

Total No. of Questions : 7]

SEAT No. :

P2317

[Total No. of Pages : 2

[5470]-1001

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

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.1 & Q.7 are compulsory.*
- 2) *Solve any four from remaining.*
- 3) *Draw neat and labeled diagram wherever necessary.*

**Q1) a)** Explain types of Buses and Interface Block diagram. **[10]**

b) Explain Logic gates in detail. **[5]**

**Q2)** What is digital computer? Explain block diagram of computer. **[10]**

**Q3)** Solve the following : **[10]**

- a)  $(451)_{10} = (?)_8$
- b)  $(1AF)_{16} = (?)_8 = (?)_{10}$
- c)  $(C.82)_{16} = (?)_8$
- d)  $(110011)_2 + (01111)_2 = (?)_2$
- e)  $(10111)_2 - (10101)_2 = (?)_2$

**Q4)** Explain synchronous counter in detail with diagram. **[10]**

**Q5)** Explain cache memory and it's structure. **[10]**

**P.T.O.**

**Q6)** Explain Arithmetic pipeline with suitable diagram and example. **[10]**

**Q7)** Write short notes on : (Any 3) **[15]**

- a) Utility software
- b) Addressing modes
- c) Duality and De-Morgan's theorem
- d) Shift register
- e) Types of Memory



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Total No. of Questions : 8]

SEAT No. :

P2318

[Total No. of Pages : 1

[5470]-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.no.1 & 8 are compulsory.

2) Solve any five from remaining.

Q1) Write a C program to accept two file names from user, read the content of one file, copy it into another file by replacing occurrences of each blank space by underscore '\_' Display the content of second file. [10]

Q2) Write a C program to implement insert, remove and display operations on queue. [10]

Q3) Write a C program to implement insertion sort for character elements. [10]

Q4) Write a C function to perform transpose of sparse matrix. [10]

Q5) Create a structure with Employee Id, Name, Department, Joining Date, & Basic Salary. Write a C-program to accept & display detail salary sheet of 10 Employees. [10]

Q6) Convert the given Infix expression to postfix in tabular format.

$A+(B*C-(D/E-F)*G)*H$  [10]

Q7) Write a C program to display the reverse of accepted string using stack.[10]

Q8) Write short note on following (Any 2) [10]

- Dynamic Memory Allocation.
- Built in I/o functions.
- Circular queue
- Recursion



Total No. of Questions : 7]

SEAT No. :

P2319

[Total No. of Pages : 2

[5470]-1003

**M.C.A. - I (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 are compulsory.*
- 2) *Attempt any three from Q.2 to Q.6.*
- 3) *Figures to right indicate full marks.*

**Q1)** Swad Caterers Pvt. Ltd. wants to develop the order processing and filling software which presently works as under. **[20]**

Company collects orders from different corporate customers or individuals. The customers fill up the order form describing various details like order details, customer details and menu item details and number of thalies. 50% advance is collected only from individual customers. Then after receiving the orders, kitchen order ticket (KOT) is issued to the kitchen and then kitchen issues the list of raw materials (excluded from available stock) to be purchased from the suppliers. Purchase order is given and ordered material is received from the fixed suppliers and forwarded further to the kitchen. After completion of the delivery of the order, bill is issued to the customer on the basis of actual number of thalies or ordered number of thalies which ever is more. Payment is accepted by credit or debit card and receipt is given to the customer.

- i) Draw first level DFD
- ii) Prepare software requirement specification in detail as per IEEE format.

**Q2)** All the states in country have arranged to implement Value Added Tax (VAT) on the various commodities sold in their respective states. The VAT rules are as follows: **[10]**

**P.T.O.**

- If the commodity is product within the state 4% VAT is applicable.
- If commodity falls in specified list. Non- listed commodities will be charged 8% VAT.
- If the commodity is from outside state, 8% VAT is applicable for all.
- If the commodity is imported, then 12% VAT is applicable for all.
- If it is second sale, the 4% VAT is applicable for all commodities. Draw decision tree and decision table and write structured English to compute VAT.

**Q3)** What are the elements of the good design? Give features of modern GOI with suitable example. **[10]**

**Q4)** Explain the role of documentation in maintenance & types of maintenance in details. **[10]**

**Q5)** CASE tools assist various phases of SDLC - Justify. **[10]**

**Q6)** Explain waterfall model & RAD model comparatively. **[10]**

**Q7)** Write short notes (any 4) **[20]**

- a) SCRUM
- b) Fact finding techniques.
- c) Role of system analyst
- d) Maintenance cost
- e) JAD model



Total No. of Questions : 7]

SEAT No. :

P2320

[Total No. of Pages : 2

[5470]-1004

M.C.A. (Management Faculty)

IT - 14 : DATABASE MANAGEMENT SYSTEM

(2015 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Q.1 is compulsory.
- 2) Solve any five from the remaining.
- 3) Mention assumption wherever necessary.

**Q1)** TSS is a local commercial bank in Maharashtra. It plans to build a credit card management system to handle large amount of information in efficient way, also to provide the goods services to customer. The system will provide online application form filling to customers, help in generating cards as per the information filled by customer, online Credit card payments, Credit cards transaction checking. online monthly credit card statement, special offers etc. Design the E-R model and normalized it upto 3NF. [20]

**Q2)** Write SQL statement for the following (any 5) [10]

Employee (Empno, Name, Deptno, Job, Salary)

Department (Deptno, Dname, Location)

- a) Display Deptno wise maximum salary and arrange in descending order.
- b) Display employees name starting with character 'A'.
- c) Display Deptno wise maximum, minimum, average salary.
- d) List Empno, Name, Dname, and salary for each employee.
- e) Display employee information whose salary between 1000 and 2000.
- f) Display lowest paid employee in the Employee table.

P.T.O.

- Q3)** Explain Encryption & public key infrastructure. [10]
- Q4)** Explain E.F. Codd's rules in details. [10]
- Q5)** Explain cardinality Ratio & Relationships. [10]
- Q6)** Explain Recovery with concurrent transactions. [10]
- Q7)** Write a short notes on (any two) [10]
- a) 3-tier Architecture of DBMS
  - b) Deadlock
  - c) Generalization
  - d) Serializability.



