behavioral operation of a system?
5. List the types of resources.

Q.2 Draw diagram of Linear sequential model & explain it. 07

OR

Compare between linear sequential model & RAD model. 07

Q.3 Describe functional modeling with a suitable example. 07

OR

Draw the diagram which represents elements of analysis model & explain it. 07

Q.4 Write short note on following 07

1) The W^5HH Principles.
2) The project planning process

OR

Explain decomposition technique in detail. 07

Section B

Q.5 Solve any three. 06

1. Define functional independence.
2. Differentiate between cohesion & coupling
3. Enlist the umbrella activities in SE.
4. What is QA & QC procedure in SE?
5. Name the techniques used in the WBT.

Q.6	Define the design process & write guidelines for designing quality software.	07
	OR	
	Describe transaction flow & transform flow.	07
Q.7	Explain the risk components & drivers.	07
	OR	
	Describe the SQA activities in detail.	07
Q.8	Describe Software testing strategies.	07
	OR	
	How system testing should be performed? Explain.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1165
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y. B.Tech. (CSE). CBC & Grading System (Sem IV)
Web Programming
[Revised]

[Time: Two Hours] **[Max. Marks:40]**

Please check whether you have got the right question paper.

N.B i) Q.No.1 and Q.No.5 are compulsory.
ii) From Q.No.2 to 4 solve any two questions.
iii) From Q.No.6 to 8 solve any two questions.

Section A

Q.1 Solve any three. 06

1. How to create constant in PHP?
2. List common uses of PHP.
3. How to repeat execution of code?
4. What will be the output of the following program

```
<? Php
    $cars = array ( “volvo”, “BMW”, “Toyota”) ;
    Var_dump ($cars) ;
?>
```

5. Enlist super global variables,

Q.2 Draw diagram which shows how PHP works & describe it. 07

OR

Explain characteristics of PHP in detail with examples. 07

Q.3 Write a PHP script which will output “Have a nice weekend!” if the current day is Friday & “Hence a nice Sunday!” if the current day is Sunday. Otherwise it will output “Have a nice day!”. 07

OR

Write a program to sort the elements of the $numbers array in descending numerical order. Array values are (2,5,3,8,6,4) what are the types of arrays. 07

Q.4 Create a function to calculate factorial of a number, take input from user. 07

OR

Write a script that checks whether a passed string is a palendrome or not 07

Section B

Q.5 Solve any three. 06

1. For storing password like sensitive information we prefer to use $-GET method. True or false. Justify your answer.
2. Which is the function that does continue the script execution even if the file inclusion fails?
3. How to set cookies?

4. List general error types.
5. Which function is used to connect database in PHP?

Q.6 Create a form to accept the user registration data & validate the contents of it in the program registration data should be name, email, password & gender. 07

OR

How read contents from file line by line? Describe with example. 07

Q.7 Develop a program to store page views count in SESSION, to increment the count on each refresh & to show the count on webpage. 07

OR

Create two cookies name & age. These cookies will be expired after one hour, & describe how to set cookies with parameter? 07

Q.8 Create a form to accept book information like accession number, title, auther & edition from a web page & store the information in a database. Also write a command for creating "Book info" table for storing above data. 07

OR

How do you handle errors in mysql database? Write a program to display all the records from employee table. Record should have value for id, name & salary. 07

Total No. of Printed Pages:3

SUBJECT CODE NO:- H-1210
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem-III)
Discrete Mathematics
[OLD]

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

Please check whether you have got the right question paper.

N.B i) Question 1 and 6 are compulsory.
ii) Solve any two questions from question 2 to 5 and two questions from question 7 to 10.

Section A

Q.1 Attempt any five: 10

i) Find the value of P(8,6).
ii) List all the permutations of {a, b, c}.
iii) Define antichain.
iv) Which of the sentences are propositions? What are the truth values of those that are propositions?
(a) The earth is flat (b) 2+ 2 = 5
v) State the principle of inclusion – exclusion for two sets.
vi) What is complement of a relation?

Q.2 a) Prove that 07

$$\frac{1}{1.4}+\frac{1}{4.7}+\frac{1}{7.10}+\ldots\ldots\ldots+\frac{1}{(3n-2)(3n+1)}=\frac{n}{3n+1}$$

using mathematical induction.

b) Among the integers 1 to 250, find how many are not divisible by 3,nor by 5. Find also, how many are divisible by 3, but not by 7. 08

Q.3 a) Two dice are rolled together. Event A denotes that the sum of the numbers on the top faces is even and event B denotes that there is a 4 on atleast one of the top faces, Find $P(A \cup B)$and $P(A \cap B)$. 07

b) A student has to answer 10 out of 13 questions in an examination. 08
i) How many choices he has?
ii) How many choice he has if he has to answer the first two questions?
iii) How many choices he has if he must answer the first or second but not both?
iv) How many choices he has if he must answer exactly three out of first five?

Q.4 a) Let $A = \{2,3,4,6\}$ and let aRb if a divides b. Show that R is a partial order and draw its Hasse diagram. 07

b) Find the inverse of the functions: 08

i) $f(x) = \frac{10}{5\sqrt{7-3y}}$

ii) $f(x) = \frac{8}{9-3x}$

Q.5 a) Explain different operations on sets with example. 07

b) Show that $\sim P \rightarrow (q \rightarrow r)$ and $q \rightarrow (Pvr)$ are logically equivalent 08

Section B

Q.6 Attempt any five : 10

i) State the equation of the linear recurrence relation with constant coefficient of order K.

ii) What is total solution?

iii) Define graph.

iv) What is planer graph?

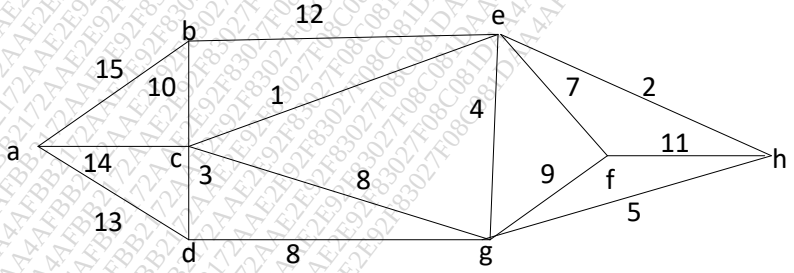
v) Define spanning tree.

vi) What is cutset?

Q.7 a) Find the total solution of 07
$q_r - ga_{r-1} + 18q_{r-2} = 0$ with $q_0 - 1,\ q_1 = 4$.

b) Find a recurrence relation and give initial conditions for the number of bit strings of length n that do not contain the pattern 11. 08

Q.8 a) Obtain the minimum spanning tree for the graph given below. Obtain the total cost of minimum spanning tree. Use kruskal algorithm. 07



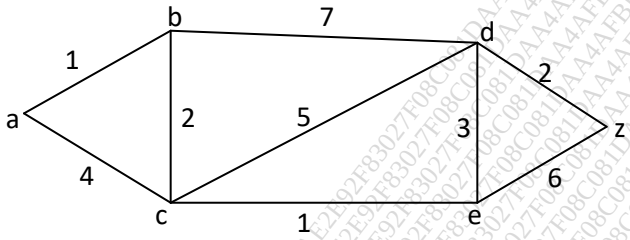
b) Explain binary search tree with example. 08

Q.9 a) Construct an optimal prefix code for the weights: 1, 3, 6, 7, 10, 11, 13, 15. 07

b) Explain traveling salesman problem with example. 08

Q.10 a) Describe different operations on graph with example. 07

b) Apply Dijkstra's shortest path algorithm to find the shortest path between vertices a and z in the figure below. 08



Total No. of Printed Pages:3

SUBJECT CODE NO:- H_1211
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem- III)
Discrete Mathematics
[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 question 2 to 5 any two questions from questions 7 to 10.

Section A

Q.1 Attempt any five: 10

i) Which of these sentences are propositions? What are the truth values of those that are propositions?
   a) There is no pollution in Delhi
   b) $2 + 1 = 5$

ii) How many rows appear in a truth table for each of these compound propositions?
   a) $(PV{\sim}t) \wedge (PV{\sim}S)$
   b) $P \wedge{\sim} P$

iii) State the pigeonhole principle.

iv) List the ordered pairs in the relation R from $A = \{0,1,2,3,4\}$ to $B = \{0,1,2,3\}$ where $(a,b)\varepsilon R$if and only if$a > b$.

v) Define recurrence relation.

vi) State the equation of the linear recurrence relation with constant coefficient of order k.

Q.2 a) Using mathematical induction prove that- 07

$$1.2 + 2.3 + ----- + n\,(n+1) = \frac{n(n+1)(n+2)}{3}$$

b) Among the integers 1 to 1000, how many of them are not divisible by 3, nor by 5, nor by 7. 08

Q.3 a) Find the inverse of the functions 08

i) $f(x) = \frac{x+1}{x}$

ii) $f(x) = \sqrt[3]{x-2}$

b) Suppose that the relations R_1 and R_2 on a set A are represented by the matrices.

