Hall Ticket Number:

II/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION

November,2016	**Common for CSE & IT**
Third Semester	**Discrete Mathematical Structures**
Time: Three Hours	**Maximum :** 60 Marks

Answer Question No.1 compulsorily.   (1X12 = 12 Marks)

Answer ONE question from each unit.   (4X12=48 Marks)

1. Answer all questions   (1X12=12 Marks)

a   (Pv~P) is a tautology or contradiction**?**
b   Give the generating function A(X) for the sequence $a_n=(n+1)$?
c   Give a relation that is antisymetric but not asymetric.
d   What is a TOSET?
e   Give the principle of Mathematical Induction?
f   State the Euler's theorem?
g   Give the chromatic number for Cycle if the length is even**?**
h   What is meant by Bi – partite graph?
i   What is the difference between tree and graph?
j   Show that 3 and 24 integers are congruent modulo 7 ?
k   Define Hamiltonian graph.
l   Define Euler's Circuit.

UNIT – I

2.a   **Show that:**
$[P \lor (P \land Q) \leftrightarrow P]$ (Using truth table)   6M

2.b   **Show that:**
$[P \lor (\sim P \land Q) \leftrightarrow P \lor Q]$(Using rules of propositions)   6M

(OR)

3.a   **Prove (or) Disprove** the validity of the following argument.
Every living thing is a Plant or animal.
Davids dog is alive and it is not a plant.
All animals have hearts.
Hence, David's dog has a heart.   6M

3.b   Write any three methods of proof of an implication with an example.   6M

UNIT – II

4.a   Use Principle of Mathematical Induction to Prove that : $6^{n+2}+7^{2n+1}$ is divisible by 43 for each +ve integer n.   6M

4.b   Use Principle of Mathematical Induction to Prove that for all Integers: $n \geq 4, 3^n > n^3$**.**   6M

(OR)

5.a   Find the coefficient of X^{25} in $(X^2+X^3+X^4+X^5+X^6)^7$ 6M

5.b   **i)**Involving 1, 2,or 3 letters and1, 2, 3, or 4 digits if the letters must occur together.
ii) In how many ways can the committee of 5 teachers and 4 students be chosen from 9 Teachers and 15students be formed if teacher A refuses to serve if student B is on the committee?   6M

UNIT – III

6.a   Computethe coefficients of $\sum d_r X^r = \dfrac{X^5}{X^2-5X+6}$ 6M

6.b   Solve the recurrence relation:$a_n=2 a_{n/2}+(n-1)$ for n≥2, where $a_1=0$.   6M

(OR)

7.a   Find the transitive closure of the relation R={(a,b)(b,c)(c,c)(a,d)(c,d)(d,a)} using warshall's algorithm   6M

7.b   Draw Hasse diagram of the poset ({1,2,3,4,6,12},|).Check whether it is a Lattice or not.   6M

UNIT – IV

8.a What is meant by Isomorphism? Determine whether the following graphs G and HIsomorphic or not?
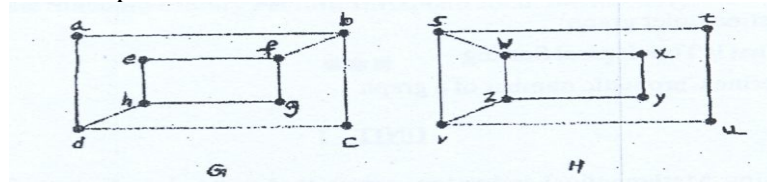
6M

8.b What is meant by coloring of a Graph?.What is the Chromatic no of complete graph K_n 6M

(OR)

9.a State and prove Euler's formula.   6M

9.b Show that every Chain is a Lattice.   6M

Hall Ticket Number:

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II/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION

November,2016   **Common for CSE & IT**

Third Semester   **Digital Logic Design**

Time: Three Hours   **Maximum :** 60 Marks

Answer Question No.1 compulsorily.   (1X12 = 12 Marks)

Answer ONE question from each unit.   (4X12=48 Marks)

1. Answer all questions   (1X12=12 Marks)

    a.   Convert decimal 43 into hexadecimal and BCD number system.

    b.   What is the reduced form for the Boolean function A+AB+ABC?

    c.   Which of the logic gates are used to realize the all possible combinational logic functions?

    d.   What is the maximum number of prime-implicants for n-variable Boolean function?

    e.   Write the expression borrow (M) and difference (N) for half subtractor with X and Y inputs.