Total No. of Questions : 6]

SEAT No. :

**P2968**

[Total No. of Pages : 1

**[5470]-1005**

**M.C.A. (Management Faculty)(Semester - I)**

**BM - 11 : PRINCIPLES & PRACTICES OF MANAGEMENT &  
ORGANIZATIONAL BEHAVIOUR**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Question No. 1 is compulsory.*
- 2) *Attempt any 3 from the remaining.*
- 3) *Figures to the right indicate full marks.*

- Q1)** a) Explain the roles & responsibilities of functional managers, specialized managers & general managers with examples. **[15]**  
b) Study of organizational behaviour is important for the success of organization. Discuss. **[10]**
- Q2)** Explain in brief fourteen management principles by Henri Fayol. **[15]**
- Q3)** Distinguish clearly between classical model of decision making and administrative model of decision making. **[15]**
- Q4)** Explain the concept of organizational behaviour. How it is important for the development of employees. **[15]**
- Q5)** Explain Johari window with its applications. **[15]**
- Q6)** Write short notes (Any three) : **[15]**
- a) Planning
  - b) Motivational theory
  - c) Team building
  - d) Conflict management
  - e) Systems Approach.



Total No. of Questions : 7]

SEAT No. :

P2321

[Total No. of Pages : 2

[5470]-2001

M.C.A (Management Faculty)

IT21: ESSENTIALS OF OPERATING SYSTEM

(2015 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Question No.1 is compulsory.
- 2) Solve any 5 from remaining.
- 3) Figures to the right indicate full marks.
- 4) Draw neat diagrams wherever necessary.

Q1) a) Consider the following snapshot of the system. [10]

Process	Burst Time	Arrival Time	Priority
P <sub>1</sub>	3	1	3 (Highest)
P <sub>2</sub>	2	2	2
P <sub>3</sub>	5	0	1 (Lowest)

Compute average turnaround time and average waiting time for SJF preemptive Algorithm and Priority Scheduling Algorithm.

b) Explain Deterministic Model and Queueing Model with examples. [10]

Q2) Identify the number of page faults for the given reference string using LRU, Optimal and FIFO for a three frame list. [10]

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

Q3) Explain various disk scheduling algorithms with example. [10]

Q4) Describe file protection techniques & Various file access methods. [10]

Q5) Explain Process Control Block and Process State Diagram. [10]

P.T.O.

**Q6)** Assume a page size of 4 words logical memory and page table information is given below : **[10]**

Page No.	Offset	Content
0	0	a
	1	b
	2	c
	3	d
1	0	e
	1	f
	2	g
	3	h
2	0	i
	1	j
	2	k
	3	l

Logical Memory

Page Number	Offset
0	3
1	2
2	0

Page Table

Calculate the physical address for 'a', 'c', 'g', 'j' and 'l'.

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

- a) Interprocess Communication (IPC).
- b) Critical Section Problem.
- c) File Structure.



Total No. of Questions : 7]

SEAT No. :

P2322

[Total No. of Pages : 2

[5470]-2002

**M.C.A. (Management Faculty)**  
**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 diagrams wherever necessary.*

- Q1)** a) Design HTML form for Movie ticket booking with suitable fields validate any five fields using javascript. **[15]**
- b) Explain marquee tag with properties. **[5]**

- Q2)** Write an External CSS for following styles. Apply styles on any HTML page. **[10]**

- i) Text having Times New Roman, font-size 15, Italic.
- ii) Border of paragraph must be Green color.
- iii) Align H<sub>1</sub> text in center with right indent 10 px.
- iv) Three types of hyperlink with mentioned color. Visited-red, active ÷ blue, current-lightgray.

- Q3)** Explain Request and Response objects in ASP with suitable example. **[10]**

- Q4)** Explain event handling in javascript with example. **[10]**

- Q5)** a) Explain tag with attributes <form> & <marquee>. **[5]**

- b) What is an image mapping? **[5]**

**P.T.O.**

**Q6)** Write ASP program to fill online CET exam form with suitable fields and insert into database. **[10]**

**Q7)** Write a short note on (any two) **[10]**

- a) CSS3 - Gradient
- b) Data object in javascript
- c) Ordered List & unordered list



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Total No. of Questions : 8]

SEAT No. :

P2323

[Total No. of Pages : 2

[5470]-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.1 and Q.8 are compulsory.
- 2) Solve any 5 from the remaining.

Q1) Attempt the following :

[5×2=10]

- a) MVC design pattern
- b) JVM
- c) 'Super' keyword
- d) Applet
- e) Sorted set interface.

Q2) Write a program to implement a user defined exception." Not Prime Exception"  
Take a number from user and check whether number is prime or not. If a number is prime display message "Prime Number". If number is not prime throw the Exception "Not Prime Exception". [10]

Q3) What is multithreading? Write a multithreaded program for demonstrating following threads: . [10]

- a) Display all number divisible by 8 from 1 to 100.
- b) Display all even numbers between 51 to 100.
- c) Display the message " Java is Awesome" 10 times.

P.T.O.

**Q4)** Write a java program to copy contents of one file to another. **[10]**

**Q5)** Create a package named math, use this package to perform different functions like addition, subtraction, multiplication and division. **[10]**

**Q6)** What is serialization in java? Demonstrate with the help of program. **[10]**

**Q7)** Explain Layout Manager in Java. Write a program to demonstrate grid Layout. **[10]**

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

- a) Adapter class
- b) List
- c) Differentiate between thread class and runnable interface.



Total No. of Questions : 6]

SEAT No. :

P2324

[Total No. of Pages : 1

[5470]-2004

M.C.A. (Management)

IT - 24 : ESSENTIALS OF NETWORKING

(2015 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 70

*Instructions to the candidates:*

- 1) Q1 & Q6 are compulsory.
- 2) Solve any three from remaining.
- 3) Draw neat diagrams wherever necessary.