$M_{R_1} = \begin{bmatrix} 1 & 0 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix} and\ M_{R_2} = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 0 & 0 \end{bmatrix}$ 07

What are the matrices representing

i) $R_1 \cup R_2$

ii) $R_1 \cap R_2$

Q.4 a) Find the total solution of 07

$a_r - ga_{r-1} + 18a_{r-2} = 0$ with $a_0 = 1, a_1 = 4$

b) Solve $a_r - 3a_r - 1 = 2, r \geq 1$ with $a_0 = 1$ using generating functions. 08

Q.5 a) Let $A = \{2,3,4,6\}$ and let aRb if a divides b. Show that R is a partial order and draw its Hasse diagram. 07

b) Show that $(p \to r) \vee (q \to r)$and $(p \wedge q) \to r$ are logically equivalent. 08

Section B

Q.6 Attempt any five: 10

i) Find the value of $P(8,8)$

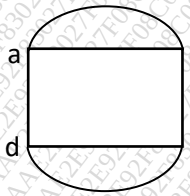
ii) What is the expansion using binomial theorem of $(x + y)^2$

iii) What is an algebraic system

iv) Define monoid

v) What is the chromatic number of Kn?

vi) State whether the following graph is planar or not.



Q.7 a) Generate all the permutations of {1,2,3,4} 07

b) Suppose that repetitions are not permitted, 08

i) How many 4 digit numbers can be formed from the six digits 1, 2, 3, 5, 7, 8?

ii) How many such numbers are less than 4000?

iii) How many of the numbers in (i) are even?

iv) How many of the numbers in (ii) are odd?

Q.8 a) Find the next larger permutation in lexicographic order after each of these permutations. 08

i) 2134

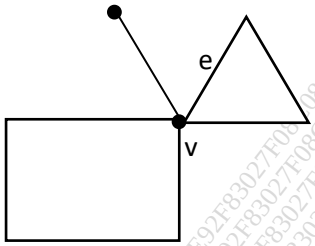
ii) 12453

iii) 3142

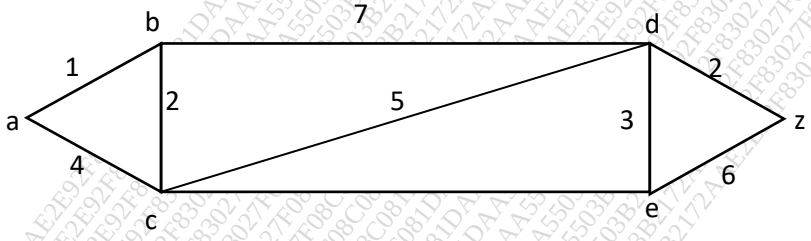
iv) 45321

b) Explain with example. 07
i) Factors of a graph
ii) Complement of a graph
iii) Multi graph
iv) Regular graph

Q.9 a) Find (G-v) and (G-e) from the following graph. 07



b) Apply Dijkstra's shortest path algorithm to find the shortest path between vertices a and z in the figure below. 08



Q.10 a) Let (A, *) be an algebraic system such that for all $a, b \varepsilon A$ 07
$(a * b) * a = a$
$(a * b) * b = (b * a) * a$
i) Show that $a * (a * b) = a * b,$ for $all\ a, b \epsilon A$
ii) Show that $a * a = (a * b) * (a * b)$, for all $a, b \epsilon A$

b) Let $(\{a, b\}, *)$ be a semi group where
$a * a = b$ show that 08
i) $a * b = b * a$
ii) $b * b = b$

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1244
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y. B.Tech. (CSE) (Sem-III)
Digital Electronics & Microprocessor 8086
[Old]

[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 in each section.

Section A

Q.1 Attempt any five. 10

a) Convert to binary i) $(42)_{10}$ ii) $(18.66)_{10}$
b) What are the applications of multiplexer?
c) Convert to gray code i) $(11000011)_2$ ii) $(10011001)_2$
d) Define Sequential Logic Circuit.
e) Draw a logic circuit of S-R flip-flop.
f) Give purpose of signals $i)\ \overline{TEST}$ $ii)\ \overline{LOCK}$

Q.2 a) Reduce the following expression using K-MAP & implement using logic gates. 08
F(A,B, C,D) = ∑m (1,3,5,7,13,15)

b) Draw and give signal description of 8086. 07

Q.3 a) Define multiplexer? Design 8:1 MUX using logic gates. 08

b) Draw & explain architecture of 8085 microprocessor. 07

Q.4 a) Minimize the function using Quine Mc-cluskey method. 08

$$F(A,B,C,D) = \prod M(0,1,3,7,8,9,11,15)$$

b) Explain the working of seven segment decoder . 07

Q.5 a) Prove the following: 08

i) $W + X\bar{Y} + YZ + X\bar{Z} = X + YZ$
ii) $A + \bar{A}B + \bar{A}\bar{B} = \bar{A} + \bar{B}$
iii) $A + \bar{A}B + A\bar{B} = A + B$
iv) $AC + C\,(A + \bar{A}B) = (A + B)C$

b) Explain the input –output addressing capabilities of 8086 microprocessor. 07

Section – B

Q.6 Attempt any five. 10

a) State the modes of operation of 8253.
b) What is role of following instructions: i) XCHG ii) ADC
c) What is DMA controller?
d) Define assembler directives with example.
e) What do you mean by inter falling?
f) What is the function of PIO 8255?

Q.7 a) Explain the addressing modes of 8086. 08

b) Draw and explain internal architecture of 8253 in detail? 07

Q.8 a) Write an assembly language program for 8-bit multiplication in 8086. 08

b) Draw & explain digital to analog converter interfacing with 8086. 07

Q.9 a) Draw & explain internal architecture of USART 8251. 08

b) Write an assembly language program for 8-bit addition in 8086. 07

Q.10 a) Explain the internal architecture of 8259 programmable interrupt controller. 08

b) Write a short note on: 07
i) STACK structure of 8086
ii) Interrupt & service routines

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1245
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem-III)
Digital Electronics & Microprocessor
[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 remaining questions from each section.

Section A

Q.1 Attempt any five. 10

a) Define digital signal with example.
b) Convert from binary to gray code i) $(11100001)_2$ ii) $(1001100)_2$
c) Identify the logic gates i) All low inputs produce high outputs ii) Output is low if and only if all inputs are high .
d) State De- Morgan's Theorem
e) Define minterm&maxterm. Give example
f) Draw a basic latch with truth table.
g) Convert to SOP form $(\bar{A}+B+\bar{C})\ (A+C)(\bar{B}+C)$

Q.2 a) Simplify the expression & implement using logic gates 08

i) $AB+\bar{A}B+\bar{A}\bar{B}$
ii) $\bar{X}(Y+Z)+\bar{Z}+ZY$
iii) $AC+C(A+\bar{A}B)$
iv) $((\overline{A\bar{B}})+(\overline{A+B}))\ A\bar{B}$

b) Give classification & explain the types of codes. 07

Q.3 a) Minimize the following logic function using K-map & realize using logic gates 08

$$F(A,B,C,D) = \Pi M(0,1,2,3,5,7,9,12,15)$$

b) Distinguish between Combinational & Sequential logic circuits. 07

Q.4 a) Show that i)$AB+A\bar{B}C+BC=AC+BC$ 08
ii) $A\bar{B}C+B+B\bar{D}+AB\bar{D}+\bar{A}C=B+C$

b) Design the following MUX using logic gates i) 2:1 MUX ii) 4:1MUX 07

Q.5 a) Reduce the expression using Quine Mc-Cluskey method & Implement using logic gates 08
$F(A,B,C,D)=\sum m\ (1,3,5,8,9,11,15)$

b) Realize the AND, OR & NOT gate using universal gates. 07

Section B

Q.6 Attempt any five. 10

a) What do you mean by pipelining architecture?
b) Give applications of 8051 Microcontroller.
c) What is the role of 8251 USART.
d) State the significance of LOCK signal in 8086 microprocessor.
e) What is Non- maskable interrupt?
f) State the function of RS1& RS0 bits in the flag register of intel 8051 microcontroller?
g) What are the modes of operations used in 8253?

Q.7 a) Draw a pin diagram of 8086 microprocessor & write the function of each pin in detail. 08

b) Describe the addressing modes of 8086 microprocessor. 07

Q.8 a) Write an assembly language program to sort an array in ascending order in 8086. 08

b) Explain the modes of operations of 8255 in detail. 07

Q.9 a) With neat block diagram, explain in detail architecture of 8253. 08

b) Draw & explain the block diagram of PIO8255. 07

Q.10 a) Draw & explain the Block diagram of 8051 microcontroller in detail. 08

b) Compare Microprocessor and Microcontroller. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1279
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem-III)
C C + + Programming
[OLD]

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

Please check whether you have got the right question paper.

N.B 1) Question 1 & 6 are compulsory.
2) Attempt any two from remaining from both sections.

SECTION – A

Q.1 Attempt any five. 10
a) What is task of set date ( )
b) Name 2 functions of $\langle stdio.h \rangle$
c) Define dynamic memory allocation
d) Give syntax of pointer to structure
e) Define binary files
f) When to use fseek ( )

Q.2 a) Write program to find is entered character is lowercase or not. 08
b) Explain purpose of header files. 07

Q.3 a) Write program to demonstrate use of malloc ( ) 08
b) Explain static memory allocation 07

Q.4 a) Write program to read a file and print its contents on console. 08
b) Why to use file handling explain. 07

Q.5 Write short notes on 15
a) Binary files
b) Pointers
c) String.h

SECTION – B

Q.6 Attempt any five 10
a) What is purpose of setb color ( )
b) When to use delay ( )
c) What is type bool
d) Define function overloading
e) Why to use inheritance
f) Compare public & private

Q.7 a) Write program to show inheritance. 08

	b)	What are virtual functions? Explain	07
Q.8	a)	Write program for Constructor overloading.	08
	b)	Compare procedure oriented & object oriented languages	07
Q.9	a)	Write program for animated graphics of an object.	08
	b)	Explain text mode graphic functions.	07
Q.10	Write short notes on		15
	a)	Graphics in C	
	b)	Constructors	
	c)	Static function	

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-1280
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem-III)
Computer Graphics
[Revised]

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

Please check whether you have got the right question paper.