    f.   Develop AND gate with 2 by 1 multiplexer

    g.   The present output Q_n of an edge triggered JK flip flop is logic 0. If J = 1, then what is the value of Q_{n+1}

    h.   Write the excitation table for SR flip flop.

    i.   What are the applications of shift registers?

    j.   Compare synchronous and asynchronous counters.

    k.   How many minimum number of MOS transistors required to make a dynamic RAM cell?

    l.   What is the full form of EEPROM

UNIT – I

2.a Find X value in the following problems   6M

    (i) $(52)_{BCD} = (X)_8$ (ii) $(425)_{10} = (X)_{BCD}$ (iii) $(10111)_{gray} = (X)_2$

2.b Implement EX-NOR gate function using only NAND gates   6M

(OR)

3.a Convert the following Boolean equation into canonical POS and SOP form   6M

    $f(A,B,C) = A'(B' + C')(A + B + C')$

3.b Simplify the following Boolean function using 4-varaiable K-map and implement 6M

    the simplified function with NOR gates only.

    $f(A,B,C,D) = \sum m(0,1,2,4,5,7,11,15)$

UNIT – II

4.a Minimize the following Boolean function using tabulation method   6M

    $f(A,B,C,D) = \sum m(0,1,2,8,9,15,17,21,24,25,27,31)$

4.b Implement the following sum of min-term equation by using a decoder and logic 6M

    gates.

    $f(A,B,C) = \sum m(0,2,3,7)$

(OR)

5.a Design a binary to gray code converter.   6M

5.b Implement 16 X 1 multiplexer using 4 X 1 multiplexers   6M

UNIT – III

6.a What is race-around condition in JK flip-flop? Explain how it is eliminated in 6M
Master Slave JK flip-flop

6.b Obtain characteristic equation of X-Y flip flop whose truth table as shown below 6M

X	Y	Q_{n+1}
0	0	1
0	1	$\overline{Q_n}$
1	0	Q_n
1	1	0

(OR)

7.a Design a mod-6 synchronous counter using JK flip flops 6M

7.b Explain about state tables, state diagrams, state reduction and assignment. 6M

UNIT – IV

8.a Distinguish between PLA and PAL. 6M

8.b Design a 4-bit binary up and down ripple counter. 6M

(OR)

9.a Classify shift registers and explain any two with neat diagram 6M

9.b Implement the following Boolean function using ROM 6M

$F_1(a,b) = \sum m(1,2)$

$F_2(a,b) = \sum m(0,1,3)$

Hall Ticket Number:

November, 2016   **Common for CSE&IT**
Third Semester   **Computer Organization**
Time: Three Hours   **Maximum :** 60 Marks

Answer Question No.1 compulsorily.   (1X12 = 12 Marks)

Answer ONE question from each unit.   (4X12=48 Marks)

1. Answer all questions   (1X12=12 Marks)

a	List the basic functional units of a computer.
b	Define arithmetic overflow.
c	Mention the commonly used condition code flags.
d	Define micro instruction.
e	What is the use of micro instruction with next address field?
f	Write the purpose of bit pair recoding of multiplier.
g	Define memory interleaving.
h	What is translation lookaside buffer?
i	Define data hazard.
j	What is memory mapped I/O?
k	Write the purpose of SIN and SOUT status flags.
l	List the data transfer signals used on the PCI bus.

UNIT – I

2.a List and explain theparameters which affect the performance of a computer.   8M
2.b Write thesteps needed to execute the machine instruction ADD R1, R2, R3.   4M

(OR)

3.a Registers R1 and R2 of a computer contain the decimal values 1200 and 4600   4M
respectively. What is the effective address of the memory operand in each of the
following instructions
  i)   Load 20(R1), R5   ii)   Move #300, R5
  iii)   Store R5, 30 (R1,R2)   iv)   Add –(R2), R5

3.b List various generic addressing modes. Explain index, indirect and auto increment   8M
addressing modes with suitable examples.

UNIT – II

4.a Write the control sequence for execution of the instruction Add(R3), R1.   4 M
4.b Write the micro instructions for ADD (Rsrc)+, Rdst. Explain each microinstruction in   8 M
detail.

(OR)

5.a Build 16 bit carry lookahead adder with 4 bit adders.   6 M
5.b Perform the division of binary numbers 1000 by 11 using restoring and non-restoring   6 M
division methods.

UNIT – III

6.a With neat sketches explain cache memory mapping functions.   8 M
6.b What is the total capacity of the formatted disk if a high data rate disk has: 20 data   4 M
recording surfaces, 5000 tracks per surfaces, average of 400 sectors per track and 512
bytes of data per sector?