- Q1)** a) What is transmission? Explain Guided transmission media. [10]  
b) What is difference between connection oriented and connection less services. [10]
- Q2)** Explain OSI Reference Model in details. [10]
- Q3)** What is ATM? Explain ATM traffic management in detail. [10]
- Q4)** Differentiate between IPV4 and IPV6. [10]
- Q5)** What is HTTP? Explain HTTP Request and Response message format in detail. [10]
- Q6)** Write short notes (Any four) : [20]
- a) DNS.
  - b) IP Routing
  - c) VSAT
  - d) SMTP
  - e) Sliding Window
  - f) Frequency Division Multiplexing



Total No. of Questions : 4]

SEAT No. :

P2325

[Total No. of Pages : 3

[5470]-2005

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

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No.1 is compulsory.*
- 2) *Attempt any two questions from question no.2,3&4.*
- 3) *Figures to the right indicate full marks.*

**Q1) a)** Let  $P$  : I will study Discrete Mathematics. **[5]**

$Q$  : I will get good score.

- i) Write the contrapositive statement of  $P \rightarrow Q$  in words as well as in symbolic form.
- ii) Write the converse of  $P \rightarrow Q$  in words as well as in symbolic form.
- iii) Write the inverse of  $P \rightarrow Q$  in words as well as in symbolic form.

b) Show that  $(\neg P \wedge (\neg Q \wedge R)) \vee (Q \wedge R) \vee (P \wedge R) \Leftrightarrow R$ . **[5]**

c) Let,  $A = \{a, b, c, d, e\}$  and let  $R$  be the relation on  $A$  defined as follows. **[5]**

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

Obtain the matrix of the relation  $R$  and also draw the digraph to represent  $R$ .

d) Define the following with example. **[5]**

- i)  $K$ -regular graph
- ii) Complete graph

**P.T.O.**

- e) Let  $H = \{1, -1\}$  and  $G = \{1, -1, i, -i\}$  Obtain the left coset of  $H$  in  $G$ . [5]
- f) Define invertible function. Let  $R$  be the set of real numbers, and let  $f : R \rightarrow R$  be defined by  $f(x) = x^2$ . Is  $f$  invertible, explain. [5]

- Q2)** a) Consider set  $A = \{1, 2, 3, 4\}$  and let  $R$  be the relation on  $A$  defined as  $R = \{(1, 2), (2, 3), (3, 4), (2, 1)\}$ . Find the transitive closure of  $R$  using Warshall's algorithm. [5]
- b) Prove that the sum of degrees of the vertices of a non-directed graph  $G$  is twice the number of edges in  $G$ . [5]
- c) Obtain the PCNF of the formula  $(\neg P \rightarrow R) \wedge (Q \Leftrightarrow P)$  without using truth table. [5]
- d) Define 'group' in algebraic structure and prove that the set  $G = \{1, 2, 3, 4\}$  is a group with respect to multiplication modulo 5. [5]

- Q3)** a) Show that  $\neg(P \wedge Q)$  follows from  $\neg P \vee \neg Q$  using indirect method of proof. [5]
- b) Consider  $A = \{1, 2, 3, 4\}$  [5]

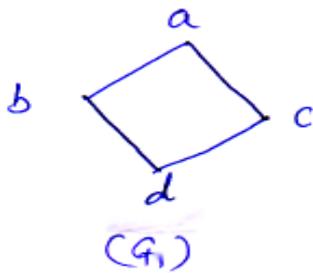
Let,  $R = \{(1, 1), (1, 2), (2, 3), (2, 4), (3, 4), (4, 1), (4, 2)\}$

$S = \{(3, 1), (4, 4), (2, 3), (2, 4), (1, 1), (1, 4)\}$

Compute

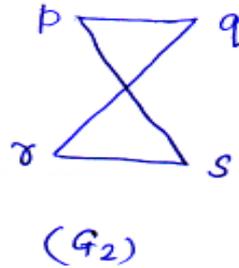
- i)  $R \circ S$
- ii)  $S \circ R$
- iii)  $S \circ S$
- c) Prove that  $G = \{1, \omega, \omega^2\}$  is a group with respect to multiplication where  $1, \omega, \omega^2$  are cube root of unity. [5]
- d) Show that  $\neg P(a, b)$  follows logically from  $(x)(y) (p(x, y) \rightarrow w(x, y))$  and  $\neg w(a, b)$ . [5]

Q4) a)



c

[5]



- b) Show that  $((P \vee Q) \wedge \neg (\neg P \wedge (\neg Q \vee \neg R))) \vee (\neg P \wedge \neg Q) \vee (\neg P \wedge \neg R)$  is a tautology without using truth table. [5]
- c) Define Hamming distance between two words. Consider the following parity-check matrix H and find all the code words generated by H. Also find the weight of each non-zero code word. [10]

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



Total No. of Questions : 5]

SEAT No. :

P2326

[Total No. of Pages : 3

[5470]-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 from the following.

- a) How many ways can 10 people be arranged so that no two women sit side by side, if there are 3 women among 10 people. [5]
- b) Prove that  $P(E|F) = P(E)$  if E and F are two independent events. [5]
- c) An experiment succeeds twice as many times as it fails. Find the chance that in 6 trials there will be at least 5 successes. [5]
- d) The joint probability distribution of two random variables X & Y is given below. [5]

Y \ X	1	2	3
0	3K	6K	9K
1	5K	8K	11K
2	7K	10K	13K

- i) Find K
- ii) Find conditional probability of Y given X=1
- iii) Find conditional probability of X given Y=3

P.T.O.

e) Five gentlemen attend a party where before joining the party they leave their overcoats in a checkroom. After the party, the overcoats get mixed up and are returned to the gentlemen in a random manner. What is the probability that three gentlemen did not receive the correct overcoat? [5]

f) Find the coefficient of  $x^2 y^4 z^3$  in the expansion of  $(x-2y + 3z)^9$ . [5]

**Q2)** a) Find the mean and variance of Poisson's distribution. [7]

b) Prove the following by combinatorial argument. [4]

$$\binom{n}{0}^2 + \binom{n}{1}^2 + \binom{n}{2}^2 + \dots + \binom{n}{n}^2 = \binom{2n}{n}$$

c) Following is the c.d.f. of a discrete random variable X. [4]

