M.C.A. (Mgmt. Faculty)
IT - 11 : FUNDAMENTALS OF COMPUTER
(2015 Pattern) (Semester - I)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:
 1) *Q1 and Q7 are compulsory.*
 2) *Solve any Four from remaining.*
 3) *Draw neat and labelled diagrams wherever necessary.*

Q1) a) What is pipeline? Explain instruction pipeline.   **[8]**

   b) Define digital computer? Explain block diagram of computer.   **[7]**

Q2) Convert the Following   **[5 × 2 = 10]**

   a) $(F2B.FC)_{16} = (?)_2$

   b) $(1010101010)_2 = (?)_{10}$

   c) $(51315)_8 = (?)_{16}$

   d) $(110\ 110.110)_2 = (?)_8$

   e) $(5734)_{10} = (?)_{16}$

Q3) What is Flip-Flop? Explain any FF in detail?   **[10]**

Q4) Explain DMA and DMA control?   **[10]**

Q5) What is counter? Explain synchronous and asynchronous counters?   **[10]**

Q6) Explain Half adder and Full adder in detail?   [10]

Q7) Write short notes (Any three):   [3 × 5 = 15]

    a)   Compiler and interpreter.

    b)   Addressing Modes.

    c)   Logic gate.

    d)   Multiplexer.

    e)   Primary Memory.

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[5170] - 1002

M.C.A. (Management)

IT-12: C PROGRAMMING WITH DATA STRUCTURE

(2015 Pattern) (Semester - I)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

   1)   *Q.1 is compulsory.*

   2)   *Solve any five from remaining.*

Q1) a)   Write a program in C for create a file and display it's contentains in reverse order. **[10]**

      b)   Write a program in C to implement insertion sort for integer array elements. **[10]**

Q2) Write a program in C for Menudriven program & perform the following operations. **[10]**

      a)   Add

      b)   Display the searched element.

Q3) Write a program for checking given number is existing or not and it's position using pointer. **[10]**

Q4) Create a structure for Library with Book_no; ; Book_name. Book_Author. NO_of_copies Book_price. Display the perticular title with NO. of copies from Database. **[10]**

Q5) Convert the following prifix expression to infire in Tabular format

        – * A + B ^ C D * ^ E F / G H. **[10]**

Q6) Write a C program for impliment the Queue and display the No. of elements.

[10]

Q7) Write a short notes (Any two):

[10]

    a)   Type def.

    b)   Structure Vs union.

    c)   Dynamic Memory Allocation.

    d)   String function.

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[5170] - 1003

M.C.A. (Management Faculty)

IT-13: SOFTWARE ENGINEERING

(2015 Pattern) (Semester - I)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

1) *Q.1 and Q.7 is compulsory.*

2) *Attempt any three from Q.2 to Q.6.*

3) *Figures to right indicates full marks.*

4) *Write assumptions whenever necessary.*

Q1) The computer science department of an institute offers many courses in MCA, M.Sc (Comp.Sci.), BCA, B.Sc. (Comp.Sci.). Every semester, the instructors are giving the choices regarding courses to be taught by them. these courses are scheduled based on policy directions of the department. Currently the scheduling is done manually but department would like to automate it.

- The preferences must be valid lecture times specified by department.

- The scheduling process must take care regarding clash of class rooms, timing, instructors.

- The scheduling shall provide one hour break after three lectures.

- The outcome of automation shall provide individual time table of instructors, class room time table, total workload allocated to every instructor.

Prepare software requirement specification in IEEE format for the same.**[20]**

Q2) Distinguish between sequential process models and iterative process models of software development. **[10]**

Q3) In an 'order processing system', the customer send in orders to the system. the system acts on these orders to dispatch goods and the invoices to the customers. The system determines the demand of goods by consolidating various orders received from customers. It checks the stock availability and convey's additional requirement of goods to the production shop. Draw context level, level-1 and level-2 (if required) DFD for the same. **[10]**

Q4) Explain importance of UI for software and list the desirable characteristics of good UI. **[10]**

Q5) How documentation plays a vital role in maintainance. List at list five different documents needed at the time of maintainance with its key contents. **[10]**

Q6) Explain different types of CASE tools and its importance. **[10]**

Q7) Write short notes on (any Four): **[20]**

    a) Water fall model.

    b) Functional and non functional requirements.

    c) Data Dictionary.

    d) Agile process.

    e) Legacy system.

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[5170] - 1004

M.C.A. (Management Faculty)

IT-14: DATABASE MANAGEMENT SYSTEM

(2015 Pattern) (Semester - I) (New)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

1) *Q.1 is compulsory.*

2) *Solve any five from the remaining.*

3) *Mention assumptions whenever necessary.*

Q1) 'Marriage place' is an online portal which provides matrimonial services for groom & bride. Interested person need to register online as a member. the members then need to create their profile along with a photograph. Members can specify their expectations about their partners in terms of academic qualifications, salary, service age, height, religion & caste along with brief information about family members. The member can subscribe for this service for a period of 3, 6 or 12 months by paying respective fees. Members get a list of matches based on their expectations "marriage place" also provides facilities related to Marriage Hall, catering services etc.

Draw E.R diagram for the above system. Show database file layout up to third normal form. **[20]**

Q2) Explain various characteristics of DBMS. **[10]**

Q3) What is log based recovery? Explain defened database modificaiton to with example. **[10]**

Q4) What is 'Relational Algebra'? Explain any five operations of relational algebra with example. **[10]**

Q5) What are different means of data storage? Explain Database backup system. **[10]**

P.T.O.

Q6) Explain different types of Access controls in dtabase security. **[10]**

Q7) Write short notes on (Any 2): **[2×5=10]**

    a)   Database users.

    b)   E F Codds' rules (any 5).

    c)   NO SQl Databases.

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M.C.A. (Management Faculty)
BM - 11 : Principles & Practices of Management & Organizational Behaviour
(2015 Pattern) (Semester - I)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:

    1)   *Question number 1 is compulsory.*

    2)   *Attempt any three questions from the remaining.*

    3)   *Figures to the right indicate full marks.*

    4)   *Draw diagrams wherever necessary.*

    5)   *Handwriting must be neat and clean.*

Q1)   a)   Explain with examples five managerial functions in proper order.   **[15]**

       b)   Discuss F.W. Taylor's four principles of scientific management and related management activity with examples.   **[10]**

Q2)   Distinguish clearly between Classical Model of Decision Making and Administrative Model of Decision Making.   **[15]**

Q3)   Define the term 'Organization'. Explain the need for Organization. Briefly explain   **[15]**

       a)   Functional Organization.

       b)   Product Organization.

       c)   Territorial Organization.

Q4) Explain Transactional Analysis in detail with applications. **[15]**

Q5) Define & explain Group & Group Dynamics with examples. **[15]**

Q6) Write short notes: (Attempt Any three): **[15]**

    a)   An overview of O.B.

    b)   Theory X & Theory Y.

    c)   Major traits of leadership.

    d)   Team Building.

    e)   Conflict Management.

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[5170]-2001

M.C.A. (Management Faculty)
IT - 21: ESSENTIALS OF OPERATING SYSTEM
(2015 Pattern) (Semester - II)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1) *Question 1 to 7 are compulsory.*
2) *Solve any 4 from remaining.*
3) *Figures to the right indicates full marks.*
4) *Draw neat diagrams wherever necessary.*

Q1) Under what circumstances do page fault occur? Describe the action taken by the OS when page fault occurs. **[10]**

<div align="center">OR</div>

Explain RAID structure in detail. **[10]**

Q2) Consider the following set of processes, with the length of the CPU burst and arrival time given in milliseconds: **[10]**

Process	Bursttime	Arrival Time
P_1	4	0
P_2	5	1
P_3	2	2
P_4	1	3
P_5	6	4
P_6	3	6

a) Draw Gantt charts that illustrate the execution of these processes using non preemptive SJF&Round-Robin scheduling algorithms (Quantum=2ms)

b) Compare which algorithm is suitable.Justify?

Q3) Explain the difference between internal & external fragmentation properly.**[10]**

Q4) Suppose the R/W head is at track 63,moving towards track number 175. The disk queue contains request for 100,175,51,133,8,140,73,77.Find the total number of head movements to satisfy the request using algorithms **[10]**

a) SSTF   b) C-look

Q5) Explain different mechanisms used by OS for interprocess communication. **[10]**

Q6) What is Deadlock? Explain how deadlock can be avoided. **[10]**

Q7) Write short notes (any four) **[20]**
   a)   System calls
   b)   File allocation methods
   c)   Resource allocation graph
   d)   Simulations
   e)   RTOS
   f)   Monitor

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[5170]-2002

M.C.A. (Management Faculty)
222-IT 22 : WEB TECHNOLOGIES
(2015 Pattern) (Semester - II)

Time : 3 Hours]   *[Max. Marks : 70*
Instructions to the candidates:
1)   *Q.1 is compulsory.*
2)   *Solve any five from Q.2 to Q.7.*
3)   *Draw neat diagram wherever necessary.*

Q1) a)   Explain properties of css of following elements: **[10]**

         i)   Font-

         ii)   Border-

         iii)   List-

         iv)   Margin-

         v)   Text-

     b)   What is Global asa? Explain with example.   **[10]**

Q2) Explain Client and server side image mapping with examples.   **[10]**

Q3) Design HTML form for online payment of telephone bill & Assume suitable fields. Validate any 5 different fields in Javascript.   **[10]**

Q4) a)   Describe Lists in HTML.   **[5]**

     b)   Explain <div> & <Span> tag.   **[5]**

Q5) Write an ASP application to accept student details through student Registration

form for International Conference. **[10]**

Q6) Explain Event handling in Javascript. **[10]**

Q7) Write short notes on (Any Two) **[10]**

    a)   String objects in Javascript.

    b)   Request & response object.

    c)   W3C.