(OR)

7.a   Explain how unconditional branches affect pipeline.   6M
7.b   With examples explain how branch prediction reduces the effect of branch instructions   6M
      on pipelining.

UNIT – IV

8.a   List and explain interrupt priority schemes.   6M
8.b   Write about DMA bus arbitration approaches.   6M
                                      (OR)
9.a   With neat timing diagrams explain synchronous and asynchronous buses.   8M
9.b   Explain about USB I/O interface in detail.   4M

Hall Ticket Number:

November, 2016   **Common for CSE & IT**

Third Semester   **Computer Graphics**

Time: Three Hours   **Maximum :** 60 Marks

Answer Question No.1 compulsorily.   (1X12 = 12 Marks)

Answer ONE question from each unit.   (4X12 = 48 Marks)

1   Answer all the following   (12X1 = 12 Marks)
   a) What is a pixel?
   b) What is DDA?
   c) What is Antialiasing?
   d) Define coherence properties.
   e) Distinguish between window port and view port?
   f) Define viewing transformation.
   g) What is a spline?
   h) What are the important properties of Bezier Curve?
   i) Define scaling in 3D transformation.
   j) What are the steps in animation sequence?
   k) What are 2 types of parallel projection?
   l) Define frame.

UNIT I

2. a) Write design of CRT with two display procedures.   6M
b) Compare the random scan display and raster scan display.   6M
                                    (OR)
3.a) Explain flood fill algorithm.   6M
b) Explain midpoint algorithm for line generation.   6M

UNIT II

4.a) Write a 2x2 transformation matrix for each of the following rotations about the origin.
      I. Counter clockwise by π
      II.Counter clockwise by $\pi/2$
      III. Counter clockwise by $5\pi/2$.   6M
b) Write about rotation transformation.   6M
                                    (OR)
5.a)Explain two dimensional viewing functions   6M
b) Explain Sutherland Hodgeman polygon Clipping algorithm.   6M

UNIT III

6.a) Explain Spline representation.   6M
b) Briefly explain curved lines and surfaces.   6M
                                    (OR)
7.a) A triangle is defined by 3 vertices A(0,1,1) B(2,1,0) c(1,2,1) find the final coordinates after it is rotated
by 45° around a line joining the points (1,1,1) and (0,0,0).   6M
b) Explain 3D translation transformation with homogeneous coordinates.   6M

UNIT IV

8.a) Explain in detail 3D Clipping.   6M
b) Explain about view volume.   6M
                                    (OR)
9.a) Classify different types of animation languages.   6M
b) Explain key frame systems.   6M

Hall Ticket Number:

II/IV B.Tech (Supplementary) DEGREE EXAMINATION

November, 2016   **Common for CSE & IT**

Third Semester   **Object Oriented Programming Using C++**

Time: Three Hours   **Maximum :** 60 Marks

Answer Question No.1 compulsorily.   (1X12 = 12 Marks)

Answer ONE question from each unit.   (4X12=48 Marks)

1. Answer all questions   (1X12=12 Marks)

    a) What is inline function?
    b) Define scope resolution operator.
    c) How will you define a "reference"?
    d) What is the main purpose of function overloading?
    e) What is destructor?
    f) Define friend function.
    g) What is the use of pure virtual function?
    h) Can we write a try block without a matching catch block?
    i) What is exception handling?
    j) What is a stream?
    k) What is the use of "EOF" in a file?
    l) What are dynamic arrays?

UNITI

2. a) Define a class "student details" with the following members. Data Members: student name, roll number, and address. Member Functions: to read, display and modify student details. Write main () code to test your class.   (6M)

    b) Explain dynamic memory allocation and de-allocation operators.   (6M)

(OR)

3. a) Write a program to demonstrate the use of nested classes.   (6M)

    b)Demonstrate friend function with an example.   (6M)

UNIT II

4. a) Explain function overloading with an example.   (6M)

    b) Explain about virtual base classes.   (6M)

(OR)

5. What is inheritance? Explain different forms of inheritance with examples.(12M)

UNIT III

6. a) Write the differences between Early and Late binding techniques.   (6M)

    b) What are Generic functions? Write the applications of Generic functions. (6M)

(OR)

7. Write a C++ program to demonstrate try, throw and catch keywords for implementing Exception Handling.   (12M)

UNIT IV

8. Explain the overloading of << and >> operators with suitable examples.   (12M)

(OR)

9. Explain File IO operators with examples.   (12M)