X	1	2	3	4	5	6	7	8
F(X ≤ a)	0.08	0.12	0.23	0.37	0.48	0.62	0.85	1

Find

i) p.m.f. of X

ii)  $p(X \leq 4)$

**Q3)** a) Find the mean and variance of Binomial distribution. [8]

b) Find the number of solutions to the equation  $x_1 + x_2 + x_3 = 17$  where  $x_1, x_2, \& x_3$  are non-negative with  $x_1 < 4, x_2 < 3 \& x_3 > 5$ . [7]

**Q4)** a) Find the mean & variance of uniform continuous distribution. [7]

b) The p.d.f. of a continuous r.v. X is

$$f(x) = c(4x - 2x^2) \dots \dots \dots \text{for } 0 < x < 2$$

$$= 0 \dots \dots \dots \text{otherwise.} \quad [8]$$

Find

i) c

ii)  $P(x > 1)$

iii) Mean of x

iv) Variance of x

- Q5) a)** In 2020 there will be three candidates for the position of principal - Mr. Roy, Dr. Patil, and Ms. Chitnis - whose chances of getting appointment are in the proportion 2: 4: 3 respectively. The probability that Mr. Roy if selected would introduce co-education in the college is 0.3. The probabilities of Dr. Patil and Ms. Chitnis doing the same are respectively 0.5 and 0.8 [4]
- i) What is the probability that there will be co-education in the college in 2021?
  - ii) If there is co-education in the college in 2021, what is the probability that Dr. Patil is the principal.
- b)** Define with illustrations [4]
- i) Discrete random variable
  - ii) Joint continuous random variable
- c)** The mean yield for one-acre plot is 662 kilos with a S.D. 32 kilos. Assuming normal distribution how many one-acre plots in a batch of 1000 plots would you expect to have yield. [7]
- i) Over 700 kilos.
  - ii) Below 650 kilos.
  - iii) What is the lowest yield of the best 100 plots?



Total No. of Questions : 9]

SEAT No. :

P2327

[Total No. of Pages : 3

[5470]-3002

M.C.A (Management)

**T1-IT31: ADVANCED DATA STRUCTURE & C++  
PROGRAMMING  
(2015 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Que.1 and Que.9 is compulsory.*
- 2) *Attempt any five from Que.2 to Que.8.*

**Q1)** a) What will be the output for the following :

**[6]**

- i) 

```
#include<iostream.h>
main()
{
    char str[80];
    *(str+3)='c';
    cout<< *(str+3);
}
```
- ii) 

```
#include<iostream.h>
struct stype {int i,j;}s;
main()
{
    s.i=100; s.j=200;
    cout<<endl<<s.i<< "\t"<<s.j;
    stype & sl=s;
    sl.i=0;sl.j=1111;
    cout<<endl<<s.i<< "\t"<<s.j;
    cout<<endl<<sl.i<< "\t"<<sl.j;
}
```
- iii) 

```
cout<<(3<4)?3*3:4*4;
```

**P.T.O.**

- b) True/False (Justify your answer) [4]
- i) All pointers in C++ can be replaced by references of C++.
  - ii) Copy constructor is required only when at least one data member of a class is array or Pointer.
- Q2)** a) Write a program to calculate area of rectangle & circle using Constructor. [5]
- b) Explain Static Data Members & Function with example. [5]
- Q3)** a) Define class STRING. Write a necessary function and overload <<, >> operators for accepting and displaying strings. [5]
- b) Design a single manipulator to provide following output specification for printing float value. [5]
- i) 10 column width
  - ii) Right justified
  - iii) two digit precision
  - iv) filling unused space with "\$"
  - v) trailing zeros shown
- Q4)** a) Write a function C++ to reverse a linked list and display its contents. [5]  
(Mention your assumptions clearly)
- b) Enlist the rules of operator overloading. [5]
- Q5)** a) Write complete Object Oriented Program to implement stack. Reverse a given string using the above created stack object. [5]
- b) Explain Role of constructor and Destructor in C++. [5]
- Q6)** Write a program in c++ that merge the content of one file in to another file using command line argument. [10]

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

In Order - 9, 5, 1, 7, 2, 12, 8, 4, 3, 11

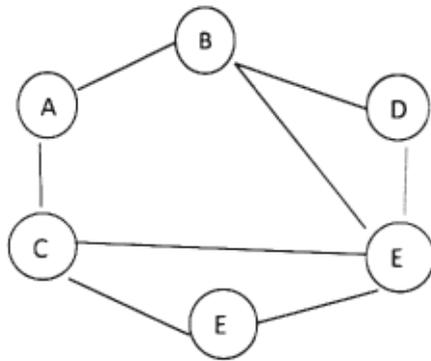
Post Order - 9, 1, 2, 12, 7, 5, 3, 11, 4, 8

b) Draw AVL Tree for the following : [5]

Ninand, Pratik, Priti, Rajesh, Raja, Sonu, Jack, Komal

Write in-order traversal of resultant AVL tree.

**Q8)** Consider the following graph: (Use A as starting vertex) [10]



1. Write Complete trace of DFS
2. Write complete trace of BFS
3. Adjacency Matrix
4. Adjacency List

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

- a) Friend Function.
- b) Threaded Binary Tree.
- c) Exception Handling.
- d) Memory Management in C++

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Total No. of Questions : 7]

SEAT No. :

P2328

[Total No. of Pages : 1

[5470]-3003

M.C.A.