N.B i) Question 1 & 6 are compulsory.
ii) Attempt any 2 from remaining from each section.

SECTION – A

Q.1 Attempt any five 10
a) Enlist hard copy devices
b) Give applications of CG
c) What is Window port?
d) What is modeling?
e) Compare Glu & Glut
f) What is display list in openGL?

Q.2 a) Explain Color CRT monitors 08
b) Explain use of indexed color for setting Color attribute. 07

Q.3 a) Distinguish random scan & Raster Scan display. 08
b) Explain openGL Architecture 07

Q.4 a) Explain Control function in OpenGL 08
b) Write program in openGL to display filled rectangle 07

Q.5 Write Short notes (Any Three) 15
a) Plasma panel display
b) LCD
c) Color models
d) Display list in Client server

SECTION – B

Q.6 Attempt any five 10
a) What is reflection
b) What is fixed point scaling
c) Define sillhouette edge
d) What is classical viewing
e) Define B – Spline curve
f) Define fractal

Q.7	a)	Rotate triangle through 30° about origin in anticlock wise direction A (20 , 20) B (40 , 20) C (30, 40)	08
	b)	What is Gouraud method?	07
Q.8	a)	Explain perspective projection	08
	b)	Give properties of B – Spine Curve	07
Q.9	a)	What is Bezier Curve? Explain	08
	b)	Describe BSP Tree in detail.	07
Q.10	Write short notes (Any Three)		15
	a)	Shearing	
	b)	Reflection	
	c)	Phong light	
	d)	Animation	

Total No. of Printed Pages:2

SUBJECT CODE NO:- H_1314
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem-III)
Object Oriented Programming in Java
[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 from remaining questions from each section.

Section A

Q.1 Attempt any five: 10
a) How to set path in Java
b) Define constructor
c) Syntax of declaring array in Java
d) What is abstract class
e) Define exception with example
f) What is the purpose of finally in Java

Q.2 a) Write program illustrating use of factory methods. 08
b) What is exception handling? Why it is required. 07

Q.3 a) Write program of calculator in Java. 08
b) Compare use of throw & throws 07

Q.4 a) Demonstrate exception handling using a program. 08
b) What are constructors? Discuss its various types. 07

Q.5 Write short notes (any three) 15
a) Factory methods
b) Net Bears
c) User-defined exceptions
d) Success specifiers

Section B

Q.6 Attempt any five: 10
a) List types of I/O stream
b) What is multithreading
c) Applications of applets
d) What is event handling
e) What is two tier database model
f) Steps of using JDBC

Q.7	a)	Program in Java to demonstrate multi-threading	08
	b)	What are layout managers, explain.	07
Q.8	a)	Program of "Hello" in Java	08
	b)	Compare JDBC Vs ODBC.	07
Q.9	a)	Program demonstrating mouse event handling in Java.	08
	b)	What is synchronization in multithreading show with example?	07
Q.10	Write short notes (any three)		15
	a)	Database connectivity for oracle	
	b)	File operations in Java	
	c)	Mouse event handling	
	d)	Life cycle of thread	

H-1315

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1315
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem-III)
Data Structures
[Revised]

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

Please check whether you have got the right question paper.

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

Section A

Q.1 Solve any five questions. 10
i) What is circular linked list?
ii) Convert the following infix expression to equivalent postfix expression.
A-(B+C)*D/E
iii) What is a recursive function?
iv) What is an ADT? How it is useful?
v) What is a circular Queue?
vi) What are primitive and non-primitive data structures?
vii) Write any four applications of stack.

Q.2 a) What are the advantages and limitations of linked lists over arrays? 05
b) What are the basic operations that can be performed on the Queue? Explain the implementation of Queue using linked list. 10

Q.3 a) Explain the ADT specification of a rational number. 05
b) Describe an algorithm for the conversion of an infix expression to postfix expression using stack with an example. 10

Q.4 a) Write an algorithm for the following operations on a doubly linked list. 05
i) Append a node ii) Delete a node
b) Explain the algorithm for adding two polynomials using a linked list with an example. 10

Q.5 a) Explain the dynamic memory allocation functions in detail. 05
b) Write brief notes on circular Queue, double ended queue and priority queue. 10

Section B

Q.6 Attempt any five questions:- 10
i) What is a 2-3 tree?
ii) What are the properties of a BST?
iii) What are the techniques of representing a graph in memory?
iv) What is B+ tree? What are the applications?
v) Sort the following list using insertion sort :
8, 2, 4, 6, 9, 7, 10, 1, 5, 3.

vi) What is hashing? Give the characteristics of hash function.
vii) What are spanning trees and minimum cost spanning trees?

Q.7 a) Differentiate between tree traversal and graph traversal. 05
b) Explain Bell-man ford algorithm with an example. 10

Q.8 a) What are the Collision resolution techniques in hashing? Explain. 10
b) Show the steps of sorting the following elements in ascending order using quick sort. Show the snapshots after every interchange: 05
25, 57, 48, 37, 12, 92, 86

Q.9 a) Write a recursive 'C' function to perform binary search of 'n' data elements for a given key, k. 05
b) Compare insertion and deletion in B- tree and B+ tree. 10

Q.10 a) Explain the following terms:- 05
i) Height balanced tree ii) Threaded binary tree
b) What do you mean by traversing a binary tree? Explain the tree traversal techniques with the help of an example. 10

Total No. of Printed Pages:01

SUBJECT CODE NO:- H-1362
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem-III)
Computer Organization
[OLD]

[Time: TWO Hours] **[Max.Marks:40]**

Please check whether you have got the right question paper.

N.B
1) Question 1 and question 5 are compulsory.
2) Solve any two from the remaining questions.

Section A

Q.1 Solve any THREE from the following. 06
a) Write the floating point representation.
b) Draw the diagram of processor organization.
c) Enlist the elements of control unit.
d) What is RISC?
e) Write the 2'S complement of – 2.

Q.2 Explain the processor organization in detail. 07

Q.3 Perform multiplication of 6 and 2 using Booth's algorithm. 07

Q.4 Differentiate between RISC and CISC. 07

Section B

Q.5 Solve any THREE from the following. 06
a) Enlist the cache levels.
b) What is cache hit?
c) Define – Stalling.
d) What is pipelining?
e) Enlist the replacement algorithms for cache memory.

Q.6 Write short note on cache memory. 07

Q.7 Describe 2 and 4 stage pipelining. 07

Q.8 Explain Intel core – 2 Duo processor. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1363
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem-III)
Advanced C
[Revised]

[Time: Two Hours] **[Max. Marks: 40]**

Please check whether you have got the right question paper.

N.B i) Q.1 and Q.5 are compulsory.
ii) Solve any two questions from Q.2 to Q.4.
iii) Solve any two questions from Q.6 to Q.8.

Section A

Q.1 Solve any three 06

(1) Convert $(123)_8 = (?)_{10}$
(2) Define Union.
(3) Explain when to use circular linked list.
(4) What is output of following program

```
# include <stdio.h>
  void main
  {
int  y=3;
int  x = 5%2 * 3/2;
printf( "value of x=%d", x);
}
```

Q.2 (1) Differentiate between array and linked list. 04
(2) Write a procedure with example to convert a number from decimal to octal. 03

Q.3 (1) Write a program in C to shift inputed data by two bits to the left. 04
(2) Write an algorithm to insert a node in doubly linked list. 03

Q.4 (1) Write a program in C to add two numbers using pointer. 04
(2) Explain structure with example. 03

Section B

Q.5 Solve any three 06
(1) Define storage classes. What are the different types of storage?
(2) What is files in C and its uses.
(3) What do you mean by lifetime of a variable
(4) Give syntax of fseek function.

Q.6 (1) Write a program in C to count number of vowels in C. 04
(2) Differentiate between static and extern variable. 03

Q.7	(1) Describe hardware communication in windows.	04
	(2) Comment on lifetime of auto, extern and static variables.	03
Q.8	(1) Write a program in C to count number of lines in C.	04
	(2) Explain key logger.	03

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-280
FACULTY OF SCIENCE AND TECHNOLOGY
S.E. (CSE/IT) (Sem-II)
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) Question No.1 and Question 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

i) What are the applications of "this" pointer?
ii) What is Cin and Cout?
iii) What is overloading? Write the rules for function overloading?
iv) What is friend function?
v) List the C++ operators that cannot be overload?
vi) What is copy constructor?
vii) What will be the output of following code?

```
int a = 10;
 void main()
{
int a = 20;
cout<<a<<::a;
```

viii) What is data abstraction?