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[5170]-2003

M.C.A.

MANAGEMENT FACULTY

IT - 23 : Core Java

(2015 Pattern) (Semester - II)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1)   Q.No 1 & 8 are compulsory.

2)   Answer any FIVE from remaining.

3)   Figures to right indicate Full marks.

Q1) Attempt the following: **[5×2=10]**

   a)   APPLET tag.

   b)   Thread Synchronization.

   c)   'Super' keyword.

   d)   JVM.

   e)   Hash Map.

Q2) Write a program to accept senior citizen name and age store the content in text file. Throw invalid age exception below '60'.   **[10]**

Q3) Differential between Byte stream and character stream. Write a program to merge two files. Accept file names using command line argument.   **[10]**

Q4) Write multithreading application to demonstrate the following threads -   **[10]**

   a)   Display all numbers divisible by 7 from 1 to 100.

   b)   Display all even numbers from 51 to 100.

   c)   Display the message "Welcome to Java" 15 times.

Q5) Write a program to implement choice, checkbox, radio button with appropriate event handling. **[10]**

Q6) What is constructor? Explain constructor overloading with suitable example. **[10]**

Q7) Explain with example how you could achieve multiple inheritance in Java.**[10]**

Q8) Write short notes on [Any two]: **[2×5=10]**

    a)   String & string Buffer classes.

    b)   List Interface.

    c)   Thread Life cycle.

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[5170]-2004

M.C.A.(Management Faculty)
IT - 24 : ESSENTIALS OF NETWORKING
(2015 Pattern) (Semester - II)

Time : 3Hours]   *[Max. Marks : 70*
Instructions to the candidates:
1) *Q.1 & 6 are compulsory.*
2) *Solve any three from remaining.*
3) *Figure to right indicates full marks.*
4) *Draw the neat diagrams wherever necessary.*

Q1) a) Explain TCP/IP model in detail with diagram. **[10]**

     b) Explain connection oriented & connectionless and difference between them. **[10]**

Q2) Explain wireless LAN features and Architecture of 802.3. **[10]**

Q3) Explain IP Addressing with Network Masks and Network Addresses? **[10]**

Q4) Explain DHCP operations in detail. **[10]**

Q5) Explain architecture of email with message format. **[10]**

Q6) Write short notes (any four) **[4 × 5 = 20]**

     a) MIME

     b) NIC

     c) SMTP

     d) ATM Traffic Management

     e) Routing Protocols

     f) Message switching

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[5170]-2005

M.C.A. (Faculty of Management)
MT - 21 : DISCRETE MATHEMATICS
(2015 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:
1) *Qeustion No. 1 is compulsory.*
2) *Attempt any 2 from remaining.*
3) *Figures to the right indicate full marks.*
4) *Scientific calculators are allowed.*

Q1) a) Show the following equivalence without using truth table: **[5]**

     i) $P \rightarrow (Q \vee R) \Leftrightarrow (P \rightarrow Q) \vee (P \rightarrow R)$

     ii) $(P \rightarrow Q) \wedge (R \rightarrow Q) \Leftrightarrow (P \vee R) \rightarrow Q$

   b) Let $A = \{1,2,3,4\}$, $R : A \rightarrow A$ and $S : A \rightarrow A$ **[5]**

$$R = \{\langle 1,1 \rangle, \langle 1,3 \rangle, \langle 2,1 \rangle, \langle 2,2 \rangle, \langle 3,3 \rangle, \langle 4,2 \rangle\}$$

$$S = \{\langle 1,4 \rangle, \langle 2,4 \rangle, \langle 3,2 \rangle, \langle 4,2 \rangle, \langle 4,4 \rangle\}$$

     Show that $\widetilde{R \circ S} = \tilde{S} \circ \tilde{R}$.

   c) Define Abelian Group and subgroup. **[5]**

   d) Show that in a simple graph containing 'n' vertices will have maximum

     of $\dfrac{n(n-1)}{2}$ edges. **[5]**

   e) Let $f : R \rightarrow R$ be given by $f(x) = x^2 - 2$. Find f^{-1}. **[5]**

   f) Rewrite the following statements in symbolic notations: **[5]**

     i)   If there gas in the car, then I will go to the store.

     ii)   If I go to the store, then I will get soda.

     iii)   There is gas in the car, and I didn't go to the store.

     iv)   I will get soda if and only if there is gas in the car.

     v)   I go to the store and I will not get soda.

Q2) a) Write the equivalence relation from the given partition and draw its graph.**[5]**

S = {{*a,c*}, {*b,e*}, {*d*}}

b) Define: **[5]**

  i) Complete Bipartite graph.

  ii) Euler circuit.

c) Obtain the principle disjunctive normal form of $(P \rightarrow R) \wedge (P \rightarrow Q)$ **[5]**
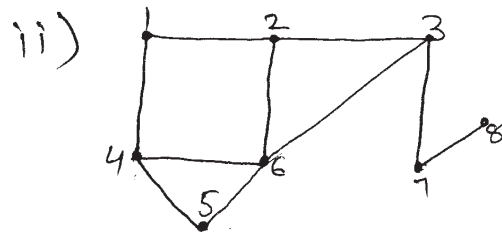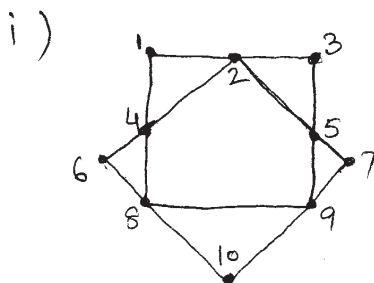
d) Show that $R \vee S$ follows logically from the premises: **[5]**

$C \vee D, (C \vee D) \rightarrow \daleth H, \daleth H \rightarrow (A \wedge \daleth B)$ and $(A \cap \daleth B) \rightarrow (R \vee S)$

Q3) a) Let A = {1,2,3,4} and $R = \{\langle 1,2 \rangle, \langle 2,1 \rangle, \langle 2,3 \rangle, \langle 3,4 \rangle\}$. Use Warshall's algorithm to find transitive closure of R. **[5]**

b) Show that $\langle R, * \rangle$ is a group where $*$ is defined as $a*b = a + b + ab$.**[5]**

c) For the given planer graphs, calculate the number of regions formed using Euler's formula. **[5]**

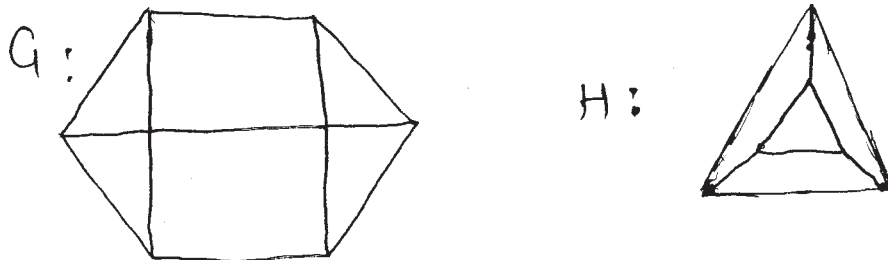d) Draw complete binary tree with 7 and 15 vertices. **[5]**

Q4) a) Write the code words generated by H, where **[5]**

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

What is the minimum weight of non-zero code word in above code words?

b) Let A = {a,b,c}. Draw the Hasse diagram for the power set of A. **[5]**

c) Show that the graphs G and H are isomorphic: **[5]**

d) Construct the truth table for the following statements: **[5]**

i) $\neg R \rightarrow (Q \wedge \neg P)$

ii) $(\neg P \rightarrow Q) \vee ((P \wedge \neg R) \leftrightarrow Q)$

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[5170] - 3001

M.C.A. (Management Faculty)
MTC-31: PROBABILITY & COMBINATORICS
(2015 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:
1) *Question No.1 is compulsory.*
2) *Solve any three from remaining questions.*
3) *Use of statistical table and non programmable calculator is allowed.*
4) *Figures to the right indicate full marks.*

Q1) Solve any five:

a) 6 men A,B,C,D,E,F are to be seated around a circular table. How many ways are there of achieveing this if A refuses to sit besides B? **[5]**

b) State and Prove Formula Derangement. **[5]**

c) The stores S_1, S_2 and S_3 each are having a stock of 20 pieces of a particular item. The S_1, S_2 and S_3 have 10%, 20% and 30% defective items, respectively. A customer first chooses a store randomly and then selects an item randomly from the store and found defective. Find the probability that it is from store S_1. **[5]**

d) For the joint probability distribution of two random variables X & Y given below. **[5]**

X \ Y	-1	0	1	2
1	k	2k	3k	k
2	2k	4k	2k	k
3	k	2k	4k	k

Find

i) k

ii) Conditional distribution of X given Y=1

iii) Conditional distribution of Y given X=2

e) On a multiple choice examination with 3 possible answers for each of the 5 questions. What is the probability that a student would get 4 or more correct answers just by guessing? **[5]**

f) Find the coefficient of $x^4 y^3 z^6$ in the expansion of $(2x^2 - y - 3z^2)^8$. **[5]**

Q2) a) Find Mean and Variance of Binomial distribution. **[7]**

b) Prove the following by combinatorial argument $\begin{pmatrix} n+1 \\ r \end{pmatrix} = \begin{pmatrix} n \\ r \end{pmatrix} + \begin{pmatrix} n \\ r-1 \end{pmatrix}$.**[4]**

c) Following is the distribution function of a d.r.v. X: **[4]**

Xi	-3	-1	0	1	2	3	5	8
F(x)	0.1	0.3	0.45	0.65	0.75	0.9	0.95	1

Find

i) pmf of X.

ii) p(x < 2).

