

MCA (SEM I) Old Nov-Dec - 2013  
02/12/13

24-10-2013-DTP-P-8-KG-18

Con. 3941-13.

KA-8380

(3 Hours)

[ Total Marks : 100

N.B. : (1) Question No. 1 is compulsory.

(2) Attempt any four questions from the remaining six questions.

1. (a) Write a program to display <sup>first n</sup> ~~first~~ fibonacci numbers. 10  
(b) Write a program to reverse the read string. 10
  2. (a) Write a program to convert a decimal into its binary representation using recursion. 10  
(b) Write a program to read 10 numbers from key board and display them in ascending order after sorting. 10
  3. (a) Write a program to display the sum and count of all numbers between 100 and 200 which are divisible by 7. 10  
(b) What is structure ? How to initialize structure variable ? Explain array of structures with suitable example. 10
  4. (a) List and explain operators in C. Also write operator precedence. 10  
(b) What is a storage class ? Explain the different storage classes with suitable examples. 10
  5. (a) What is Macro ? List and explain the different types of macros with examples. 10  
(b) Write a program to check the given no. is prime or not. 10
  6. (a) Write a program to read data from a file and print it on the console. 10  
(b) Write a program to simulate digital clock. 10
  7. Write any four from the following :- 20
    - (a) Difference between Call by reference and Call by value.
    - (b) Difference between getch ( ), getchar ( ), getche ( ).
    - (c) Difference between Union and Structure.
    - (d) Difference between Actual Parameter and Formal parameter.
    - (e) What is Pointer ? How to declare a pointer ? Explain with a suitable example.
-

MCA (Sem-I) (old) Nov-Dec-2013  
System Analysis Design.

mk.32-2nd hlf 13-(d)

Con. 4294-13.

4/12/13

KA-8384

(3 Hours)

[ Total Marks : 100

**N.B.** (1) Question No. 1 is **compulsory**.

(2) Attempt any **four** questions from Question Nos. 2 to 7.

1. (a) Build CLD, DFD upto two level and ERD for online bus reservation system. 15  
(b) What are the skills required for system analyst ? 5
  2. (a) Explain the different phases of SDLC. 10  
(b) Discuss structured walkthrough in detail. 10
  3. (a) What is meant by feasibility of a system ? What are the different aspects of feasibility study ? 10  
(b) Explain user interface design in detail. 10
  4. (a) Define testing. What is the difference between conventional testing and object oriented testing ? Explain. 10  
(b) Explain the concept of normalization with an example. 10
  5. (a) Explain HIPO chart and Warnier Orr diagram in detail. 10  
(b) Explain fact finding techniques. 10
  6. (a) What is meant by CASE tools ? What are the different CASE tools can be used in different phases of information system development ? 10  
(b) Describe the different activities of implementation phase. 10
  7. Write short note on any **four** :—
    - (a) Debugging 5
    - (b) Coupling and Cohesion 5
    - (c) List of deliverables 5
    - (d) Prototyping 5
    - (e) Data dictionary. 5
-

Dec 7, 2013

MCA Sem I (old course)

V-A4-II-Ex-13-D-53

Computer Organization & Architecture.

Con. 2905-13.

KA-8387

(3 Hours)

[Total Marks : 100

**N.B. :** (1) Question No. 1 is **compulsory**.

(2) Attempt any **four** questions out of **remaining**.

1. (a) What is FF ? Explain working of SR and J-K FF. Explain all its states. **10**  
(b) Compare sequential Vs combinational circuits. Discuss 8 to 1 mux using truth table. Draw its implementation using appropriate gates. **10**
2. (a) Explain DMA method of I/O technique with suitable diagram. **10**  
(b) Explain six stage instruction pipeline along with conditional branching with suitable timing diagrams. **10**
3. (a) Compare following :— **10**  
(i) SRAM Vs DRAM  
(ii) Micro program Vs hardwired control.  
(b) Explain RISE and CISE architectures in detail. **10**
4. (a) What is I/O module ? Discuss with the help of diagram functioning of I/O module. **10**  
(b) What is cache memory ? Explain cache coherence strategies in single and multiprocessor systems. **10**
5. (a) Explain different RAID levels in details. **10**  
(b) List and explain different superscalar instruction issue policies. **10**
6. (a) Define system bus. What is bus arbitration ? Explain different methods of bus arbitration with suitable diagrams. **10**  
(b) Explain Flynn's classifications with suitable diagrams. Also comment on design issues of pipeline architecture. **10**
7. Write short notes on (any **four**) :— **20**  
(a) Memory hierarchy  
(b) Clusters in parallel organization  
(c) Associative memory  
(d) Loop buffer  
(c) Processor organization.