Q.2 a) Define a class to represent Employee which includes following: 08
Data members:
i) name of the employee
ii) employee_id
iii) employee department
Member function:
i) to initialize all data member functions
ii) display the records
b) Write a program for static data members? 07

Q.3 a) What is recursive function? Write a program to calculate factorial of number using recursive function? 08
b) Explain the concept of Array of Objects? 07

Q.4 a) Explain multiple inheritance with suitable programming example? 08
b) What is constructor? Explain the types of constructors? 07

Q.5 a) Write a program to overload pre increment and post increment operator using friend function? 08

b) Write a program for inline function? 07

SECTION B

Q.6 i) What do you mean by cascading of I/O operators? 10

ii) What is Virtual function?

iii) Define containers?

iv) What is early and late binding?

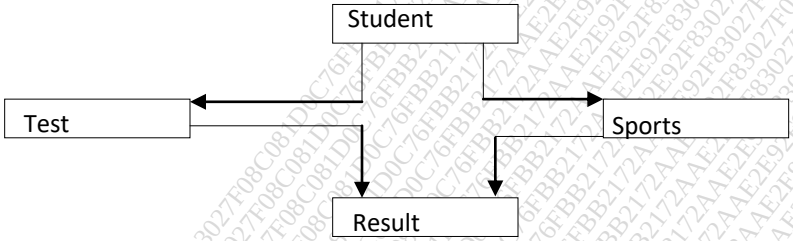
v) What is stream?

vi) Elaborate the concept of overriding?

vii) What is exception?

viii) What are generic classes in template?

Q.7 a) Write program to implement student virtual base class? Consider the result processing system given in following figure. 10



b) Discuss the concept of visibility modes in inheritance with example? 05

Q.8 a) Explain the following functions: 08

1) seekg()
2) seekp()
3) tellg()
4) tellp()

b) Explain stream classes with their hierarchy in details? 07

Q.9 a) What is Exception? Explain in details exception handling mechanism? 08

b) What is file mode? Describe the various file mode option available? 07

Q.10 Write a note on (Any Three): 15

a) Multiple inheritance
b) Formatted I/O
c) Pure virtual function
d) Destructor

Total No. of Printed Pages:03

SUBJECT CODE NO:- H-137
FACULTY OF SCIENCE AND TECHNOLOGY
S.E. (CSE/IT) (Sem-II)
Discrete Mathematic
[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.
3. Assume suitable data, if necessary.

Section A

Q.1 Solve any five 10

a) Let $A = \{a, b, , \{a, b\}, \{a, b\}\}\}$. Identify each of following statements are true or false. Justify your answers.
   a. $\{a, b\} \in A$
   b. $\{\{a, b\}\} \leq A$

b) Define universal set with example.

c) Explain distributive law of sets.

d) What is conditional proposition?

e) Write the following statements in symbolic form
   I) The sun is bright and humidity is not high
   II) It is already 9.00am, I should start my job.

f) Define rule of universal specification.

g) Negate the following
$\exists x\ [r\ (x) \cap s(x)]$ Where $r(x)$ and $s(x)$ are open statements.

h) Explain universal quantifier.

Q.2 a) Certain questions are given to the three independent students A, B and C to solve. A solve 25%, B solve 50% and C solve 40% of questions given to then. What is probability that the questions will be solved? 07

b) Prove the De- Morgan's laws of set theory. 08

Q.3 a) Using Venn diagram prove that for any sets A,B and C. 08

$$\left[\overline{(A \cup B) \cap C}\right] \cup \bar{B} = \overline{B \cap C}$$

b) Show that $p \vee q$ and $(p \vee q) \wedge \sim (p \wedge q)$ are logically equivalent. 07

Q.4 a) Prove by mathematical induction $1.2 + 3.4 + 5.6 + \ldots + (2n-1)2n = \frac{n(n+1)(4n-1)}{3}$. 08

b) Explain universal modus ponens and universal modus tollens with example 07

Q.5 a) Show that $\urcorner r$ is valid conclusion from the premises $p, p \rightarrow \urcorner q, \urcorner q \rightarrow \urcorner r$. 07

b) Let $D = \{1,2,3,9\}$determine the truth value of each of the following statements. 08

1) $\forall x \in D, x + 4 < 15$
2) $\exists x \in D, x + 4 = 10$
3) $\forall x \in D,\ x + 4 \leq 10$
4) $\exists x \in D,\ x + 4 > 15$

Section B

Q.6 Solve **any five** 10

a) Let $A = \{2,3,4,5\}$ and let R be the relation on A defined as aRb iff $a < b$. Find D(R) and Rn (R) .

b) Define converse of a relation. With example.

c) Explain Cartesian product of two sets.

d) Define equivalent functions.

e) What is ring and its properties.

f) Explain cyclic group.

g) Find hamming distance between x and y.

1. $x = 0010111 \qquad y = 0101011$
2. $x = 1101 \qquad y = 1000$

h) Explain integral domain.

Q.7 a) Explain pigeon hole principle & show that if seven numbers from 1 to 12 are chosen then two of them will add upto 13. 07

b) Let $A = \{1,2,3,4,5,6,7\}$ and R be the relation on set A. 08
$R = \{(x,y) | (x-y)$ is divisible by 3$\}$

1) Show that R is an equivalence relation.
2) Find equivalence classes generated by elements$f\ A$.

Q.8 a) Draw the hasse diagram representing the positive divisors of 45. 07

b) Let $f(x) = x + 2$, $g(x) = x - 2$ and $h(x) = 3x$ for $x \in R$, where R is set of real numbers find gof, fog, foh, fohog. 08

Q.9 a) Define group, determine whether algebraic system $(Q, +)$ is a group where Q is set of all rational numbers and '+' is an addition operation. 08

b) Let $\begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 & 1 \\ 0 & 1 & 0 & 1 & 0 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 1 \end{bmatrix}$ be a parity check matrix of the (7,4), hamming code. 07
FFy = 1111011 is received, determine the code word which was most likely sent.

Q.10 a) Explain integral domain and field. 07

b) Explain elements of coding theory. 08

Total No. of Printed Pages:2

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

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

Please check whether you have got the right question paper.

N.B
1. Question number 1 and 6 are compulsory.
2. Attempt any two from remaining questions from each section.

Section -A

Q.1 Attempt any five from the following. 10
1) What is the function of SI and DI registers?
2) How 8086 microprocessor generates 20 bit physical address?
3) Explain PUSH and POP instructions.
4) Write any two instructions using register relative addressing mode.
5) What is the difference between physical and logical address?
6) What is function of IP?
7) Explain interrupt and TRAP flag of 8086.
8) Explain ADD and DAA instruction.

Q.2 a) Explain internal block diagram of 8086 microprocessor. 08
b) Explain flag resister of 8086 microprocessor in detail. 07

Q.3 a) Explain logical instruction of 8086 microprocessor with example. 08
b) Write assembly language program to perform 16bit by 8bit division. 07

Q.4 a) Explain rotate and shift instructions of 8086. 08
b) What is interrupt? Explainroll of stack memory in interrupt execution. 07

Q.5 a) Enlist addressing modes. Explain any two addressing modes with example. 08
b) Write assembly language program to find even and odd between two numbers. 07

Section – B

Q.6 Attempt any five from the following. 10
1) What is maskable and non-maskable interrupt?
2) Differentiate memory mapped I/O and I/O mapped I/O.
3) Write function of AI and AO pin of 8255 PPI.
4) What is handshaking?
5) What is purpose of CS or CE pin on the memory device?
6) What is function of BHE and DEN pin of 8086?
7) Draw diagram of memory read machine cycle in minimum mode for 8086 microprocessor.
8) Draw control word format for bit-reset of 8255 PPI.

Q.7	a)	Explain different modes of operation of 8254	08
	b)	Draw and explain block diagram of 8255 PPI.	07
Q.8	a)	Draw and explain interconnection between 8086 microprocessor and 8284A	08
	b)	Explain DMA operation in detail.	07
Q.9	a)	Draw memory interfacing of two 8K × 8SRAM memory chip with 8086 microprocessor. Also write address mapping for the memory chips.	08
	b)	Explain maximum mode operation of 8086 microprocessor with suitable diagram.	07
Q.10	a)	Explain software and hardware interrupts of 8086 microprocessor	08
	b)	With suitable example explain MODE1 strobe input operation of 8255 PPI.	07

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-172
FACULTY OF SCIENCE AND TECHNOLOGY
S.E (CSE/IT) (Sem-II)
Object Oriented 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 from the remaining in each Section.

Section – A

Q.1 Solve any FIVE. 10

a. What is dynamic binding?
b. How to define operator function?
c. What do you mean by data abstraction and encapsulation?
d. What is function overloading?
e. What is message passing?
f. What is data hiding?
g. Why it is necessary to overload an operator?
h. Explain output operator (<<)in C++.

Q.2 a. Explain Basic Concepts of Object – Oriented Programming. 08
b. Define inline functions. Write a program to demonstrate inline function. 07

Q.3 a. What is friend function? Write a program to demonstrate friend function. 08
b. Explain concept of dynamic constructors and destructors. 07

Q.4 a. How Objects are passed as Function Arguments? Demonstrate with program. 07
b. Write a program to demonstrate binary operator overloading. 08

Q.5 a. What is function overloading? Write a program to demonstrate function overloading. 07
b. Write a program to demonstrate basic to class type conversion. 08

Section - B

Q.6 Solve any FIVE: 10

a. What is abstract class?
b. Why templates are used?
c. What do you mean by pure virtual function?
d. What do you mean by late binding? Give example of late binding.
e. List file stream classes.
f. How to detect end of file?
g. Define hybrid inheritance.

h. What do you mean by virtual base class?