Q3) a) Mean and Variance of Normal Distribution. **[8]**

b) State and prove Poisson is a limiting case of binomial random variable.**[7]**

Q4) a) Find the number of non negative integer valued solutions of the following equation with given conditions: **[7]**

$$x_1 + x_2 + x_3 = 28, \quad 3 \le x_1 \le 19, 4 \le x_2 < 20, 5 \le x_3 \le 21.$$

b) Following is a p.m.f of a discrete random variable X   **[8]**

   $p(x) = k(x +1);$ $x -, 1, 2, 3, 4$

   $= 0$ otherwise

   Find

   i)   k

   ii)   Mean of X

   iii) Standard deviation of X

Q5) a) Prove the following using Axioms of probability: **[4]**

   $P(A') = 1 - P(A)$, where A' is the complement of A.

   b) Define with illustration: **[4]**

   i)   Equi-probable sample space.

   ii)   Event.

   c) The amount of time consumed by an individual at a bank ATM is found
      to be normally distributed with mean 130 seconds and standard deviation
      45 seconds.   **[7]**

   i)   What is the probability that a randomly selected individual will
         consume less than 100 seconds at the ATM?

   ii)   What is the probability that a randomly selected individual will spend
         between 2 to 3 minutes at the ATM?

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[5170] - 3002

M.C.A. (Management Faculty)
T1-IT31: ADVANCED DATA STRUCTURE & C++ PROGRAMMING
Software & Application Development
(2015 Pattern) (Track - I) (Semester - III)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

     1)   *Q.1 and Q.9 are compulsory.*
     2)   *Answer any five questions from remaining questions.*
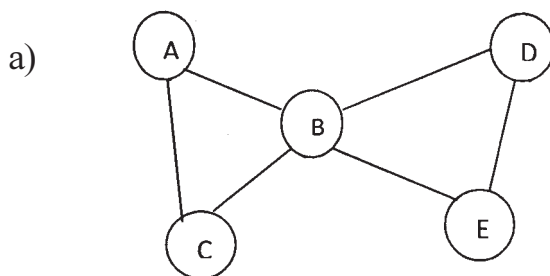   *3)*   *Figures to the right indicate full marks.*

Q1) a)   Write a functions for PUSH() and POP() operations of stack using linked list.   **[5]**
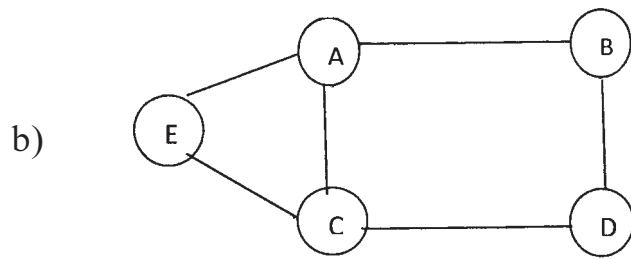
     b)   What will be the output for the following: **[5]**

i)
```
#include<iostream.h>
Class A
{
Public:
A& operator=(const A&a)
{
Cout<<"A's assignment operator"
}
return *this;
};
class B
{
A a[2];
};
int main()
{
B b1,b2;
b1=b2;
return 0;
}
```

ii)
```
#include<iostream.h>
Using std::cout
Class main
{
Public:
main()
{
cout<<"I am in Main"<<endl;
}
~main()
{
   cout << "Free Me";
}
};
int main()
{
 main m;
}
```

Q2) a) Write a function power() to raise number m to power n using function overloading. **[5]**

b) Explain Memory management operators with example. **[5]**

Q3) a) Define class STRING. Write a necessary function & overload == operator to compare two strings. **[5]**

b) Explain parameterized constructor with example. **[5]**

Q4) a) Write a program to perform division of two numbers using try-catch block. **[5]**

b) Enlist the rules of operator overloading. **[5]**

Q5) a) Write a C++ function for merging two linked list. **[5]**

b) Explain Multilevel & Multiple inheritance with example. **[5]**

Q6) Write a program in C++ that reads a text file and create another file that is identical to it except that every consecutive blank space is replaced by "$".**[10]**

Q7) a) Construct binary tree for the following: **[5]**

preorder: A B D G H E I C F J K

inorder: G D H B E I A C J F K

b) Construct AVL tree for **[5]**

8, 15, 1, 19, 16, 4, 25. Start with empty tree.

Q8) Generate DFS and BFS output for the following: Use A as staring vertex.**[10]**

a)

b)

Q9) Write a short notes on (Any Two):   **[10]**

a)   Virtual Function.

b)   Threaded Binary Tree.

c)   Manipulators.

d)   Static Data members & Function.

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[5170] - 3003

M.C.A.

Track - II:INFRASTRUCTURE & SECURITY MANAGEMENT

T2-IT31: IT Infrastructure Architecture

(2015 Pattern) (Semester - III)

Time : 3 Hours]
[Max. Marks :70

Instructions to the candidates:

1) Q.1 and Q.7 are compulsory.

2) Answer any four from Question No. 2 to 6.

3) Draw diagrams and illustrations supportive to your answer.

Q1) What is the role of Configuration Management and Change Management in Service Support Process? **[15]**

Q2) Explain various security threats for Computer and Internet. How do you manage? **[10]**

Q3) Describe various challenges in IT Infrastructure Managememt. **[10]**

Q4) Explain Different activities performed in IT Service Continuity Management. **[10]**

Q5) Explain in detail about data retention policy in IT Organization. **[10]**

Q6) How an organization can protect their system from physical threats. **[10]**

Q7) Write short notes on any three: **[3×5=15]**

   a)   Problem Mangement.

   b)   Financial Management.

   c)   Intrusion Detection.

   d)   Disaster Recovery.

   e)   Information System Design Process.

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[5170] - 3004

M.C.A. (Management Faculty)
IT-31: ENTERPRISE RESOURCE PLANNING
(2015 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

1)   Q.1 is compulsory. Solve any 5 from remaining.

2)   Draw suitable diagram when needed.

3)   Give suitable examples if required.

4)   Whenever necessary state assumptions.

Q1) Konarak PVT. LTD. is a manufacturing company providing services to various big companies in India and Abroad. However, currently the company is facing lots of problems due to huge competition in the manufacturing sector. You as a ERP consultant, suggest how ERP implementation can prove as the better tool to improve companies overall functioning. List all modules and sub-modules and discuss any three modules of ERP which will be suitable for Konarak PVT. LTD. Company.   **[20]**

Q2) What is ERP and explain the Success & failure factors of an ERP system.**[10]**

Q3) Which are the different Current ERP Packages and Vendors available in the market and differentiate the packages.   **[10]**

Q4) Explain the ERP Implementation Life Cycle in an organization.   **[10]**

Q5) How data mining & data warehousing is helpful for a business to survive.**[10]**

Q6) Explain OLAP and SCM in detail with suitable example.   **[10]**

Q7) What is CRM an BPR and why is it required explain with a suitable example.**[10]**

Q8) Which are the key factors for Measuring the Performance of ERP system.**[10]**

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[5170] - 3005

M.C.A. (Management)
T4-IT31: NETWORK ADMINISTRATION - I
(2015 Pattern) (Track - IV)(Semester - III)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

1) *Q.1 and Q.7 are compulsory.*

2) *Solve any four from remaining.*

3) *Figure at right indicates marks.*

Q1) Explain OSI layers and their functions.   **[10]**

Q2) Explain UTP Cables and RJ45 connector with diagram.   **[10]**

Q3) Explain HDLC protocol, its configuration and transmission modes.   **[10]**

Q4) Explain IP Header and describe each field in header.   **[10]**

Q5) Explain LAN switching with diagram.   **[10]**

Q6) Explain various IOS CLI command modes.   **[10]**

Q7) a)   Explain compare and contrast IP Routing Protocols.   **[10]**

   b)   Write short notes (ANY TWO):   **[2×5=10]**

      i)   IP Addresses.

      ii)   Exterior Routing Protocol.

      iii)   VLANs.