(3 Hours)

[ Total Marks : 100

- N.B. :** (1) Question No. 1 is compulsory.  
 (2) Attempt any **four** questions out of remaining **six** questions.  
 (3) Assume any **necessary** data but justify the **same**.  
 (4) **Figures** to the **right** indicate **full** marks.

Q.1. (a) Determine whether the relation R on a set A is reflective, irreflexive, symmetric, asymmetric, antisymmetric, or transitive. [10]  
 A = Set of all positive integers,  $aRb$  iff  $a = b^2$

(b) (i) Solve the recurrence relation:  $a_n = a_{n-1} + 2a_{n-2}$ , initial cond<sup>n</sup>  $a_0 = 1, a_1 = 1$  [10]  
 (ii) Obtain the recurrence relation & initial condition to find the maximum number of regions defined by n lines in a plane. Assume that the lines are not parallel & lines are not intersecting at one point, and  $n > 2$ . Solve the recurrence relation.

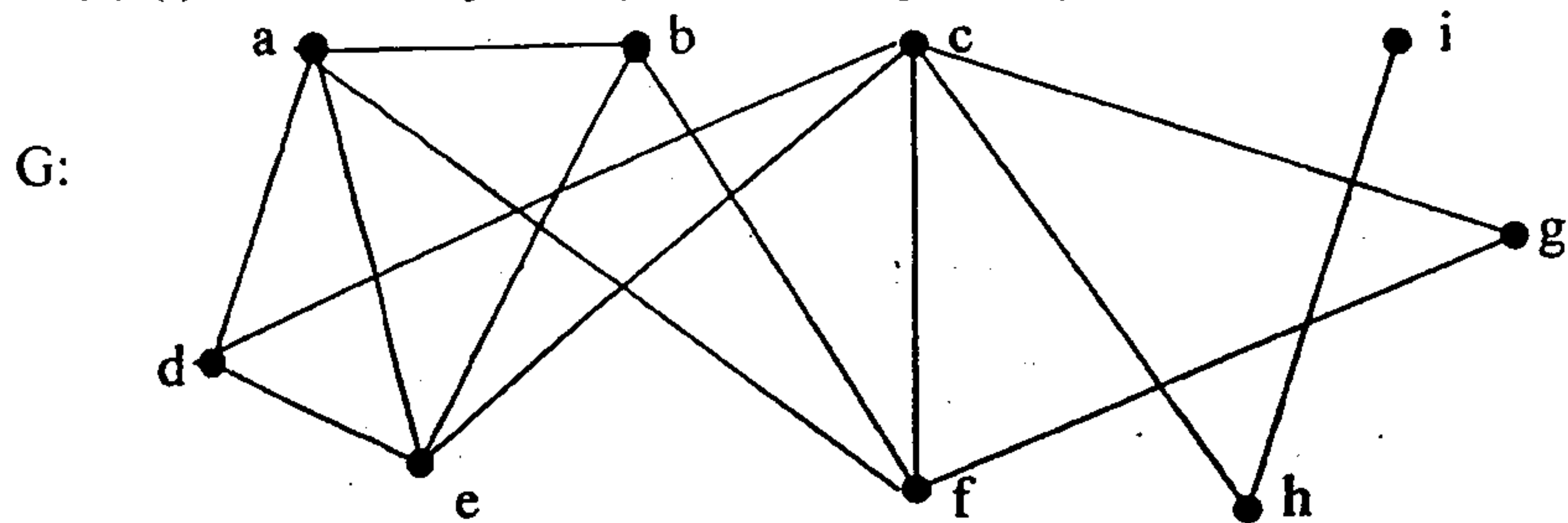
Q.2. (a) Determine whether the following set S together with the binary operation is a semigroup, a monoid or neither. If it is a monoid, specify the identity. If it is semigroup or a monoid determine whether it is commutative. [10]

Set S = set of real numbers that are not equal to -1, where  $a \cdot b = a + b - ab$

(b) (i) Show that  $R \rightarrow S$  can be derived from the premises  $P \rightarrow (Q \rightarrow S)$  and  $(\sim R \vee P)$  and Q [10]  
 (ii) Test the validity of the following arguments:

1. If milk is black then every Crow is white
2. If every Crow is white then it has four legs
3. If every Crow has four legs then every Buffalo is white and brisk
4. The milk is black
5. So, every Buffalo is white

3. (a) (i) Find the adjacency list and adjacency matrix for G [10]



(ii) Show that following the (2,5) encoding function e defined by  
 $e(00) = 00000$        $e(01) = 10101$   
 $e(10) = 01110$        $e(11) = 11011$

is a group code. Define minimum distance of an encoding function.