Q.7 a. Write a program to implement hierarchical inheritance. 08

b. Explain I/O manipulators. 07

Q.8 a. Write a program to read and write objects on file. 08

b. Explain how parameters are passed to base class constructor. 07

Q.9 a. What errors can be occurred while file handling? Explain error handling functions. 07

b. Write a program with the following:- 08

i) A function to read two integer type numbers from keyboard.

ii) A function to calculate the division of these two numbers.

iii) A try block to detect and throw an exception if the condition "divide by zero" occurs.

Appropriate catch block to handle the exception thrown.

Q.10 a. Explain stream class hierarchy. 08

b. Write a program to demonstrate function overriding. 07

Total No. of Printed Pages:02

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

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

Please check whether you have got the right question paper.

N.B
i. Q.1 from section A and Q.6 from section B are compulsory.
ii. From the remaining solve any two questions form each section.

Section A

Q.1 Attempt any five 10

Define following Terms:

a) Frame Buffer
b) Display Controller
c) Aspect ratio
d) Scan Code
e) Pixel
f) Resolution
g) Translation
h) Sierpinsky Gasket

Q.2
a) Write OpenGL code to draw following primitives: 07
i. Triangle
ii. Line loon
b) Explain logical classification of input devices. 08

Q.3
a) Rotate a triangle with co-ordinates A(3,-1), B(4,1) and C(2,1) through 90° about the origin in anticlockwise direction. 07
b) What are the various callback functions supported by Open GL? 08

Q.4
a) Differentiate between raster scan and random scan display. 07
b) With neat diagram explain OpenGL primitives and attributes. 08

Q.5
a) Describe in brief frames and frame coordinates in OpenGL. 07
b) What is meant by color formation? Explain additive and subtractive color, indexed color concept. 08

Section B

Q.6 Solve any five questions 10

a) What is the use of Quaternion's?
b) What do you mean by orthographic projection?
c) Explain pixel phasing.
d) What is illumination model?
e) Explain materials in OpenGL.
f) What is vanishing point? Classify perspective projection.
g) Enlist different types of reflection.
h) Define region code used in Cohen Sutherland algorithm.

Q.7
a) Explain in detail any one polygon shading method. 07
b) What is composite transformation? Apply the following transformation sequences to the given polygon coordinates: 08
   i. Scale the polygon with Sx =Sy = 0.5
   ii. Rotate it with angle theta = 900
   iii. Translate it with Tx = 0, Ty = -75
   And polygon coordinates are (50, 50) (150, 50) and (100, 150).

Q.8
a) Differentiate between parallel and perspective projection. 07
b) Describe in brief viewing transformation. 08

Q.9
a) Use Bresenham's line drawing algorithm to rasterize the line with endpoints (5,5) and (13,9) 07
b) Explain with suitable example DDA line drawing algorithm. 08

Q.10
a) What is line clipping? Explain any one line clipping algorithm. 07
b) Explain 4 major tasks of graphics system for rendering any geometric entity. 08

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-207
FACULTY OF SCIENCE AND TECHNOLOGY
S.E. (CSE/IT) (Sem-II)
Microprocessor & Computer Organization
[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 from the remaining in each section.

Section A

Q.1 Attempt any Five from the following 10

1. List the 16-bit segment registers used with register addressing mode by MOV, PUSH, POP instruction.
2. Draw memory map of TPA in Personal Computer system.
3. What does the following assembly language statements do
   i) TABLE 50 DUP(0)
   ii) NUMI DB 04H
4. Identify addressing modes of the following:
   i. MOV AL,[BP+DI]
   ii. ADD AL,05H
   iii. MOV AL,[SI]
5. What is the function of queue status bits QS0& QS1 of 8086 Microprocessor?
6. What do the following instruction perform
   i) IN AL,DX.
   ii) OUT P8, AL.
7. What is the function of Instruction Pointer?

Q.2 a) Draw register organization of 8086 microprocessor & explain function of all register. 08
b) Write assembly language program using assembler directive to find average of data containing 10 elements. 07

Q.3 a) Differentiate between JMP instruction & CALL instruction. 08
b) Explain following instruction with suitable example 07
   1. INC
   2. CMP
   3. TEST
   4. SAR

Q.4 a) Explain machine control & miscellaneous instruction in detail. 08
b) With suitable diagram explain microprocessor based personal computer system. 07

Q.5 a) Explain miscellaneous data transfer instructions (XCHG, LAHF, SAHF, XLAT). 08
b) Differentiate between near jump and far jump. 07

Section B

Q.6 Write short note on Following (Any two) 10

1. Serial Port
2. Functional Components of Computer
3. Data Path in CPU
4. Semiconductor Memories

Q.7
a) Explain structural overview of a computer in detail. 08
b) Explain Primary storage devices. 07

Q.8
a) How performance of a computer system is measured? 07
b) Explain organization of processor in detail. 08

Q.9
a) Explain micro operations with respect to control unit. 08
b) Draw and explain ALU architecture. 07

Q.10
a) Explain DRAM organization in detail. 08
b) Write note on Memory Paging. 07

H-208

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-208
FACULTY OF SCIENCE AND TECHNOLOGY
S.E. (CSE/IT) (Sem-II)
Discrete Mathematics
[Old]

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

Please check whether you have got the right question paper.

N.B i) Question 1 from Section A and Question 6 from Section B are compulsory.
ii) Solve any two questions from remaining in each section.
iii) Assume suitable data, if necessary

Section A

Q.1 Attempt any Five: 10

a) Explain Distributive laws of set.
b) Consider Statement p and q, construct truth table for ¬ p∨q.
c) What is empty set, explain with example.
d) Find the elements of following set
$A = \{x | x \epsilon N \text{ and } x < 5\}$
$B = \{1 + (-1)^n | n \epsilon N\}$
Where N is a set of Natural numbers.
e) Define Probability.
f) Explain Universal quantifier.
g) What is Modus Tollens?
h) What is Existential quantifier?

Q.2 a) A bag contains 5 green, 4 yellow and 3 white marbles three marbles are drawn at random. What is the probability that they are not of same color. 08

b) Show that R∧(P ∨ Q)is a valid conclusion from the premise P∨Q, Q → R, P → M and ~M. 07

Q.3 a) Show that 07
$1^2 + 2^2 + 3^2 + \cdots + n^2 = \frac{n(n+1)(2n+1)}{6}; n \geq 1$. Using mathematical Induction.

b) Translate the following statements into logical Expressions using predicates, quantifiers and logical connectives. 08

i) The integer 41 is equal to the sum of two perfect squares. Consider universe of all positive integers.

ii) All your friends are perfect.

Q.4 a) Consider $U = \{1,2,3,4,5,6,7,8,9,10\}$ 08
$A = \{1,2,3,4,5\}$ $B = \{1,2,4,8\}$, $C = \{2,4,6,8\}$
Determine, i) $C \cap B$ ii) $A \cup (B \cap C)$
iii) $(A \cup B) - C$ iv) $\bar{B} \cup \bar{C}$

b) Prove the Demorgans laws with the help of truth table. 07

Q.5 a) Write converse and contrapositive of following 08
i) If Joy is a writer, then he is rich.
ii) If Rani works, then she will earn money.

b) Construct truth tables; show that: 07
i) $p \rightarrow q <=> \neg p \vee q$
ii) $(p \leftrightarrow q) <=> (p \rightarrow q) \wedge (q \rightarrow p)$

Section B

Q.6 Attempt any Five 10
a) Explain one-to-one function.
b) Define cyclic group.
c) Explain Range and Domain of a function
d) Define Relation with an example.
e) Explain Directed graph.
f) Explain Inverse of a function.
g) Explain onto function with example.
h) Define function composition with example.

Q.7 a) Explain pigeon hole principle and show that if any 20 people are selected then we may choose a subset of 3 so that all 3 were born on the same day of the week. 07
b) What is group? explain with example. 08

Q.8 a) Let $f(x) = x^2$, $g(x) = x + 5$ 08
$h(x) = \sqrt{x^2 + 2}$, find i) hogof ii) gof iii) hog iv) hof

b) Explain following properties of relation with an example. 07
i) Reflexive ii) Symmetric
iii) Transitive iv) Antisymmetric

Q.9 a) Given a (6,3) linear block code with the following parity-check matrix. 08

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

i) find the generator matrix.
ii) find the code word for the data bit 101.

b) Explain elements of coding theory in detail. 07

Q.10 a) What is Ring ?explain with example. 07
b) Explain Homomorphisms and Isomorphisms of group in detail with example. 08

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-279
FACULTY OF SCIENCE AND TECHNOLOGY
S.E. (CSE/IT) (Sem-II)
Computer Graphics
[Revised]

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

Please check whether you have got the right question paper.

N.B (i) Q.1 from section A and Q.6 from section B are compulsory.
(ii) From the remaining solve any two questions from each section.

Section A

Q.1 **Solve any five questions** 10

a) Define Following Terms:
1. Frame Buffer 2. Persistence
b) What is display controller?
c) What are the primary components of an electron gun in a CRT?
d) Explain with neat diagram convex and concave polygon.
e) Discuss the concept of color look up table.
f) What do you mean by physical and logical devices?
g) Write working of pen-plotter model.
h) Draw neat diagram of CMYK color model.