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[5170] - 3006
M.C.A. (Management Faculty)
T1-IT32: DESIGN AND ANALYSIS OF ALGORITHMS
(Software & Application Development)
(2015 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

1) *Question No.1 and Question No.7 are compulsory.*
2) *Solve any four questions from remaining questions.*
3) *Use of non-programmable calculator is allowed.*
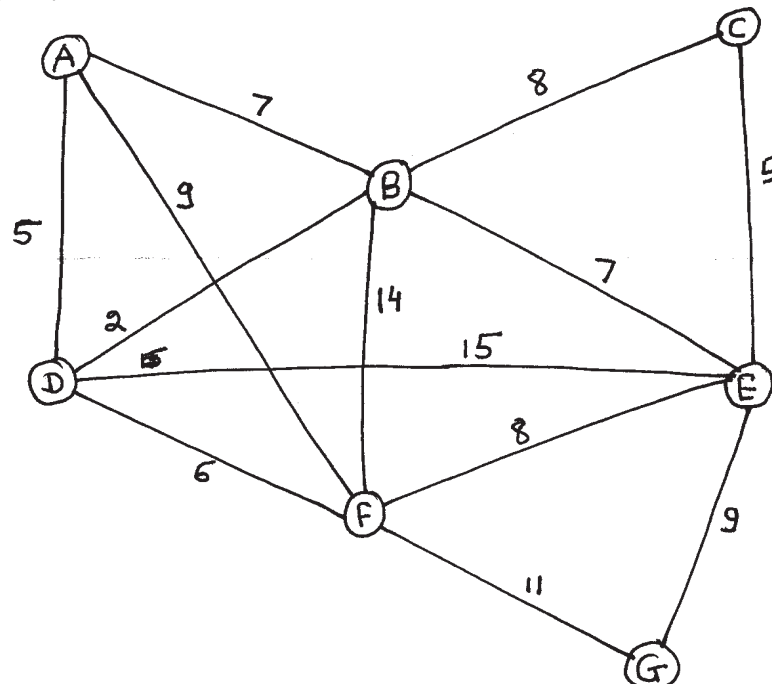4) *Figures to the right indicate full marks.*

Q1) a) Explain N Queen Problem in detail. **[8]**

     b) Discuss Binary search algorithm with example. **[7]**

Q2) a) Explain Union and Find Algorithm with suitable example. **[5]**
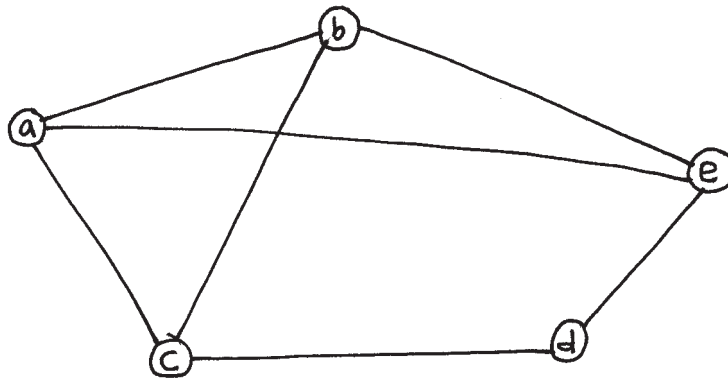
     b) Find the optimal solution for the Knapsack problem (Fraction) where Knapsack capacity = 28, P[7] = {9, 5, 2, 7, 6, 16, 3}, W[7] = {2, 5, 6, 11, 1, 9, 1}. **[5]**

Q3) Explain Kruskal's Algorithm and find MST for the following graph using Prims Algorithm. **[10]**
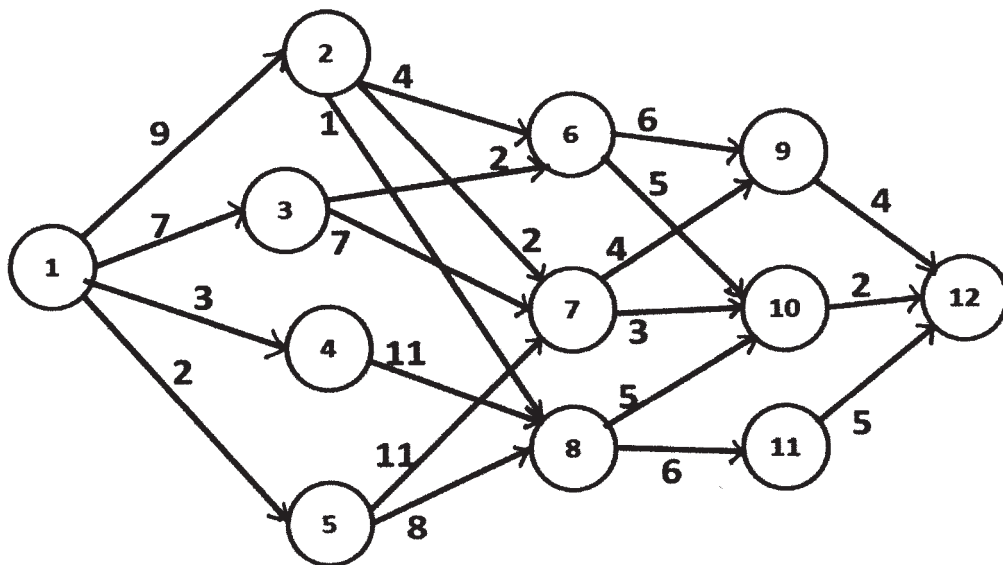
Q4) Write Graph-coloring Algorithm and explain with the help of following graph. **[10]**

Q5) Explain multistage graph by using the following example. **[10]**

Q6) Discuss 0/1 Knapsack Algorithm using branch and bound technique. **[10]**

Q7) Write short notes on any three of the following: **[15]**

    a)   Tower of Hanoi.

    b)   Minimal Spanning tree.

    c)   Flow Shop Scheduling.

    d)   NP Hard and NP-Complete.

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Total No. of Questions :7]

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[5170] - 3007

M.C.A. (Management)
DATA CENTER ARCHITECTURE & STORAGE MANAGEMENT
(Infrastructure Security Management)
(2015 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

    1)   *Q.1 and Q.7 are compulsory.*

    2)   *Solve any 4 questions from remaining.*

Q1) a)   Explain Data Center Architecture with diagram.   **[10]**

    b)   What is Information Security? Explain Critical security attributes for information systems.   **[10]**

Q2) Explain in brief RAID and its levels.   **[10]**

Q3) a)   Differentiate between Business Continuity (BC) and Disaster Recovery (DR).   **[5]**

    b)   Differentiate between RTO and RPO.   **[5]**

Q4) Discuss SAN and NAS along with FC-SAN and IP-SAN.   **[10]**

Q5) Describe the Backup/Recovery topologies.   **[10]**

Q6) What is Storage Virtualization? Explain the types of Storage Virtualization.**[10]**

Q7) Write short notes on any two: **[10]**

    a)   Data Center Monitoring.

    b)   Storage Virtualization Challenges.

    c)   Threats in Storage Security Domain.

    d)   CAS.

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[5170]-3008

M.C.A.(Management Faculty)

T3 - IT32 : DATA COMMUNICATION & COMPUTER NETWORKS

(Information Management & Quality Control)

(2015 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) *Q.1 & Q.6 are compulsory.*
2) *Attempt any Three from remaining.*
3) *Neat diagram must be drawn whenever necessary.*
4) *Figures to the right side indicate full marks.*

Q1) a) Justify with True or False (Not more than 60 words) **[10]**

  i) Only the dynamic address allocation scheme used in DHCP

  ii) SMTP is pull protocol

  iii) Domain name system is a distributed database

  iv) RIP is dynamic distance vector method based on hop count

  v) Device on the network can communicate with device on the another network via gateway

  b) The received hamming codeword is 101101010. Using odd parity locate and correct the bit in error. **[10]**

Q2) What are different HTTP response message status codes? Give the description of each. **[10]**

Q3) What is default mask for following IP host address **[10]**

  (Solve with proper procedure)

  a) 98.0.46.201

  b) 172.14.6.8

  c) 205.35.66.12

  d) 192.5.78.111

Q4) Explain TCP/IP protocol suite. **[10]**

Q5) a) What is DNS & DNS protocol. **[5]**

b) What is POP? What are its disadvantages? **[5]**

Q6) Write short notes (any 4) **[20]**

a) IPv6

b) Packet Switching Techniques

c) Wi - Max

d) Cryptography

e) VPN

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[5170]-3009

M.C.A

(Computer Management)
T4 - IT 32: WINDOWS SERVER CONFIGURATIONS
(2015 Pattern) (Semester - III)

Time : 3Hours]   *[Max. Marks : 70*
Instructions to the candidates:
  1) *Q.1 and Q.6 are compulsory.*
  2) *Attempt any THREE from remaining.*

Q1) a) What is Multiple Local Group Policy? Explain how to configure Multiple Local Group Policy.

   b) Explain Dynamic Memory & Smart paging concepts in windows server 2012.   **[20]**