**T2 - IT31 : INFRASTRUCTURE ARCHITECTURE**

**(Infrastructure & Security Management)**

**(2015 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question sr. no.1 (10 marks) and sr. no.7 (20 marks) are compulsory.*
- 2) *Answer any 4 questions from sr. no. 2,3,4,5 and 6. (Each carries 10 marks)*
- 3) *Draw diagrams / flow charts to substantiate your answers wherever necessary.*

**Q1)** Discuss the importance of IT security with security concerns for various processes, i.e. service delivery and service support . **[10]**

**Q2)** What is meant by 'IT infrastructure'? Explain Design issues of IT Organization and IT service management in details. **[10]**

**Q3)** What is IT disaster recovery. Explain with example in detail . **[10]**

**Q4)** Explain Financial management and Availability management concepts. Highlight the salient differences between the two. **[10]**

**Q5)** Explain service support process in relation to different management techniques. **[10]**

**Q6)** Explain Access control system and intrusion detection. **[10]**

**Q7)** Write short notes (any four) **[20]**

- a) Information system and design processes
- b) Availability management process
- c) Configuration management
- d) Application protection
- e) Physical security



Total No. of Questions : 8]

SEAT No. :

P2329

[Total No. of Pages : 1

[5470]-3004

**M.C.A. (Computer Management)**

**T3 - IT31 : ENTERPRISES RESOURCE PLANNING**

**(Information Management & Quality Control)**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.1 is Compulsory and carries 20 marks.*
- 2) *Answer any 5 from Q.2 to Q.8 (Each question carries 10 marks)*

**Q1)** Imagine you are managing an "Automobile ancillary" company and want to manage your data and processes effectively and efficiently. Will ERP be helpful in this issue? If yes, which all modules would you prefer to have. Also discuss your implementation methodology.

**Q2)** Explain the need and advantages of ERP implementation. Also discuss the risks involved in ERP implementation?

**Q3)** Explain the utility of FICO and Marketing management modules and explain how it can help to the organization?

**Q4)** Discuss the ERP implementation life cycle for an organization.

**Q5)** Define SCM. Explain SCM in current scenario of Globalisation.

**Q6)** Discuss various ERP modules and their significance.

**Q7)** Discuss various parameters to be used in comparing various ERP packages.

**Q8)** Write short notes on (any two)

- a) ERP market
- b) Data warehouse
- c) ERP consultant



Total No. of Questions : 7]

SEAT No. :

P2330

[Total No. of Pages : 1

[5470]-3005

**M.C.A. (Computer Management)**

**T4 - IT 31 : NETWORK ADMINISTRATION - I**

**(2015 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.7 is compulsory.*
- 2) *Attempt any five from remaining.*

- Q1)* Explain HDLC protocol. [10]
- Q2)* Explain OSI layer and their functions with the help of suitable diagram. [10]
- Q3)* Explain IP4 header. [10]
- Q4)* Explain UTP Cabling Pinouts for 10BASE-T and 100BASE-TX. [10]
- Q5)* Highlight on historical progression of Hubs, Bridges and Switches. [10]
- Q6)* Explain different Interior and Exterior routing protocols. [10]
- Q7)* Write short notes : (Any Four) [4×5=20]
- a) Point-to-point WAN
  - b) Extended ping
  - c) RIPv1 vs. RIPv2
  - d) Couplers
  - e) Switching Logic



Total No. of Questions : 8]

SEAT No. :

P2331

[Total No. of Pages : 2

[5470]-3006

M.C.A (Management)

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.8 are compulsory.
- 2) Solve any five questions from remaining questions.
- 3) Figures to the right indicate full marks.

Q1) Explain asymptotic notations with examples. [10]

Q2) Sort the following elements using quick sort. [10]

Show all possible passes

55, 90, 85, 99, 95, 70, 68, 57, 10, 23.

Q3) a) State the Recurrence relation for the recursive algorithm of Tower of Hanoi. [5]

b) Explain Union and Find algorithms. [5]

Q4) Explain Greedy Method and write an algorithm for fractional Knapsack problem using greedy method. [10]

Q5) Solve the traveling salesperson problem with the associated cost-adjacency matrix using dynamic programming. [10]

$$\begin{bmatrix} 0 & 5 & 7 & 9 \\ 3 & 0 & 12 & 13 \\ 8 & 5 & 0 & 2 \\ 3 & 2 & 1 & 0 \end{bmatrix}$$

P.T.O.

**Q6)** What is NQueens problem. Write an algorithm for NQueens problem. [10]

**Q7)** Solve the following 0/1 Knapsack instance using Branch and Bound. [10]

$$n = 4, \quad (P_1, P_2, P_3, P_4) = (10, 10, 12, 18)$$

$$(W_1, W_2, W_3, W_4) = (2, 4, 6, 9) \text{ and } m = 15.$$

**Q8)** Write short notes (any two) : [10]

- a) Optimal merge patterns.
- b) NP-Hard and NP-Complete.
- c) Difference between Divide and Conquer and Dynamic Programming.

\* \* \*

Total No. of Questions : 6]

SEAT No. :

P2332

[Total No. of Pages : 1

[5470]-3007

**M.C.A. (Management)**

**T2 - IT32 : DATA CENTRE ARCHITECTURE & STORAGE MANAGEMENT**

**(Infrastructure & Security Management)**

**(2015 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Questions 1 & 6 are compulsory.*
- 2) *Answer any three questions from remaining.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Draw neat diagram wherever necessary.*

- Q1)** a) What are the criteria while selecting a Data Center? Why environmental conditions are important? [10]  
b) What are key areas for monitoring the storage infrastructure, explain. [10]
- Q2)** Explain Physical and logical components of connectivity in storage system of Data Center. [10]
- Q3)** Explain Network-Attached Storage (NAS) and its benefits. Also explain IPSAN. [10]
- Q4)** What is Single Points of failure in a Storage Infrastructure and what are solutions to mitigate these failures? [10]
- Q5)** Explain Replication Technologies and their role in ensuring information availability for Data Center management. [10]
- Q6)** Write short notes (Any Four) [20]
- a) Architecture Precursors for Data Center.
  - b) Fire protection and security systems in Data Center Design.
  - c) Reasons for planned/unplanned outages.
  - d) Storage Virtualization Challenges.
  - e) Key metrics to monitor storage infrastructure.