Q.2 a) Consider a line from (0,0) to (-8, -4). Use the simple DDA to rasterize this line. 07

b) Write short notes on 08
1. OpenGL libraries
2. OpenGL Primitives

Q.3 a) Explain in detail two techniques used for producing color display with a CRT monitor. 07
b) Write an OpenGL program to draw a triangle. 08

Q.4 a) Explain logical classification of input devices. 07
b) Use Bresenhams line drawing algorithm to rasterize the line with endpoints (20,10) and (30,18). 08

Q.5 Write short notes on (any three) 15
1. LCD
2. Touch Panel
3. Display Lists in OpenGL
4. RGB color model.

Section B

Q.6 **Solve any five questions** 10

a) What is vanishing point?
b) What do you mean by exterior clipping?
c) Give the 2D transformation matrix for Rotation about origin in
   1. Clockwise Direction
   2. Anticlockwise Direction
d) Distinguish between Window port & View port?
e) Define Translation and translation vector.
f) Enlist types of projection with neat diagram.
g) Define pivot point for rotation.
h) What is the use of polar coordinate system?

Q.7 a) Perform a 45° rotation of triangle A(0,0), B(1,1) and C(5,2) about the origin. 07
b) Explain why homogenous coordinates are used for handling geometric transformations. 08

Q.8 a) Explain the Painter's algorithm for hidden surface removal. Why Painters algorithm is a priority algorithm? 07
b) Differentiate between parallel and perspective projection. 08

Q.9 a) Describe in brief viewing transformation? 07
b) What is line clipping? Explain Cohen-Sutherland line clipping algorithm. 08

Q.10 a) Write short note on 15
1. Midpoint Subdivision algorithm
2. Polygon clipping
3. Classical and computer viewing

Total No. of Printed Pages:2

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

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

Please check whether you have got the right question paper.

N.B
1. Q1 & Q6 are compulsory.
2. Solve any two questions from section A and Section B.
3. Neat diagrams must be drawn wherever necessary.

SECTION A

Q.1 Attempt any FIVE: 10

a) What is protocol & service?
b) What is the function of presentation layer?
c) What are the different types of transmission media?
d) Define Line coding & give its purpose.
e) What is switching? Explain need of switching.
f) Define logical, physical & port address.
g) Define Checksum.
h) What is FDM?

Q.2 (a) What is spread spectrum? Explain FHSS in detail. 08
(b) What is multiplexing? Explain wavelength Division Multiplexing. 07

Q.3 (a) What are the principles that were applied to design seven layer OSI model? 07
(b) Differentiate between OSI& TCP/IP model. 08

Q.4 (a) What is error detecting code? A computer received 7 bits of data 0100011. Check whether the received data is correct or not using Hamming code. 08
(b) Explain Digital-to-Digital conversion using Line coding techniques. 07

Q.5 (a) Explain working principle of twisted pair cable. 07
(b) What is switching? Explain virtual circuit network in detail. 08

SECTION B

Q.6 Attempt ANY FIVE: 10

a) What is classful & classless addressing?
b) What is piggybacking?
c) What is meant by ‘carrier sense’ in LAN Protocols?
d) Compare piconet & scatternet.
e) What is Hub? Explain type of Hub.
f) Define Bluetooth.

g) What is subnet and subnet mask?
h) What is NAT?

Q.7 a) Draw & explain IEEE 802.11 LAN architecture. 07
b) Explain Bluetooth. Compare the layers in Bluetooth & Internet model. 08

Q.8 (a) What is framing? Explain any one framing technique in detail. 08
(b) What are sliding window protocol? Explain 1-bit sliding window. 07

Q.9 (a) Explain ALOHA protocol. What is the difference between pure ALOHA & Slotted ALOHA? 08
(b) Write short note on CSMA protocol. 07

Q.10 (a) Explain IPv6 protocol. What are the advantages of IPv6 when compared with IPv4? 08
(b) An IP datagram has arrived with following header information (in hexadecimal) 07
45000054 00030000 2006-------
a) What is header size?
b) What is size of data?
c) Is the packet fragmented?
d) How many routers can the packet travel to?

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-329
FACULTY OF SCINECE AND TECHNOLOGY
S.E. (CSE/IT) (Sem-I)
Computer Networks
[Revised]

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

Please check whether you have got the right question paper.

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

Section -A

Q.1 Attempt the following (any 5): 10

a) What are the responsibilities of session layer in OSI model?
b) State the uses of computer networks.
c) Consider a noiseless channel with a bandwidth of 2000Hz transmitting a signal with two signal levels. Calculate minimum bit rate using Nyquist theorem.
d) Bit – stuft the following data
00011011111111001111101000111111111011111111000011111
e) What is baseline wandering?
f) Draw starts topology with 5 nodes state what happens if one of the node is unplugged from start topology?
g) What is FSK?

Q.2
a) What are the principles that were applied to design seven layer OSI model? 08
b) Explain in detail fiber optics cable used as a transmission media. 07

Q.3
a) Differentiate between: 08
   i. Error correcting codes & error detecting codes.
   ii. Flow control & congestion control.
b) What is meant by 'carrier sense' in LAN protocol explain CSMA/CD protocol in detail? 07

Q.4
a) Explain working of FSK with suitable diagram. 07
b) What is switching? Explain various techniques of switching. 08

Q.5
a) Compute CRC for a frame which is 1101011011using generator polynomial $x^4 + x + 1$. 07
b) Draws mesh topology. Explain advantages & disadvantages of mesh with respect to star topology. 08

Section – B

Q.6 Attempt the following (any 5): 10

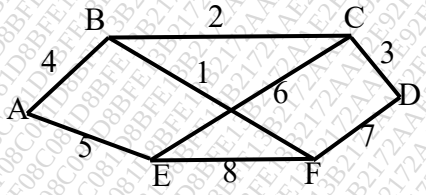
a) What is adaptive routing?
b) What is subnet & subnet mask?
c) Transport protocols resemble the data link protocol. Justify your answer.
d) What is buffer?
e) What is anonymous FTP?
f) What are the different types of connections used in FTP?
g) What is WWW?

Q.7 a) What is congestion control? How it is caused? Describe any one congestion control method with its advantages & disadvantages. 08

b) Write short note on OSPF protocol. 07

Q.8 a) Consider the subnet below. Distance vector routing is used, & following vectors have just come in to router C 08

From B (5, 0, 8, 12, 6, 2)
From D (16,12,6,0,9,10)
From E (7,6,3,9,0,4)
The measured delays to B, D, & E are 6, 3 & 5 respectively. What is C's new routing table?



b) Explain IPv4 protocol with neat diagram. 07

Q.9 a) Explain half close connection in TCP protocol by drawing neat diagram. 07

b) What is TCP & UDP? Compare TCP header with UDP header. 08

Q.10 a) What is DNS? Explain working of DNS in detail. 08

b) Write short note on remote logging using telnet. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-363
FACULTY OF SCIENCE AND TECHNOLOGY
S.E. (CSE/IT) (Sem-I)
Data Structure using C
[OLD]

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

Please check whether you have got the right question paper.
N.B.: (i) Q.1 from section A and Q.6 from section B are compulsory.
(ii) From the remaining solve any two questions from each section.

Section A

Q.1 Solve any five questions: 10
a) Define an algorithm?
b) Define space complexity of an algorithm?
c) What is a sparse matrix?
d) Write any two differences between a stack and a queue.
e) What are dynamic arrays?
f) What are functions used for dynamic memory allocation in C?
g) Differentiate between structure and union?

Q.2 a) What are characteristics of an algorithm? Write an algorithm to add two matrices. 07
b) How do we measure performance of an algorithm? Explain with an example. 08

Q.3 a) Create a structure for a student. Write a program in C to calculate percentage marks obtained by a student. 07
b) Write a program highlighting use of dynamic arrays. 08

Q.4 a) Define a stack. Write an algorithm to perform operations on a stack. 07
b) Why do we need linked list? Write an algorithm to insert a node at the start and end of a singly linked list. 08

Q.5 a) Define a queue. Write an algorithm to perform operations on a queue. 07
b) Define doubly linked list. Write an algorithm to delete search and delete a node from a doubly linked list. 08

SECTION B

Q.6 Solve any five questions: 10
a) Define a binary tree.
b) What is a max heap tree?
c) Define a forest.
d) Represent a graph using a data structure.
e) What is binomial heap?
f) Define Red Black trees.
g) What are splay trees?

Q.7	a)	Define a binary search tree. Construct a binary search tree for the given set of nodes [20, 40, 50, 30, 20, 10, 60, 70, 20]	07
	b)	For the tree constructed in Q.7 a) perform all tree traversals.	08
Q.8	a)	Write an algorithm to construct a binary tree and insert and delete a node from the binary tree.	07
	b)	Write an algorithm to perform DFS traversal on a graph.	08
Q.9	a)	Write steps to construct an AVL tree by taking the following set of items: [AB, DC, AC, EG, TH, SA, BD, DD]	07
	b)	Explain Fibonacci heap trees.	08
Q.10	a)	What is optimal binary search tree? Construct BSTs for given set of items and find OBST. Set=[20, 30, 10, 40, 20, 10, 50]	07
	b)	Explain efficient binary search trees except OBST with an example.	08

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-364
FACULTY OF SCIENCE AND TECHNOLOGY
S.E. (CSE/IT) (Sem-I)
Data Structures
[Revised]

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

Please check whether you have got the right question paper.