Q2) What are the prerequisites to install server 2012? Give installation steps for windows server 2012.   **[10]**

Q3) What is WinRM? What are the prerequisites to manage older operating systems through WinRM? Explain the process to enable/disable remote management through windows interface & through PowerShell.   **[10]**

Q4) Explain the process to Create and Configure DHCP Scope.   **[10]**

Q5) Explain how Create a New Computer Account in AD DS along with additional considerations.   **[10]**

Q6) Write short notes (any four)   **[5 × 4 = 20]**
   a) DSC
   b) NIC Teaming
   c) Organizational Units
   d) Storage Spaces.
   e) Windows Firewall

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[5170] - 3010

M.C.A. (Management Faculty)

T1-IT33: OBJECT ORIENTED ANALYSIS AND DESIGN

(Software & Application Development)

(2015 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

     1)   *Q.1 and Q.7 are compulsory.*

     2)   *Solve any four questions from the remaining.*

     3)   *Mention assumptions made for solving the case studies.*

Q1) Relcom Telecom launched the 4G service outlets to sell 4G SIM cards. Customer visits the outlet and submits the valid ID proof to buy the card. One customer can buy any number of SIM cards. Company provides various combo plans of call, sms and data rates. Customer has to select the plan at the time of buying the SIM. Outlet representative collect the form, ID proof, photo from the customer along with money and submit to company's office. Technical engineer feeds the customer and SIM information to the system. Verification team member from company gives the verification call to customer for authentication. If the information of customer during the verification call is correct, the card is activated else verification team submits the fraud report and make the cultivation status of card pending. As per the call and data usage the bill is charged. Draw use case and class diagram. **[20]**

Q2) Explain OMT in detail. **[10]**

Q3) Draw an activity diagram for online railway reservation system. **[10]**

Q4) Draw state transition diagram for automated gate entry system of vehicle in the society which consists of sensor. The system is with the following facilities.

     *   Sensing the vehicle

     *   Scanning the number plate of vehicle.

     *   Recognizing the registered and not registered vehicles.

*   Opening the gate

*   Closing the gate

*   Alarm for non registered vehicles.

If there are no vehicles coming in the society, system will be in idle state. If vehicle is registered with the system, it will recognize the vehicle and allow it to pass in the society. Gate will not open if vehicle is not registered.   **[10]**

Q5) Draw sequence and collaboration diagram for withdrawal of an amount from ATM machine.   **[10]**

Q6) Explain RUP in detail.   **[10]**

Q7) Short notes on (any 2):   **[2×5=10]**

   a)   Pattern.

   b)   SSAD Vs OOAD

   c)   Class Responsibility Collaborator Approach

   d)   Component and deployment diagram.

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[5170] - 3011

M.C.A. (Management Faculty)

T2-IT33: INTRODUCTION TO INFORMATION SECURITY

(Infrastructure & Security Management)

(2015 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) *Question No. 1 & 7 are compulsory.*

2) *From remaining solve any four.*

Q1) CNB bank has loan accounting system. For applying for the loan customer needs to register & enter details. Discuss the access rights & security related issues. **[10]**

Q2) Explain the PDCA cycle with reference to ISO 27001. **[10]**

Q3) What are challenges in database security? **[10]**

Q4) Define & explain the various threats to information security. **[10]**

Q5) Define cryptography. Explain the public key encryption. **[10]**

Q6) What is Ethical Hacking? **[10]**

Q7) Write short notes on (any Four): **[4×5=20]**

   a)   Indian IT act.

   b)   Security strategies.

   c)   Security policy standards.

   d)   Malware.

   e)   Digital signatures.

   f)   Privacy issues in security.

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[5170] - 3012

M.C.A. (Management)

T3-IT33: DATA WAREHOUSE, MINING, BI TOOLS & APPLICATIONS

(Information Management & Quality Control)

(2015 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) *Question No. 7 is compulsory.*
2) *Solve any five questions from 1 to 6.*
3) *Figures to the right indicate full marks.*
4) *Use of simple calculators are allowed.*

Q1) What are OLAP data cubes? Explain any four operations on these data cubes with example. **[10]**

Q2) What is Expert System? Explain the working of Expert System in detail.**[10]**

Q3) Apply FP-Growth Tree Algorithm to construct FP-Tree and find the frequent item set for the following dataset given below. (Given Minimum Support Count = 30%) **[10]**

TID	List of Items
1	apple, berries, coconut
2	berries, coconut, dates
3	coconut, dates
4	berries. dates
5	apple, coconut
6	apple, coconut dates

Q4) What is Clustering? Write K-means algorithm and explain wih example. **[10]**

Q5) What is Web Mining? Explain three main areas of Web Mining. **[10]**

Q6) What is Six Sigma? Explain DMAIC Process Improvement Model. **[10]**

Q7) Write short notes on (Any Four): **[20]**

    a)   Market Basket Analysis.

    b)   Dashboard.

    c)   Balanced Scorecard.

    d)   Applications of Expert System.

    e)   Data Classification using Decision Tree.

    f)   Regression Analysis.

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[5170]-3013

M.C.A.

COMPUTER MANAGEMENT

T4-IT - 33 : IT Infrastructure Monitoring
(Net Working)
(2015 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:
1) *Q.1 and Q.8 are compulsory.*
2) *Attempt any Five from remaining.*

Q1) What is change management? Explain Change control plan in detail. **[10]**

Q2) Discuss Instructions and Addressing modes in detail. **[10]**

Q3) Highlight Nagios administration general security guidelines. **[10]**

Q4) Explain project estimations tools & techniques in detail. **[10]**

Q5) Explain Auto discovery process in OPENNMS. **[10]**

Q6) What are the issues with data archiving? Discuss Archiving benefits &

Implementation of an archive strategy. **[10]**

Q7) Explain hierarchical space management. **[10]**

Q8) Write Short Notes: (Any two) **[2 × 5 = 10]**

     a)   Capacity planning.

     b)   SCSI.

     c)   Quality Plan.

     d)   Database & Application Protection.

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[5170]-3014
M.C.A. (Management Faculty)
T1 - IT 34 : ADVANCED INTERNET TECHNOLOGIES
(2015 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:

    1)   *Q1 & Q7 are compulsory Questions.*

    2)   *Solve any 4 questions from Q2 to Q6.*

Q1) a)   Write PHP script for update specific record in database. Assume student table with required fields in database. May update address.   **[7]**

      b)   Explain following J-Query methods with example.   **[8]**

          i)   Animate

          ii)   Fade

Q2) Write an XML file to record company details Name, Address, URL. Apply XSLT to this XML file.   **[10]**

Q3) Explain PHP session with suitable program.   **[10]**

Q4) Explain MVC architecture of angular JS. Draw suitable well labelled diagram.   **[10]**

Q5) Write a program using <CANVAS> to draw triangle shape.   **[10]**

Q6) Explain Jquery DOM traversing methods, with suitable example. **[10]**

Q7) Write short notes on following: (Any three): **[5 × 3 = 15]**

    a) AJAX.

    b) SOAP.

    c) Include & Require.

    d) Jquery widgets.

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[5170]-3015

M.C.A.-II (Management)
T2-I T 34 : OFFICE AUTOMATION TOOLS
(Infrastructure & Security Management)
(2015 Pattern) (Semester - III)

Time : 3 Hours]   *[Max. Marks : 70*
Instructions to the candidates:
1)   *Q.1 is compulsory; solve any FIVE from remaining questions.*
2)   *Numbers written at right indicates full marks of that question.*

Q1) a)   Mr. Aryan has borrowed home loan of Rs. 50 Lakh from ABC bank for period of 180 months. He was offered a fixed interest rate of 9.5%. Prepare a spread sheet for EMI to be paid by Mr. Aryan. Write and explain all formulas used in. Also write the steps to draw bar chart of EMI showing clearly interest and principal amount.   **[15]**

b)   Explain importance of open source software in office automation. **[05]**

Q2) a)   State and explain steps and tools involved in office automation.   **[05]**

b)   Explain features of Writer, Calc and Impress.   **[05]**

Q3) a)   Write steps to create a pie chart of grade distribution of a class as A, B, C, D and E with open office and illustrate Data range, series and legends with suitable example.   **[05]**

b)   Explain, use and write syntax of sort, sum and average calc functions with the help of a spread sheet for salary calculation of a small business organization having 20 employees on roll.   **[05]**

Q4) a)   Explain the procedure for adding animation effect and slide transition effect in an impress presentation.   **[05]**

b)   How to publish Writer text as a Blog?   **[05]**

Q5) a) What do you mean by 'loop until escape' function in Impress? How to achieve it? **[05]**

b) Explain the procedure to add Citations in a document. **[05]**

Q6) a) What do you mean by Macros? Explain its use in OpenOffice. **[05]**

b) Explain steps to create HTML,XML and Master documents in OpenOffice Impress. **[05]**