Total No. of Questions : 6]

SEAT No. :

P2333

[Total No. of Pages : 2

[5470]-3008

**M.C.A. Management**

**(Computer Management)**

**T3 - IT - 32 : DATA COMMUNICATION & COMPUTER NETWORKS**

**(2015 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

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

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

- i) DNS can obtain the port address of host if its domain name is known and vice versa.
  - ii) The default gateway is known as the address of the router.
  - iii) Network ID and host ID is not separated by a subnet mask.
  - iv) HDLC is a very common bit-oriented data link protocol.
  - v) VPN uses a part of public network to create private network.
- b) A receiver received the hamming code 101100010111 with odd parity. Find the error in received code and give corrected data [10]

**Q2) For the IP address 179 125 21 55 and the subnet mask 255 255 255 0 determine the following. [10]**

- a) IP address in binary notation.
- b) Subnet address in binary notation.
- c) Identify network bits, subnet bits and host bits.
- d) Network address.
- e) Subnetwork address.
- f) Host address.

**P.T.O.**

**Q3)** Explain 10 Gigabit Ethernet with its goals, specifications and frame format. **[10]**

**Q4)** What is DHCP? What is scope resolution in DHCP? Explain DHCP scope resolution process. **[10]**

**Q5)** Explain P2P protocol in detail. **[10]**

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

- a) Grid Computing.
- b) Symmetric cryptography.
- c) Resource records.
- d) IPV4 Vs IPV6
- e) RIP



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Total No. of Questions : 7]

SEAT No. :

P2334

[Total No. of Pages : 1

[5470]-3009

**M.C.A. (Management Networking)**

**T4 - IT - 32 : WINDOWS SERVER CONFIGURATION**

**(2015 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Questions no.7 is compalusory.*
- 2) *Attempt any 5 from the remaining.*
- 3) *Write your assumptions.*
- 4) *Figures to the right indicate full marks.*
- 5) *Draw neat diagram wherever necessary.*

**Q1)** Write installation steps for windows server 2012. **[10]**

**Q2)** Explain group policy. Write steps to create a GPO and link it to an OU? **[10]**

**Q3)** What is Active Directory? Write steps to implement Active Directory in windows server 2012. **[10]**

**Q4)** Explain Integration services in Windows server 2012. **[10]**

**Q5)** Write steps to configure print and document services. **[10]**

**Q6)** Write steps to create & configure virtual machine storage. **[10]**

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

- a) Storage Spaces.
- b) Configure windows firewall
- c) GPT & MBR
- d) Group Policy Object (GPO)
- e) S/w Restriction Policies
- f) Configure User Account Control



Total No. of Questions : 7]

SEAT No. :

P2335

[Total No. of Pages : 2

[5470]-3010

**M.C.A. (Management Faculty)**

**T1 - IT 33 : OBJECT ORIENTED ANALYSIS & DESIGN**

**(2015 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question 1 & 7 are compulsory.*
- 2) *Attempt any four from remaining.*
- 3) *Marks are shown against questions.*

**Q1)** The DTE wants to reduce the manual work involved with Management Entrance Examination. For this DTE wants to make an "Online Test System". Which will be a web based application. This website will provide facility to DTE to conduct the "Management Entrance Examination" in a transparent manner. It will have an Admin who keeps an eye on the overall functioning of the system. The site gets revenue by charging the DTE each time they want to conduct the Examination. In this institutes will be given instituted. The institute provides questions along with positive and negative marks. Institutes can also enter the list of eligible students. All the information can later be edited by the institute. Students can login with their id, name and instituted to give the exam. They will also see their result then and there. DTE can also view the results. Draw the following

- a) Use case diagram [10]
- b) Class diagram [10]

**Q2)** What is RUP? Explain its phases with diagram. [10]

**Q3)** Draw sequence Diagram & Collaboration Diagram for joining Alumni Community of your college on Facebook. Consider necessary authentication by community owner. [10]

**P.T.O.**

- Q4)** a) What do you mean by Testing strategies. [5]  
b) Draw Activity diagram for online movie ticket booking system for a Theatre (The payment is done by Credit/Debit Card) [5]

**Q5)** Explain various Approaches for identifying classes. [10]

- Q6)** a) Explain object Modelling Technique. [5]  
b) Compare Object Oriented versus Relational Database. [5]

**Q7)** Attempt any two: [2×5=10]

- a) Interface.  
b) Benefits of OOAD  
c) Pattern



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Total No. of Questions : 7]

SEAT No. :

P2336

[Total No. of Pages : 1

[5470]-3011

M.C.A. (Management Faculty)

T2-IT33 : INTRODUCTION TO INFORMATION SECURITY

(2015 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Q1 & Q7 are compulsory.
- 2) Attempt any four from Q2 to Q6.
- 3) Figures to the right indicate full marks.
- 4) Draw neat diagrams wherever necessary.

Q1) Explain message authentication & Hash Function in detail? [10]

Q2) Explain policy design life cycle. How PDCA model is used in policy design. [10]

Q3) Define malicious software? Explain type of malicious software. [10]

Q4) What is access control. How role based access control used in organization? [10]

Q5) What is information security? Explain concept of computer security? [10]

Q6) What is ethical hacking. Explain role of cryptography in information security? [10]

Q7) Write a short note on (Any four) : [4×5=20]

- a) Digital Signature.
- b) Phishing.
- c) Indian Copyright Act.
- d) Attacks
- e) IA-CMM



Total No. of Questions : 7]

SEAT No. :

P2337

[Total No. of Pages : 2

[5470]-3012

**M.C.A. (Computer Management)**

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

**(2015 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question 7 is compulsory.*
- 2) *Solve any five questions from Q.1 to Q.6.*
- 3) *Figures to the right indicate full marks.*
- 4) *Simple calculator and log table is allowed.*

**Q1)** What do you mean by dimension modeling? Explain the dimension modeling techniques with example. **[10]**

**Q2)** What is OLAP? Explain in brief various OLAP servers [ROLAP, MOLAP and HOLAP]. **[10]**

**Q3)** What is Market-basket Analysis? Write Apriori Algorithm and track it with following example. (Given minimum support count=2). **[10]**