N.B.: i) Question No.1 from Section A & Question No.6 from Section B are compulsory.
ii) Solve any two questions from each section from remaining questions.
iii) Assume suitable data if necessary.

SECTION– A

Q.1 Solve any five: 10

a) Define primitive & non primitive data structure.
b) Assume stack of size 5. Show diagrammatic representation for the following opeations: Push (20), Push(30), Push (40), Pop ( ), Push (50). Indicate the position of top variable.
c) What are the advantages of linked representation over sequential representation.
d) Differentiate between structure & union.
e) Define queue full & queue empty condition.
f) Define pointer with example.
g) Convert the following to postfix form
i) (P+Q)*(C-D)/E
ii) (A+B) + C*D
h) Explain malloc ( ) function.

Q.2 a) Define algorithm. Explain all the criteria every algorithm should satisfy. 07
b) Write ADT for array. 08

Q.3 a) Evaluate given postfix expression using stack 5 6 2 + * 12 4 / - 07
b) Write a C program to implement queue data structure. 08

Q.4 a) Write a C function to perform following operations on singly linked list. 08
i) Insert a node at the end of linked list.
ii) Delete a node from beginning of linked list.
b) Show how to represent polynomial using linked list 07
Add A&B using linked list.
$A = 15x^5 - 10x^3 + 5x^2 + x \;\&\; B = x^3 + x - 10$

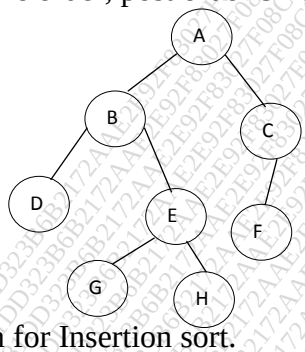
Q.5 a) Analyze the difference between queue implementation using array with queue implementation using linked list. 08
b) Explain various function used for dynamic memory allocation. 07

SECTION B

Q.6 Solve any five: 10

a) Define binary tree & binary search tree.
b) Construct binary tree for a given sequence of preorder & inorder.
Preorder – A B D G C E H I F
Inorder – D G B A H E I C F
c) Define full binary tree with example.
d) Define AVL tree.
e) Define cycle & path with respect to graph.
f) Define graph & subgraph.
g) What is the maximum no. of nodes on level 7 in a binary tree?
h) Define: Indegree & outdegree of a vertex, self edge.

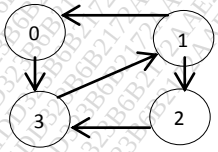
Q.7
a) Explain graph traversal techniques with examples of one graph.
b) Explain in order, pre order, post order & level order traversal for binary tree.



Q.8
a) Write a C program for Insertion sort. 08
b) Construct AVL tree by assuming insertions in the following order: 14, 17, 11, 7, 53, 5, 13. 07

Q.9
a) Explain bubble sort for the following elements 35, 80, 22, 11, 85, 90. 07
b) Perform binary search for searching element 60 in the given elements: 80, 70, 65, 82, 90, 60, 50,71. 08

Q.10
a) Explain insertion into a binary search tree and deletion from a binary search tree with suitable example. 07
b) Explain graph representation technique
i) Adjacency matrix ii) Adjacency list obtain representation for the following graph. 08



Total No. of Printed Pages:2

SUBJECT CODE NO:- H-397
FACULTY OF SCIENCE AND TECHNOLOGY
S.E. (CSE/IT) (Sem-I)
Unix & Shell Programming
(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 Q.2 to Q.5 and from Q.7 to Q.10 of each section.
3. Figure to the right indicate full marks.

Section A

Q.1 Describe any FIVE of following 10
- i) Who
- ii) cp and mv commands
- iii) mkdir and rmdir
- iv) Shell
- v) Fork system call
- vi) Zombie
- vii) bg and fg commands
- viii) chmod

Q.2 a) Explain *ls* command with its options and give suitable example. 08

b) Explain job scheduling inUnix with 'at' 'cron' and 'batch'. 07

Q.3 a) Describe command structure with its types and explain flexibilities of command usage. 08

b) Explain find command in Unix describe the selection criteria for finding file with an example. 07

Q.4 a) With suitable example, explain how to change file owner and group owner in Unix. 08

b) Explain three different standard files for redirection in Unix. 07

Q.5 a) What is the difference between job and process? Name and explain five important process attributes by the child from its parents. 08

b) With example, differentiate between absolute and relative pathnames. 07

Section B

Q.6 Describe any Five of the following 10

i) Wild cards
ii) Begin andend section in awk
iii) exec system call
iv) Character class
v) tr command
vi) Join function in perl
vii) Set command
viii) Trap

Q.7 a) With an example, explain sort command with its options. 08

b) What is sed? Explain addressing in sed with an example. 07

Q.8 a) How string handling is performed in perl? Give an example. 08

b) Write shell script to check and list attributes of processes. 07

Q.9 a) What is here document? Write a shell script which uses here document. 08

b) Explain various filters in unix with example and options, describe uniq command. 07

Q.10 a) Write perl script to demonstrate use of foreachloop . 08

b) Explain use of regular expressions with grep command. 07

Total No. of Printed Pages:2

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

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

Please check whether you have got the right question paper.

N.B
1. Q.1 from section A and Q.6 from section B are compulsory.
2. From the remaining solve any two questions from each section.

Section A

Q.1 Describe any five questions 10

a) Explain "mv" command
b) How to delete line in VI Editor.
c) How to insert the data in VI Editor.
d) Enlist any four application areas of Linux Operating System.
e) How to locate the files in Linux.
f) Sed command with options.

Q.2
a) Explain the use of regular expression with grep and awk. 07
b) What is Process? How to set priority for processes. 08

Q.3
a) Explain the disk partition management in Linux. 07
b) How user can change the permissions of files using chmod command. Explain with example. 08

Q.4
a) Explain file and directory handling commands with example. 08

b) Which command is used for listing file attributes? Explain briefly the significance of each filed of output. 07

Q.5
a) Explain the various features of Linux. 08
b) Explain boot process and run level in Linux? 07

Section B

Q.6 Describe any five questions 10

a) Explain the use of ping command and ifconfig command.
b) Which port numbers are use for FTP and HTTP services.
c) Variable Assignment in shell script.
d) Number comparison in shell script
e) cpio command

f) dump command

Q.7 a) Write short note on samba for sharing and accessing files in network. 08
b) Explain the use of network services in Linux. 07

Q.8 a) Explain the installation and configuration of FTP server. 08
b) Explain in detail use of web server in Linux. 07

Q.9 a) Write a shell script to check given number is even or odd number? 07
b) What are the different kinds of loops available in shell script? Explain with an example. 08

Q.10 a) Explain the "tar" command and "restore" command with example. 08

b) Write a short note on generating the reports on system utilization for processor, memory and disk. 07

Total No. of Printed Pages:02

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

[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 solve any two questions from Q.7 to Q.10.

Section -A

Q.1 Solve any five questions:- 10

a) Define combinational logic circuit.
b) Define magnitude comparator.
c) Draw circuit diagram of JK FF.
d) What isuse of set and reset input in FF.
e) Define multiplexer and demultiplexer.
f) Define digital signal.
g) Draw circuit diagram for DFF.
h) Design AND gate using NAND gate and design AND gate using NOR gate.

Q.2 a) Design 16:1 mux using 8:1 mux and OR gate. 08
b) Design full subtractor using 1:8 demultiplexer. 07

Q.3 a) Convert 1) SR FF to DFF 2) JKFF to TFF 08
b) Design and explain working of SR FF. 07

Q.4 a) Minimize following Boolean equation using K-map and realize it. 08
f(A,B,C,D)= $\sum m(0,1,5,6,8,9,12) + d(2,10,15)$
b) Minimize following Boolean equation using K-map and realize it. 07
f(A,B,C,D)=$\pi M(2,3,7,9,10,12) + d(13,15)$

Q.5 a) What is race around condition? How to avoid race around condition. 08
b) Compare multiplexer and demultiplexer. 07

Section- B

Q.6 Solve any five questions. 10

a) Define register. How many FF are required to design 4-bit register?
b) Draw 3-bit synchronous counter.
c) Write any four applications of A/D converter.

d) Define synchronous and asynchronous counter.
e) Write any four applications of counter.
f) Draw diagram of 4-bit right shift register.
g) How many FF are required to design MOD-10 counter and MOD-7 counter.

Q.7	a)	Design MOD-10 counter using J-K FF.	08
	b)	Explain ring counter with example.	07
Q.8	a)	Design and explain R-2R binary ladder.	08
	b)	Explain binary weighted D/A convertor.	07
Q.9	a)	Draw and explain serial in serial out shift register.	08
	b)	Draw and explain universal shift register.	07
Q.10	a)	Design and explain 3-bit asynchronous counter with waveform.	08
	b)	Differentiate between synchronous and asynchronous counter.	07

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-433
FACULTY OF SCINECE AND TECHNOLOGY
S.E. (CSE/IT) (Sem-I)
Digital Electronics
[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 remaining in each section.
3. Figure to the right indicate full marks.
4. Assume suitable data, wherever necessary.

Section– A

Q.1 Attempt any five of the following. 10

a) Convert following expression in standard SOP form $Y = AB + \overline{A}C + BC$
b) Define multiplexer with example.
c) Why NAND and NOR are called universal gates? Explain with example.
d) Explain De Morgan's theorem with proof.
e) Write characteristics of CMOS and TTL.
f) Compare digital and analog signals.
g) Draw and explain half adder circuit.