Q7) a) What is mail merge? Explain all the steps with suitable example. **[05]**

b) Write the correct syntax and use for following calc functions. **[05]**

    i) QUOTIENT

    ii) SQRTP

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[5170]-3016

M.C.A. (Management)
T3-IT 34 : INFORMATION SECURITY AND AUDIT
Information Management & Quality Control
(2015 Pattern) (Semester - III) (Track-3)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:
    1)   *Q.1 and Q.8 are compulsory.*
    2)   *Attempt any 4 out of the remaining.*
    3)   *Draw neat and labelled diagram wherever necessary.*

Q1) A Government hospital in an urban area receives a phone call saying person has gained unauthorized access to hospital information system and entire database in within the control of a hacker. Database contains the details of patients, doctors, diagnosis, treatments, insurance claims etc. The hacker has asked for a ransom money failing which application as well as database will be deleted. As an expert in handling such situations from cyber forensics point of view, suggest preventive , detective and corrective techniques to handle such incidences. **[15]**

Q2) Explain the need of IS Audit. What are the goals achieved by IS Audit? **[10]**

Q3) Elaborate in detail, role of biometric controls in preventing cyber crimes.**[10]**

Q4) Explain the role and components of ISMS. **[10]**

Q5) What are the types of information security policies? Explain the role of PDCA for policy improvement. **[10]**

Q6) Elaborate on different risks to information assets in today's cyber world.**[10]**

Q7) Explain different types and examples of controls along with their role in securing information assets. **[10]**

Q8) Write short notes on (Any 3)   [15]

    a)   e-governance.

    b)   BCP.

    c)   Evidence Collection.

    d)   Cyber Crimes.

    e)   IT Audits standards.

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[5170]-3017

M.C.A. (Mgmt. Faculty)
T4-IT 34 : LINUX ADMINISTRATION-I
Net Working
(2015 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

    1)   Q.1 and Q.7 are compulsory.

    2)   Attempt any 4 from Q.No. 2 to 6.

Q1) Explain the three levels of permission of files and directories in Linux. **[10]**

Q2) Explain the User creation in Linux. **[10]**

Q3) Explain the Restoring process in Linux. **[10]**

Q4) How to create and configure Local Printer on Linux. **[10]**

Q5) Explain the network file system in detail. **[10]**

Q6) Explain DHCP in detail. **[10]**

Q7) Write short Note (Any 4) **[20]**

    a)   DNS.

    b) ext_3.

    c)   SAMBA.

    d)   System Rescue.

    e)   USER ADD COMMAND.

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[5170]-4001

M.C.A. (Faculty of Management)
OPTIMIZATION TECHNIQUES
(2015 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:
1) *Question No. 1 is compulosry.*
2) *Attempt any three from the remaining.*
3) *Use of non programmable calculators is allowed.*
4) *Figures to the right indicate full marks.*

Q1) a)   Solve the following transportation problem: **[7]**

Origins		Destinations				Supply
		I	II	III	IV	
	A	23	20	26	31	150
	B	28	29	25	22	200
	C	26	29	23	19	250
Demand		200	125	175	150	

b)   A project consists of different activities and relevant data as follows:**[7]**

Activity	Immediate Predecessor	Duration (weeks)		
		Optimistic	Most Likely	Pessimistic
A	-	2	3	4
B	-	2	2	2
C	A	2	4	6
D	A	5	7	9
E	B	1	2	3
F	C	2	2	2
G	E	2	3	4
H	E	1	4	7
I	D,G	1	3	5
J	F,I	1	5	9

     i)   Draw PERT Network of the project.

     ii)   Find the Expected duration of the project and variance.

     iii)   Find the probability that the project will completed before 16 weeks.

c) A firm has a single machinist in a repair shop. He works 8 hours a day, and on an average 4 machines break each day. It takes on the average one hour to repair a machine. Using Poisson-Exponential model, determine: **[7]**

   i) The expected number of machines in the repair shop.

   ii) The expected number of machines in the shop on which the machinist has not started to work.

   iii) The average free time of machinist on any working day.

d) Seven jobs are to processed through 2 machines A and B in the order AB. Processing times (in hours) are given below: **[7]**

Jobs	1	2	3	4	5	6	7
Machine A:	4	3	5	13	7	10	5
Machine B:	9	8	10	4	3	4	10

Find the order of jobs that minimize the total elapsed time. Also find optimum elapsed time.

Q2) a) Solve the following LPP by Big-M Method: **[7]**

Max : $Z = 4x_1 + 3x_2$

Subject to:

$$2x_1 + x_2 \leq 2$$
$$3x_1 + 4x_2 \geq 12$$
$$x_1, x_2 \geq 0$$

b) The following table represents the % of survival by the end of week for a certain type of light bulbs. **[7]**

Week	0	1	2	3	4	5
% surviving by the end of week	100	90	65	40	15	0

There are 1000 bulbs in use and it costs Rs. 2 to replace an individual bulb which has burnt out. If all bulbs were replaced simultaneously it would cost 50 paise per bulb. Suggest optimum replacement policy.

Q3) a) The demand rate of a particular item is 12,000 units per year. The setup cost per run is Rs. 432 and the holding cost is Rs.0.60 per unit per month. If no shortages are allowed and the replacement is instantaneous, determine: **[7]**

    i) The optimum run size.

    ii) The optimum scheduling period.

    iii) Minimum total expected annual inventory cost.

b) Five new machines are to be located in a machine shop. There are five possible locations in which the machines can be located. Following table represents cost (in 1,000 Rs.) of placing the machine at the respected place find optimum assignment schedule. **[7]**

Place

Machine	A	B	C	D	E
1	15	13	9	13	12
2	5	8	13	16	18
3	10	9	10	20	11
4	11	15	13	-	17
5	10	8	-	13	18

Note: '-'indicates that the machine cannot be located at the corresponding place.

Q4) a) Choose the correct option: **[7]**

    i) The key column in the simplex table indicates:

        1) Incoming Variable

        2) Outgoing variable

        3) Dependant variable

        4) Basic variable

ii) The rent of the store/warehouse where materials are stored falls under:
   1) Inventory carrying cost
   2) Ordering cost
   3) Procurement cost
   4) Stock out cost

iii) The lead time is the time:
   1) To place orders for materials
   2) Of receiving materials
   3) Time gap between two successive orders
   4) Between placing the order and receiving the material

iv) When the value of money changes with the time @ 20% p.a., the discount factor for 2nd year is:
   1) 1
   2) 0.833
   3) 0.6955
   4) Cannot be determined

v) In a CPM/PERT network a dummy activity is necessary when
   1) Two activities have the same starting node
   2) Two activities have the same ending node
   3) A node does not actually connect to another node
   4) When two activities share the same starting and ending node

vi) The standard deviation of the project is computed as:
   1) The sum of the standard deviations of all activities on the critical path
   2) The square root of the sum of the standard deviations of all activities
   3) The sum of the variances of all activities on the critical path
   4) The square root of the sum of the variances of all activities on the critical path

vii) The objective of project crashing is to.
   1) Reduce the project duration.
   2) Reduce indirect costs.
   3) 1 and 2 both.
   4) Only 1.

b) Solve the following using Dual simplex Method [7]

Minimize $Z = x_1 + x_2$

subject to

$2x_1 + x_2 \geq 2$

$-x_1 + x_2 \geq 1$

$x_1, x_2 \geq 0$

Q5) a) The following is the data regarding a project [7]

Activity	Preceding Activity	Normal		Crash	
		Time(weeks)	Cost (Rs. '000)	Time(weeks)	Cost (Rs. '000)
A	-	10	20	7	30
B	-	8	15	6	20
C	B	5	8	4	14
D	B	6	11	4	15
E	B	8	9	5	15
F	E	5	5	4	8
G	A,D,C	12	3	8	4

Indirect Cost is Rs. 2,800 per week. Find the optimum duration and the associated cost.

b) In a supermarket, the average arrival rate of customer is 10 per every 30 minutes following Poisson process. The average time taken by a cashier to list and calculate the customer's purchase is 2.5 minutes following exponential distribution. Find:

i) The expected time spent by a customer in the supermarket.

ii) The probability that customer need not wait for billing of his purchase.

iii) Probability that the queue length exceeds 4. [7]

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[5170]-4002

M.C.A. (Management Faculty)
SOFTWARE & APPLICATION DEVELOPMENT
T1-IT41 : Advance Java
(2015 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:
   1)   Q.1 is compulsory.
   2)   Answer any FOUR from Remaining.