TID	Items
1	I1,I2,I3,I6
2	I2,I3,I4,I5
3	I2,I3,
4	I1,I2,I5
5	I4,I5
6	I1,I2,I5, I6
7	I2,I3,I4,I5,I6

**P.T.O.**

**Q4)** What is Clustering/Cluster analysis? Explain K-means algorithm for cluster analysis with example (0.8,1.2,1.4,1.6,2.6,2.9,3.4,3.8,4.7,4.9,5.6,5.8) Consider initial centroid 1.4 and 1.6 and  $k=2$ . [10]

**Q5)** What is Text Mining? Explain the Text Mining approach in detail. [10]

**Q6)** What is Business Intelligence? Explain the components of BI architecture.[10]

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

- a) KDD Process
- b) Predictive and Descriptive Mining
- c) Dashboard
- d) Rule based classification
- e) Neural Networks
- f) Six Sigma



Total No. of Questions : 7]

SEAT No. :

P2338

[Total No. of Pages : 1

[5470]-3013

**M.C.A. (Faculty of Management)**

**COMPUTER MANAGEMENT**

**T-4 - IT - 33 : IT Infrastructure Monitoring (Networking)**

**(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 three from remaining.*
- 3) *Neat diagram must be drawn wherever necessary.*

**Q1) a) Explain project estimation tools and techniques in details? [10]**

b) Define storage? Explain Internal & External storage in detail? [10]

**Q2) Write steps of Installation of Nagios? [10]**

**Q3) Explain Auto discovery process in Open NMS? [10]**

**Q4) Difference between Tactical & Remote monitoring? [10]**

**Q5) Explain any one of open NMS administrative tool? [10]**

**Q6) Explain the process of Disaster Recovery in storage administration? [10]**

**Q7) Write short note on any four. [4×5=20]**

- a) Types of Memory
- b) Secondary storage
- c) Project Tracking
- d) Project Plan
- e) SNMP Macros
- f) SCSI



Total No. of Questions : 7]

SEAT No. :

P2339

[Total No. of Pages : 1

[5470]-3014

M.C.A. (Management Faculty)

T1 - IT 34 : ADVANCED INTERNET TECHNOLOGY

(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 Q.2 to Q.6.

- Q1) a) Write PHP code to display students belongs to management department & age is in between 21-30 years & store found records into another table. (Assume suitable table structure). [10]
- b) Explain XML DSO object with example. [5]
- Q2) Explain any three effects of JQuery in detail with example. [10]
- Q3) Explain XML schema & XSLT with example. [10]
- Q4) Explain with example super global variables in PHP. [10]
- Q5) Explain chaining, getters & setters in JQuery with examples. [10]
- Q6) Explain MVC architecture of angular JS. [10]
- Q7) Write short note on : (Any Three) [3×5=15]
- a) PHP Error Handling
  - b) AJAX
  - c) <audio> & <video> tag
  - d) SOAP



Total No. of Questions : 7]

SEAT No. :

P2340

[Total No. of Pages : 1

[5470]-3015

**M.C.A. (Management Faculty)**  
**INFRASTRUCTURE & SECURITY MANAGEMENT**

**T2 - IT 34 : Office Automation Tools**  
**(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 from Q.2 to Q.6.*
- 3) *Draw neat labeled diagram wherever necessary.*

- Q1)** Prepare a sample sheet having 7 rows & 7 columns. Give the name's to column as Book Code, Book Name, Author, Publisher, Order Qty. Price, Total Amount. Fill the sample data in all cells and do the following analysis on it.
- a) Prepare any one charts and one graphs of any type.
  - b) Set the formula to calculate total amount. Write Calculated amount in total amount column by using formula. **[10]**
- Q2)** Explain workstation communication and convergence of technologies for office. **[10]**
- Q3)** Explain need for office automation and its advantages. **[10]**
- Q4)** Explain in details slide shows features in impress. **[10]**
- Q5)** Explain how you will adding, formatting pictures and graphs objects in impress. **[10]**
- Q6)** Write the steps for setting up & customizing impress. **[10]**
- Q7)** Write short note on (any four) **[20]**
- a) Office automation tools
  - b) Adding and formatting pictures
  - c) Features of writes
  - d) Customizing writes
  - e) Office equipment



Total No. of Questions : 7]

SEAT No. :

P2341

[Total No. of Pages : 1

[5470]-3016

**M.C.A. (Management)**

**Information Management and Quality Control**

**T3 - IT - 34 : INFORMATION SECURITY & AUDIT**

**(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 from Q.2 to Q.6.*
- 3) *Figures to the right side indicates full marks.*
- 4) *Draw Neat diagrams wherever necessary.*

**Q1)** Government of India, want to implement authorized e-mail Communication system in their government offices all over India, for all kind of official communication. You as an auditors, ask to discuss.

- a) Possible threats & risks.
- b) Provide the security guidelines. [10]

**Q2)** What is DRP & BCP? Explain the need for both in IT enabled organization. [10]

**Q3)** Explain SSE-CMM in detail. [10]

**Q4)** Define the term Threat and Risk. Explain Risk assessment process in detail. [10]

**Q5)** Explain ISO 27001 security policy standard in detail. [10]

**Q6)** Explain need and objective of IS Audit. [10]

**Q7)** Write short notes on (any 4 only) [20]

- a) PDCA Model
- b) Ethical hacking
- c) Pillars of Information Security
- d) ISMS
- e) Cyber Crimes



Total No. of Questions : 7]

SEAT No. :

P2342

[Total No. of Pages : 1

[5470]-3017

**M.C.A. (Management Faculty) (Semester - III)**

**T4-IT34 : LINUX ADMINISTRATION - I (NET WORKING)  
(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No. 1 and No. 7 are compulsory.*
- 2) *Solve any 4 from Q.2 to Q.6.*

- Q1)* a) Explain Linux file system hierarchy. [10]  
b) Explain user management and Group management commands with example. [10]
- Q2)* Explain user login process in details. [10]
- Q3)* Explain how to configure and manage network printer using CUPS. [10]
- Q4)* Explain different steps to configure Samba. [10]
- Q5)* Explain steps for configuring Name server with BIND. [10]
- Q6)* Explain different consideration while choosing backup Hardware. [10]
- Q7)* Write short notes on : (Any Two) [2 × 5 = 10]  
a) Disk Quota  
b) DHCP  
c) Networking with TCP/IP