(b) Let  $A = \{1, 2, 3, 4, 6\}$  and R be the relation on A defined by "x divides y". Write down the relation R, draw digraph of R and find matrix of R. Check whether R is an equivalence relation [10]

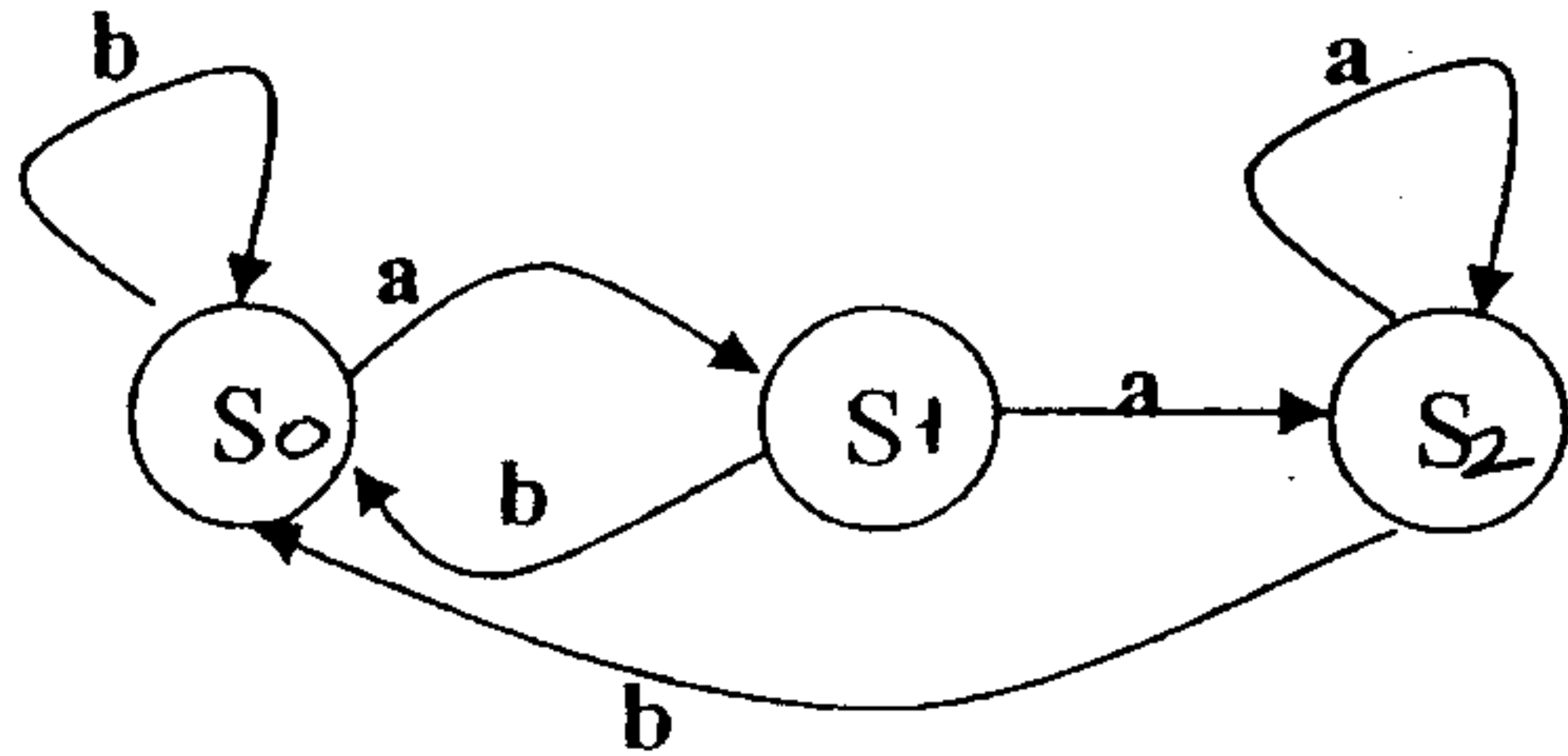
Q.4. (a) (i) Use mathematical Induction to prove that: [10]  
 $5 + 10 + 15 + \dots + 5n = 5n(n + 1) / 2$

(ii) Show that  $a_{n-2} = a_n - 2 \nabla a_n + \nabla^2 a_n$ , where  $\nabla$  is a backward difference.