Q.2 a) Design 4 – bit binary to gray code converter. 08
b) Design 4 – bit BCD to Excess – 3 converter. 07

Q.3 a) Minimize following equation using k- map. 08
i) $Y = \sum m\ (0,1,2,5,7,9)$ ii) $F(A,B,C) = \sum m\,(0,2,5,7)$
b) Design full adder and full subtractor using 3 line to 8 line decoder. 07

Q.4 a) Design and explain look ahead carry generator. 08
b) Design 2 – bit comparator circuit using gates. 07

Q.5 a) Perform following operation using is complement. 08
i) 10101 – 11001 ii) 1100101 – 1101010
b) Design combination circuit for two way switch used on staircase. 07

Section – B

Q.6 Attempt any five of the following. 10

a) Define synchronous and asynchronous counter.
b) Draw circuit diagram of 1 bit memory cell.
c) Write applications of counters.
d) How many flip flops are required to design MOD- 10 counter.
e) Draw serial In Serial Out shift register.
f) Define ADC and DAC.
g) Write any four applications of shift register.

	h)	What do you mean by edge triggered flip flop?	
Q.7	a)	Design and explain 3 bit even parity generator.	08
	b)	Draw and explain working of edge triggered JK flip flop.	07
Q.8	a)	Explain master slave JK flip flop with suitable diagram.	08
	b)	Draw and explain working of PISO shift register.	07
Q.9	a)	Design 3 – bit asynchronous up counter. Also draw waveform for it.	08
	b)	Design MOD- 10 counter using suitable flip flop.	07
Q.10	a)	What is race around condition? How to avoid race around condition?	08
	b)	Design & explain working of 4- bit synchronous down counter with waveform.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1030
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem IV)
Data Structure
[OLD]

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

Please check whether you have got the right question paper.

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

Section A

Q.1 Solve any five questions: 10

a) Give two applications of data structures
b) What is ADT?
c) Convert expression to postfix:
$A * B/C + (D \text{ ^} E - F)$

d) What are various types of linked lists?
e) List operations performed on stack
f) What is empty method ()

Q.2 a) Write program to add two complex numbers using structure. 08
b) Compare array and liked lists. 07

Q.3 a) Write function for push () and pop () 08
b) What are queues, write its applications. 07

Q.4 a) Compare singly and doubly liked lists with diagram. 08
b) Write algorithm to convert infix expression to postfix. 07

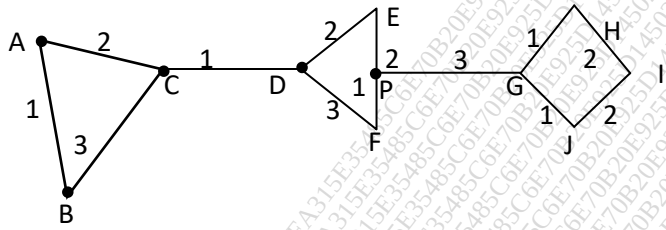
Q.5 a) Write function for insertion in a queue. 08
b) What is dynamic memory allocation explain. 07

Section B

Q.6 Solve any five questions: 10

a) What is hashing
b) Define weighted graph.
c) Give example of binary search tree.
d) Applications of graphs (any two)
e) What are threaded binary trees
f) Advantages of hashing.

Q.7	a)	Program for bubble sort.	08
	b)	Sort the following using radix sort 97, 9, 7, 2, 4, 86, 143	07
Q.8	a)	Give algorithm of DFS.	08
	b)	What are sparse matrices, give example.	07
Q.9	a)	What is collision in hashing, how to resolve collision.	08
	b)	Apply Kruskal's algorithm to find minimum spanning tree, give its weight.	07



Q.10	a)	What are binary search tree. Give example and its applications.	08
	b)	What are various ways of representing graphs, give example of each.	07

H-1055

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1055
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y. B.Tech. (CSE) (Sem-IV)
Programming in VB.NET
[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 are compulsory.
2. Attempt any two questions from remaining questions from each section.

Section A

Q.1 Attempt any five. 10

a. What is the use of picture box control?
b. Enlist any four properties of timer.
c. What is interface?
d. What is property?
e. What is namespace?
f. Define MSIL.

Q.2 a. What is inheritance? Explain with example. 08
b. What is parameterized constructor? Explain with example. 07

Q.3 a. With the help of class hierarchy & properties explain the following controls: 08
1.text box 2. label
b. Explain menu control with example. 07

Q.4 a. What is Shared Member function? Explain with example. 08
b. Explain check box control with example. 07

Q.5 a. Explain the architecture of .NET framework with diagram. 08
b. Explain the VB.NET IDE with diagram. 07

Section B

Q.6 Attempt any five. 10

a. What is the use of formula field?
b. What is SQL Expression Field?
c. Define data set
d. Define array.
e. What is database management system?
f. Enlist any four date handling functions.

Q.7 a. Explain data types in vb.net. 08
b. Explain do while with example. 07

Q.8	a.	Explain exception handling in vb.net.	08
	b.	Explain functions with suitable example.	07
Q.9	a.	Explain how to access data with server explorer.	08
	b.	What is simple binding and complex binging? Explain in detail.	07
Q10	a.	Explain field objects in crystal reports.	08
	b.	Write a short note parameter field.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1056
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y. B. Tech.(CSE) CBC & Grading System
Database Management System
(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 remaining question from each section.

Section A

Q.1 Attempt any Five 10

a. Define the arity and cardinality of relation.
b. Draw the symbols used to represent weak entity sets and identifying relationship set in ER Diagrams.
c. What is Instance and Schema?
d. Define weak and strong entity set.
e. What is decomposition?
f. Identify the Trivial Functional Dependencies from the following set of Functional F=$\{X \rightarrow Y, Y \rightarrow Z, XY \rightarrow Y, X \rightarrow X, X \rightarrow Z\}$.
g. "The passenger is reserving his railway ticket from www.irctc.co.in website". Then, which of the following type of database user he is?
   i. Naïve
   ii. Sophisticated
   iii. Application Programmer
   iv. DBA

Q.2
a) If R=$(ABCDEF)$,F=$\{A \rightarrow B, A \rightarrow C, B \rightarrow C, BD \rightarrow E, CD \rightarrow F\}$ and decomposition of R is D=(R1,R2,R3) where, R1=(ABC), R2=(CDEF), R3=(BCDE). Find that the decomposition of R is dependency preserving or not? 08
b) Explain boyce codd normal form with example. 07

Q.3
a) Draw and explain overall structure of DBMS. 08
b) What is normalization? Explain first, second and third normal form. 07

Q.4
a) Draw an ER diagram for the following scenario. 08
1. One bank can have many branches.
2. A branch can have many accounts and loans.
3. A customer can have many accounts or loans and the vice versa.
4. One employee works for only one branch.
5. One branch can have many employee.
6. One employee can have many dependents.
7. Every branch is having only one manager.
8. One manager can manage many employee.

	b)	Write a short note on types of attributes in ER Model.	07
Q.5	a)	Explain the disadvantage of traditional file systems.	08
	b)	Discuss the responsibilities of DBA?	07

Section B

Q.6 Attempt any Five. 10

a. What is transaction?
b. What are the different modes of lock?
c. Define serial and concurrent schedule.
d. What is data control language?
e. Define dense and sparse index.
f. What is multiple row sub query.
g. What is Block anchor?

Q.7	a)	Write a short note on Primary index.	08
	b)	Explain file organization in details.	07
Q.8	a)	Draw and explain transaction state diagram.	08
	b)	Write a short note on deadlock handling in database systems.	07
Q.9	a)	Discuss the constraints in SQL with example.	08
	b)	Explain the Operators in SQL.	07
Q.10	a)	Write a short note on Data Manipulation Language.	08
	b)	Explain shadow paging scheme for recovery.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1081
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (CSE) (Sem IV)
Computer Network
[OLD]

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

Please check whether you have got the right question paper.

N.B i) Q.No.1 and 6 are compulsory.
ii) Attempt any two questions from remaining questions from each section.

Section A

Q.1 Attempt any five. 10
a. Define: Computer Network.
b. Write layers of OSI model.
c. Multiplexing is …
d. What is Half duplex transmission?
e. Define: Network Throughput.
f. Define: Topology
g. Jitter is ……..

Q.2 a. Describe OSI model. 08
b. Explain Different topologies. 07

Q.3 a. Write short note on Network criteria. 08
b. Explain Channelization. 07

Q.4 a. Explain Point to Point protocol. 08
b. Write a note on Go Back N-ARQ protocol. 07

Q.5 a. Explain Pure & Slotted ALOHA. 08
b. Explain different Framing methods. 07

Section B

Q.6 Attempt any five. 10
a. What is the use of SNMP?
b. Enlist the Bridge types.
c. What is Congestion?
d. Define: Cryptography.
e. Write two features of UDP.
f. VPN is ……..
g. What is the use of DNS?

Q.7	a.	Write short note on CSMA.	08
	b.	Describe Congestion in detail.	07
Q.8	a.	Explain IPV6 scheme.	08
	b.	Describe Router & Switch.	07
Q.9	a.	Differentiate: TCP – UDP.	08
	b.	Describe ICMP.	07
Q.10	a.	Write a short note on Secret key algorithm.	08
	b.	Describe HTTP.	07