Q1) Answer the following: **[10]**

   a)   What are core interfaces Hibernate

   b)   List out JSP Directives

   c)   what is Remote Interface

   d)   Servlet AP1

   e)   What is IP Address

Q2) Write a client server application to implement the echo string.   **[15]**

Q3) Write servlet Application to insert research scholars registration information. Assume suitable table structure. (Write HTML, Web-XML & Servlet class).**[15]**

Q4) Write a java bean named "student" having roll no. and name having getter & setter methods. Write a JSP page to set the roll number and name for a student object and then print them by reading from object.   **[15]**

Q5) What is RMI? Explain with suitable example. [15]

Q6) Write short notes on: (ANY THREE) [15]

    a) Resultset and Resultset Meta Data Classes

    b) Spring MVC Architecture

    c) Servlet session tracking

    d) JSP custom tags

    e) Hibernate objects

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[5170]-4003
M.C.A. (Management Faculty)
T2-IT41: IDENTITY AND ACCESS MANAGEMENT
(2015 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

1) *Question No. 1 compulsory.*
2) *Answer any five (5) from remaining.*
3) *Figures to right indicate full marks.*
4) *Draw neat diagram whenever necessary.*

Q1) a)   What is role of Identity and Access management in an organization.**[10]**

b)   Write steps for installing and configuring AD-RMS server components.   **[10]**

Q2) Explain different steps involved in 'Deploying CA Hierarchy.   **[10]**

Q3) Explain different deploying certificates.   **[10]**

Q4) Explain installation and configuration of AD-LDS.   **[10]**

Q5) How to implement AD-RMS trust policies.   **[10]**

Q6) Explain in brief: maintaining AD-LDS and AD-FS.   **[10]**

Q7) Write short note on (any two)   **[10]**
   a)   Administering AD - RMS
   b)   Trouble shooting of AD-CS
   c)   Deployment of AD-FS

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[5170]-4004

M.C.A. (Management Faculty)
INFORMATION MANAGEMENT & QUALITY CONTROL
T3-IT41 : E-Commerce & Knowledge Management
(2015 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:
   1)   *Q.1 and Q.7 are compulsory.*
   2)   *Solve any Four from Remaining.*

Q1) Explain various tools of knowledge management in details. **[10]**

Q2) Define the term Intranet. Explain role of Intranet in B2B Applications. **[10]**

Q3) What is knowledge Management? Explain roles and responsibilities of knowledge management within organizations. **[10]**

Q4) Explain legal risks of E-payment along with risk management options. **[10]**

Q5) What is Electronic Payment? Explain in detail "Process of EPS" with neat suitable diagram. **[10]**

Q6) Explain Any Two E-commerce Models. **[10]**

Q7) Write a notes on following (ANY FOUR) **[20]**
   a)   Critical success factor in M-commerce.
   b)   Knowledge Management influencing factors.
   c)   Digital Signature.
   d)   WAP.
   e)   VPN.

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[5170]-4005

M.C.A. (Management Faculty)
T4-IT-41 : NETWORK ADMINISTRATION-II
Net Working
(2015 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:
1) *Q.1 and Q.7 are compulsory.*
2) *Solve any 4 from Remaining.*
3) *Figures to right indicates full marks.*

Q1) Explain three major branches of troubleshooting Methodology? **[10]**

Q2) Explain IP addressing and subnetting with example? **[10]**

Q3) Explain the Ping Command with examples? **[10]**

Q4) Explain in details distance vector routing protocol features? **[10]**

Q5) Explain concept of EIGRP? **[10]**

Q6) Explain VLAN Trunning protocol (VTP) in detail. **[10]**

Q7) Write short notes (Any 4) **[4 × 5 = 20]**

     a)   Network Control Protocol.

     b)   IP Routing table.

     c)   DNS.

     d)   OSPF Protocols.

     e)   ARP.

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[5170]-4006

M.C.A. (Management Faculty)
PYTHON PROGRAMMING
T1 - IT 42 :Software and Application Development
(2015 Pattern) (Semester - IV) (Track - I)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

1) Q.No 1 & 7 compulsory.

2) Solve any four questions from Q.2 to Q.6.

Q1) a) Write a python function to calculate area of circle & area of square. **[8]**

b) Write a python code to validate email address using regular expression.**[7]**

Q2) What is Inheritance? Explain multiple Inheritance & multilevel Inheritance with example. **[10]**

Q3) a) Write python code to find factorial of a number. **[5]**

b) Write python code to merge two dictionaries. **[5]**

Q4) Write python code to create text file & write python code to display first *n* & last *m* lines from the created file. **[10]**

Q5) What is 'set' in python? Write python code to create two sets. Find out the union, intersection, difference & symmetric difference between these two sets. **[10]**

Q6) a) What is exception? Explain user-defined exception with example. **[5]**

b) Write python code to add two matrices. **[5]**

Q7) Write short note on [Any 3]: **[3×5=15]**

a) Features of Python.

b) Modules in Python.

c) Tuples.

d) Constructor & Destructor in Python.

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[5170]-4007

M.C.A. (Management)
T2 - IT 42 : IT ADVISORY SERVICES
(Infrastructure & Security Management)
(2015 Pattern) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) *Question No. 8 is compulsory.*
2) *Answer any 5 from remaining.*
3) *Figures to right indicate marks.*

Q1) Explain IT Advisory Service organization in detail. **[10]**

Q2) Explain different categories of IT consulting skills in detail. **[10]**

Q3) Explain pre-requisites of contracts in terms of technical, Financial and operational feasibility. **[10]**

Q4) Explain legal framework of Global Tendering. **[10]**

Q5) Explain strategic issues in mergers and acquisitions. **[10]**

Q6) Explain various techniques used in optimization and utilization of resources. **[10]**

Q7) Factors affecting success and failure of consulting organizations. Discuss. **[10]**

Q8) Write Short Note (any 4): **[20]**

a) Patents and trade - marks.

b) Types of consulting.

c) Major obstacles of Advisory service organization.

d) Licensing and quality aspects.

e) Four - tier system - professional services.

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[5170]-4008

M.C.A. (Mgt)

T3 - IT42 : CYBER LAWS & INTELLECTUAL PROPERTY RIGHTS

(Information Management & Quality Control)
(New 2015 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:
1) *Q.No 1 & 7 are compulsory.*
2) *Solve any THREE from remaining.*
3) *Figures to the right indicate full marks.*

Q1) Solve any two cases.   **[20]**

Case - I

The ABC Hospital management has decided to computerized their hospital management for SPD & OPD system. There are Doctors who are full time, Resident & visiting with various specialization. Visiting Doctors visiting hospital at different hours of the week. Charges for the same can different from doctor to doctor depending on their experience. Patients are admitted to the hospital for various reason according to the category. Employee, patients, doctors recorded different information time to time & maintain different Record like patient, feedback, enquiry, appointment etc.

As security manager suggest different access role & some access control, security control to maintain system security.

Case - II

Swyam Corporative Bank having multiple branches all over the Maharashtra. Customer can perform the transaction from any branch as well as through internet as security expert suggest some network threats & also suggest security for protecting data from unauthorised access.

Case - III

The information security system was developed for International airport which can protect Information related airport operation.

As system analysist specify threats & security for smooth Airport data & operation.

P.T.O.

Q2) Define Information security & How to maintain security for operating system. **[10]**

Q3) Explain Information Technology Act 2000. **[10]**

Q4) What is copyright & Explain issues related to it. **[10]**

Q5) Intellectual property Rights & its type. **[10]**

Q6) What is E-governance. **[10]**

Q7) Write short note on [Any 4]: **[20]**

    a)   Cyber squatting.

    b)   Natural threats.

    c)   Cyber crime law.

    d)   Need of Information security.

    e)   Biometrices security.

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[5170]-4009

M.C.A. (Semester - IV) (Management Faculty)
T4-IT42: INTERNET OF THINGS
(2015 Pattern)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

   1)   *Q.No. 1 and 7 are compulsory.*

   2)   *Solve any four from remaining.*

Q1) a)   What are the goals of IOT?   **[8]**

      b)   Write any five IOT applications and explain in detail.   **[7]**

Q2) Explain wired Vs wireless communication.   **[10]**

Q3) Give the overview of governance, privacy and security issues in IOT. Also highlight upon contribution from FP7 Projects.   **[10]**

Q4) Explain user centric cloud based services In IOT.   **[10]**

Q5) Differentitate between IEEE- 802.15.4. and 802.11 ah   **[10]**

Q6) Explain four aspects in your business to master IOT.   **[10]**

Q7) Write short notes on (any three)   **[15]**

     a)   SPMI.

     b)   Zigbee.

     c)   RFID.

     d)   CDMA.

     e)   Bluetooth.

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[5170]-4010

M.C.A. (Management)
T1 - IT 43: Advance DBMS
(Software & Application Development)
(2015 Pattern) (Semester - IV)

Time : 3Hours] *[Max. Marks : 70*

Instructions to the candidates:
1) *Question No.7 is compulsory.*
2) *Solve any five questions from 1 to 6.*
3) *Figures to the right indicate full marks.*

Q1) Explain what a data mart is. Discuss ETL process. **[10]**

Q2) Explain various Data Partitioning Techniques in Parallel Databases. **[10]**

Q3) Apply Apriori / FP Growth Tree Algorithm to the following data-set to find Frequent Item list (Given Support Count is 30%) **[10]**

TID	List of Items
1	a,b,c
2	b,c,d
3	c,d
4	b,d
5	a,c
6	a,c,d

Q4) Explain Relevance ranking using Terms and Hyperlinks. **[10]**

Q5) Explain various Concurrency Control approaches in DDBMS. **[10]**

Q6) What do you understand by OODBMS? Explain the features of OODBMS.

[10]

Q7) Write short notes on (Any four) **[4× 5 = 20]**

    a) Spatial Database.

    b) Simple Object Access Protocol.

    c) DataCube.

    d) Document Indexing

    e) Mobile Database.

    f) Regression Analysis.