[ TURN OVER

(b) For the diagram as shown:

[10]



- (i) List the values of transition function  $f_w$  for  $w = abba$
- (ii) Describe the set of words  $w$  having the property that  $f_w(S_0) = S_2$
- (iii) Describe the set of words  $w$  having the property that  $f_w = f_{abc}$

Q.5. (a) Let  $A = \{1,2,3\}$  and let  $R$  and  $S$  be the relations on  $A$ . Suppose that matrices of  $R$  and  $S$  are

[10]

$$M_R = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{pmatrix}, M_S = \begin{pmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

Compute (i)  $R \cup S$  (ii)  $R \cap S$  (iii)  $R^{-1}$  (iv)  $\bar{S}$  (v)  $\bar{R}$

(b) Find the transitive closure of  $R$  of the following using by Wars hall's algorithm

[10]

$A = \{a,b,c,d,e\}$   $R = \{ (a,a) (a,d) (b,b) (c,d) (c,e) (d,a) (e,b) (e,e) \}$

Q.6. (a) (i) Consider the (3,6) encoding function

$e: B^3 \rightarrow B^6$  defined by

[10]

- $e(000) = 000000$        $e(001) = 001100$
- $e(010) = 010011$        $e(011) = 011111$
- $e(100) = 100101$        $e(101) = 101001$
- $e(110) = 110110$        $e(111) = 111010$

Show that this encoding function is a group code.

(ii) Given

STATE	A	B	C
$S_0$	$S_0$	$S_0$	$S_0$
$S_1$	$S_2$	$S_3$	$S_2$
$S_2$	$S_1$	$S_0$	$S_3$
$S_3$	$S_3$	$S_2$	$S_3$

*draw digraph of the machine whose transition table is as above?*

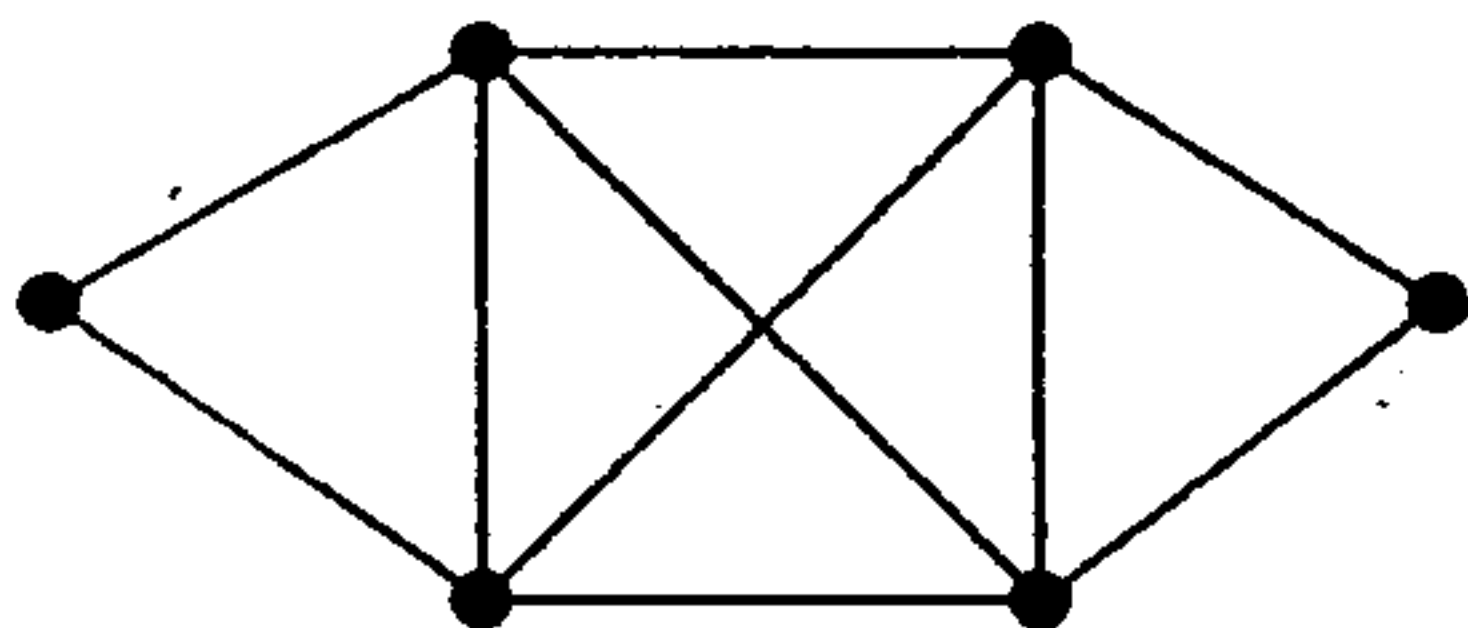
(b) Show that  $(A, \subseteq)$  is a poset, where  $A$  is a collection of all subsets of  $S$ ,

[10]

$\subseteq$  is a set inclusion Operation. Draw the Hasse Diagram when  $S = \{a,b,c\}$

Q.7. (a) (i) Check whether the given graph  $G$  is Eulerian and Hamiltonian.

[10]



(ii) Let  $V = \{v_0, w, a, b, c\}$   $S = \{a, b, c\}$  and let  $\rightarrow$  be a relation on  $V^*$  given by  $v_0 \rightarrow aw$ ,  $w \rightarrow bbw$ ,  $w \rightarrow c$  consider the phase structure grammar  $G = (V, S, v_0, \rightarrow)$  Derive the sentence  $ab^6c$ .

(b) Determine whether the following relation are reflexive, symmetric or transitive

[10]

- 1. For  $A = \{1,2,3\}$  if  $R = \{ (1,1) (1,2) (2,1) (2,2) (3,3) (2,3) (3,1) \}$
- 2. "is the father of"

\*\*\*\*\*

Con. 6400-13.

KA-8392

( 3 Hours )

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.  
 (2) Attempt any **two** questions from Question Nos. 2 to 4.  
 (3) Attempt any **two** questions from Questions Nos. 5 to 7.  
 (4) Answer to questions should be **grouped** and written **together**.  
 (5) **Figures** to the **right** indicate marks.

- |    |  |    |
|----|--|----|
| 1. | (a) Explain the law of demand. What factors are important and influences the said law? | 10 |
|    | (b) Explain Fayol's "Principles of Management".  | 10 |
|    | (a) Discuss the main features of oligopoly market.                                     | 10 |
|    | (b) With the help of diagram, explain the different concepts of elasticity of supply.  | 10 |
| 3. | (a) Describe in detail the internal and external economies of scale.                   | 10 |
|    | (b) Define and explain the expert opinion method.                                      | 10 |
| 4. | Write notes on :-  | 20 |
|    | (a) Market Equilibrium.  |    |
|    | (b) Monopoly and Perfect Competition   |    |
|    | (c) BEP  |    |
|    | (d) Managerial Economics.  |    |
| 5. | (a) Explain Maslow's theory of motivation.   | 10 |
|    | (b) Explain the concept of 'quality circles' with example.                             | 10 |
| 6. | (a) Discuss the various types of interviews used in selecting employees.               | 10 |
|    | (b) Explain the different phases of a Product life cycle'.                             | 10 |
| 7. | Write notes on (any <b>four</b> ):-  | 20 |
|    | (a) Performance appraisals   |    |
|    | (b) Planning   |    |
|    | (c) Leadership theory  |    |
|    | (d) Matrix organisation  |    |
|    | (e) Decision making.   |    |
-

MCA sem I (old)

16/12/13

Nov/Dec-13

C:\data\SP\Con No. 6

sub - Introduction To web Technology

79

Con. 2911-13.

KA-8396

(3 Hours)

[ Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.  
(2) Attempt any **four** question from Question Nos. 2 to 7.  
(3) Illustrate answers with **sketches** wherever **required**.

1. (a) Explain application object, session object in ASP with example. 10  
(b) Write a HTML Code to create a GUI for job registration form. 10
  2. (a) Write short notes on DHTML and XHTML. 10  
(b) Explain DOM model of Java script in detail. 10
  3. (a) Write a Java script to accept a number from user and calculate its cube and display result in a text box. 10  
(b) Explain Math object and string object in Java script. 10
  4. (a) Explain date object in Java script with atleast five methods. 10  
(b) What is CSS ? Explain the different types of CSS with example. Give the use of CSS. 10
  5. (a) Why Java script is used for client side scripting ? Which are the different ways in which Java script can be embedded with a HTML Code? 10  
(b) Write a javas cript program to count number of vowels in a text typed in a textarea. 10
  6. (a) Write java script program demonstrating the inter-window communication by changing the background color. 10  
(b) Explain add Event Listener and remove Event listener with suitable example. 10
  7. (a) Explain Request and Response object available in ASP. 10  
(b) Distinguish between – 10
    - (i) Post and get method.
    - (ii) Client side and server side scripting.
-