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[5170]-4011

M.C.A.(Computer Management)
T2- IT 43: INFRASTRUCTURE SECURITY AND AUDIT
(Infrastructure & Security Mangement)
(2015 Pattern) (Semester - IV)

Time : 3Hours]   *[Max. Marks : 70*
Instructions to the candidates:
  1) *Q.7 is compulsory.*
  2) *Attempt any Five from remaining.*

Q1) Explain following networking devices and security concerns associated with them. **[10]**
  a) Switches
  b) Routers

Q2) Explain different types of security audits & approaches to audits. **[10]**

Q3) Explain application hardening in brief. **[10]**

Q4) What is IT infrastructure? Discuss IT infrastructure model in detail. **[10]**

Q5) Explain VLAN in detail. **[10]**

Q6) Explain cloud deployment models and service models. **[10]**

Q7) Write short notes: (any four) **[5 × 4 = 20]**
  a) VPN.
  b) Honey pots.
  c) Evidence collection.
  d) Security concerns of coaxial cable.
  e) DRP.

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[5170] -4012
MCA(Mang) (Semester -IV)
(T3-BM43) CUSTOMER RELATIONSHIP MANAGEMENT & SUPPLY CHAIN MANAGEMENT
(2015 Pattern)

Time : 3 Hours]   *[Maximum Marks : 70*

Instructions to the candidates:

    1)   *Q.1 and Q.7 are compulsory.*

    2)   *Solve any 4 from remaining.*

    3)   *Figures to right indicate full marks.*

Q1) Cisco reported savings of $500 million by restructuring its internal operations and integrating processes with suppliers and customers with the help of web-based tools. The wal-Mart & P&G experiences demonstrate how information sharing can be utilized for mutual advantage. Through sound information, Wal-Mart shares point of sale information from its many retail outlet directly with P&G and other major suppliers like Anderson. Information Technology (IT) and its use in cisco organizations and across the supply chain has become a determinant of competitive advantage. New cisco company must realize that they must harness the power of technology to collaborate with their business partners. Customer's expectations are also increasing and companies are prone to more and more uncertain environments in the face of increasing competition. To survive, cisco will find that their conventional supply chain integration which will have to be expanded beyond their boundaries so as to integrate all stakeholders. Adoption of *i*nformation Technology tools is vital for such efforts. You have been deputed as a SCM consultant to analyses and suggest solutions on following points as-   **[10]**

1)   Identify SCM areas of this business use case.

2)   Identify challenges in implementing IT in SCM.

3)   Suggest IT tools and applications for this SCM.

4)   How IT in helping to restructure the entire distribution set up to achieves higher service levels, lower inventory and lower supply chain costs.

5)   Explain the advantages of SCM.

Q2) Differentiate between E-CRM and CRM. **[10]**

Q3) Define EDI. What are the applications of EDI? Mention their advantages and disadvantages. **[10]**

Q4) Calculate customer lifetime value with following assumptions:
- Annual revenue per average customer is Rs. 2000 per annum.
- Product costs associated with the average customer's purchases is Rs.500 per year.
- The firm also spends Rs. 250 a year per customer to provide customer service.
- Annual retention rate (loyalty rate) is 50%
- Average costs to acquire a new customer are $ 1000. **[10]**

Q5) Define inventory. What is Role of Inventory in SCM? **[10]**

Q6) Define supply chain management and explain its objective and scope. **[10]**

Q7) Write a short note on (any four) **[20]**
   a) Six E's of E-CRM
   b) TMS
   c) Architecture of CRM
   d) Vendor-managed inventory
   e) Outsourcing

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[5170]-4013

M.C.A - Management
Track 4 - Networking
T4 - IT43: LINUX ADMINISTRATION-II
(2015 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:

   1)   *Question no.7 is Compulsory.*

   2)   *Attempt any 5 from the remaining.*

   3)   *Write your assumptions.*

   4)   *Figure to right indicate full marks.*

   5)   *Draw neat diagrams wherever necessary*

Q1) Write types of internet connection and the steps to configure dialup internet access. **[10]**

Q2) Write the steps to install and configure FTP server in Linux. **[10]**

Q3) Write sendmail configuration in detail. **[10]**

Q4) Write about kernel & module management in Linux. **[10]**

Q5) Explain the process of configuring and using the digital camera in Linux. **[10]**

Q6) Explain how email is handled in Linux. **[10]**

Q7) Write short notes on (Any 4 ONLY) **[20]**

     a)   Installing & configuring MYSQL

     b)   PostgreSQL

     c)   Fetchmail

     d)   WU - FTPD server

     e)   Configuring PPP server

     f)   Burning CD/DVD in Linux

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SEAT No. :

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[5170]-4014

M.C.A.(Management Faculty).
T1-IT-44: CLOUD COMPUTING
(Software & Application Development)
(2015 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks :70*
Instructions to the candidates:
1) *Q 1 is compulsory.*
2) *Attempt any six from the remaining.*

Q1) Differentiate between Cluster Computing, Grid Computing and Cloud Computing. **[10]**

Q2) Explain Virtualization in detail. Also list the types of Virtualization and their benefits. **[10]**

Q3) Discuss the characteristics of Cloud Computing. **[10]**

Q4) What do you mean by Platform as a Service? Explain any two Service Providers which Gives paaS. **[10]**

Q5) Write a detail note on Web services. **[10]**

Q6) Explain Cloud Security Architecture. **[10]**

Q7) What do you mean by Storage as a Service? List and explain any two example of SaaS. **[10]**

Q8) Write a short note on (Any Two): **[10]**

a)   Data Migration in cloud.

b)   Vulnerability Assessment Tool for Cloud.

c)   Service Oriented Architecture

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[5170]-4015

M.C.A.(Management Faculty)
T2-IT44: ENTERPRISE & SOLUTION ARCHITECTURE
(2015 Pattern) (Semester - IV)

Time : 3 Hours] *[Max. Marks :70*
Instructions to the candidates:
1) *Q 7 is compulsory.*
2) *Solve any FIVE questions from Q1 to Q6.*
3) *Figures to the right indicate full marks.*

Q1) How does Enterprise Architecture support business goals and strategy? **[10]**

Q2) What is the need of Data Architecture? Discuss the components of data Architecture. **[10]**

Q3) How would you develop application systems governance? **[10]**

Q4) State the how would you develop the target data architecture that enables our business architecture and the It architecture vision? **[10]**

Q5) What is network topology? Discuss various Network topologies. **[10]**

Q6) Discuss the process of Business decomposition and automation. **[10]**

Q7) Write a short notes on any four of the following: **[20]**

   a) Architecture Granularity.

   b) Design for Business Security.

   c) Architecture implementation.

   d) Publish and subscribe Distribution.

   e) Data Architecture Structure.

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[5170]-4016

M.C.A.(Management Faculty)
T3-IT44:SOFTWARE QUALITY ASSURANCE & CONTROL
Information Management & Quality Control
(2015 Pattern) (Semester - IV) (New)

Time : 3 Hours]   *[Max. Marks :70*

Instructions to the candidates:

    1)   Question 1 and 7 are compulsory.

    2)   Solve any four from the remaining.

Q1) a)   Write software Inspection checklist for Job portal system.   **[10]**

    b)   EXplain ISO 9000 & its companion standards in detail.   **[10]**

Q2) What is SQA? Explain blocks of SQA in detail.   **[10]**

Q3) Explain software reliability measures & models in detail.   **[10]**

Q4) Explain various measurements of s/w quality metrics.   **[10]**

Q5) Explain fundamentals in measurement theory.   **[10]**

Q6) What are corrective & preventive actions? Explain its process in detail. **[10]**

Q7) Short notes (Any Two):   **[10]**

    a)   Clean room software Development.

    b)   Six sigma

    c)   Verification & validation model

    d)   In-process Quality metrics

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SEAT No. :

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[5170]-4017
M.C.A.
T4-IT44:WIRELESS NETWORKS
(2015 Pattern) (Semester - IV)

Time : 3 Hours]   *[Max. Marks :70*
Instructions to the candidates:
  1) Questions 1 and 7 are compulsory.
  2) Answer any three questions from remaining.
  3) Figures to the right indicate full marks.
  4) Draw neat diagram wherever necessary.

Q1) a) Explain the basic details of WLAN FHSS and DSSS physical layers.**[10]**
     b) Compare tight and loose coupling architecture for interworking between IEEE 802.11 WLAN and GPRS.   **[10]**

Q2) Explain with diagram the UMTS core network architecture.   **[10]**

Q3) What is Source-initiated on Demand routing protocols? Explain AODV routing Protocol.   **[10]**

Q4) What is the multichannel multipoint distribution system (MMDS)? Compare it with LMDS.   **[10]**

Q5) What is SIP (Session Initiation Protocol) in IMS? Explain procedure of SIP.**[10]**

Q6) What is LTE Network? What are the services offered by LTE Network. **[10]**

Q7) Write short notes (Any Fours):   **[20]**
     a) Gateway approach-to Connect WLANs and 3G Networks
     b) TD-SCDMA
     c) MAC Management sublayer
     d) Wi-Max
     e) Hybrid routing protocol (MANETs)
     f) 4G features and Challenges.

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