Total No. of Questions : 8]

SEAT No. :

P2343

[Total No. of Pages : 3

[5470]-4001

**M.C.A. (Management Faculty) (Semester - IV)**

**ITC41 : OPTIMIZATION TECHNIQUES**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No. 1 is compulsory.*
- 2) *Attempt any five questions from remaining.*
- 3) *Use of non-programmable calculator is allowed.*
- 4) *Graph paper will not be provided. Solve the graphical problem in the same answer sheet.*
- 5) *Figures to the rights indicate full marks.*

**Q1) a)** The following table gives data on normal time and cost and crush time and cost for a project. **[10]**

Activity	Normal		Crush	
	Time (days)	Cost (Rs.)	Time (days)	Cost (Rs.)
1-2	6	600	4	1,000
1-3	4	600	2	2,000
2-4	5	500	3	1,500
2-5	3	450	1	650
3-4	6	900	4	2,000
4-6	8	800	4	3,000
5-6	4	400	2	1,000
6-7	3	450	2	800

The indirect cost per day is Rs. 100.

- i) Draw network diagram and identify critical path.
- ii) Calculate normal project duration & associated cost.
- iii) Find out total & free float associated with each activity.
- iv) Crush the relevant activities systematically and determine the optimum project completion time and cost.

**P.T.O.**

b) Solve following LPP graphically [10]

$$\text{minimise } Z = x_1 + 4x_2$$

subject to constraints,

$$5x_1 \geq x_2$$

$$x_1 + x_2 \leq 5$$

$$3x_1 + x_2 = 9$$

$$\text{with } x_1, x_2 \geq 0$$

**Q2)** A book binder has one printing press, one binding machine manuscript of seven different books. The time required for performing printing and binding operators for different books are shown below. [10]

Book	1	2	3	4	5	6	7
Printing time (hrs)	20	90	80	20	120	15	65
Binding time (hrs)	25	60	75	30	90	35	50

Decide the optimum sequence of processing of books in order to minimize the total time required to bringout all the books.

**Q3)** The following rates have been observed for certain items : [10]

End of the month	1	2	3	4	5
Probability of failure	0.10	0.30	0.55	0.85	1.00

The cost of replacement of an individual item is Rs. 1.25. The decision is made to replace all items simultaneously at fixed interval & also to replace individual item as they fail. If the cost of group replacement is 50 paise, what is the best interval of group replacement?

At what group replacement price per item, would a policy of strictly individual replacement become preferable to the adopted policy?

**Q4)** A department store has a single cashier. During the rush hours. Customer arrive at a rate of 20 customers per hour. The cashier takes an average 2.5 minutes per customer for processing. **[10]**

- What is the probability that the cashier is idle?
- What is the probability that the customer shall have to wait in the queue?
- What is the average number of customers in the queueing system?
- What is the average time spend by customer in the system?
- What is the average queue length?

**Q5)** Solve the T.P. to maximize profit and give the criteria for optimality. **[10]**

		Profit (₹/unit)				
		Destination				
Origin		1	2	3	4	Supply
A		40	25	22	33	100
B		44	35	30	30	30
C		38	38	28	33	70
Demand		40	20	60	30	

**Q6)** The production department of a company requires 3600 kg of Raw material for manufacturing a particular item per year. It has been estimated that the cost of placing an order is Rs. 36 and cost of carrying inventory is 25% of the investment in the Inventories. The price is Rs 10 per kg. Help the purchase manager to determine an order policy for raw material. **[10]**

**Q7)** Use the dual simplex method to solve the LP problem : **[10]**

$$\text{Max } Z = -3x_1 - 2x_2$$

subject to the constraints,

$$x_1 + x_2 \geq 1$$

$$x_1 + x_2 \leq 7$$

$$x_1 + 2x_2 \geq 10$$

$$x_2 \leq 3 \quad \text{and } x_1, x_2 \geq 0$$

**Q8)** Write Short Note on (any two) **[10]**

- Basic elementary queueing system
- Importance of PERT & CPM in project management
- Sequencing models



Total No. of Questions : 8]

SEAT No. :

P2344

[Total No. of Pages : 2

[5470]-4002

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

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. 1 and Q. 8 are compulsory.*
- 2) *Solve any four from remaining.*

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

- i) What is Naming Class?
- ii) Explain Socket Class.
- iii) What is JAR?
- iv) Explain Hibernate objects.
- v) Explain Prepared statement.

**b) Explain JSP error handling.** **[5]**

**Q2) Write Client-server application where client will send username and password to the server. If it is 'scott' and 'tiger' respectively then only send welcome message otherwise give proper error message.** **[10]**

**Q3) Write a remote method palin (string) that will take one string from client and checks whether string is palindrome or not.** **[10]**

**Q4) Write a JDBC application to display list of blood donor with specific blood group. Accept blood group from user. Assume suitable table structure.** **[10]**

**P.T.O.**

**Q5)** Validate the data by using a servlet.

**[10]**

Book Information	
Book-no :	<input type="text"/>
Book-name :	<input type="text"/>
Price :	<input type="text"/>
<input type="button" value="Validate"/>	

Validation Parameters :

- a) All fields are compulsory.
- b) Book number should be numeric.
- c) Book name should not contains special symbol.
- d) Price should be decimal with two precision.

**Q6)** Write JSP code to accept registration details for placement portal from candidate and insert the details in database. (Assume suitable table structure.)

**[10]**

**Q7)** Explain Aspect Oriented Programming with example.

**[10]**

**Q8)** Write short notes on : (any 3)

**[15]**

- a) Connection Pooling
- b) Servlet life cycle
- c) Entity Java Bean
- d) Dependency injection
- e) InetAddress Class



Total No. of Questions : 7]

SEAT No. :

**P2345**

[Total No. of Pages : 1

**[5470]-4003**

**M.C.A. (Management Faculty) (Semester - IV)**  
**T2-IT 41 : IDENTITY AND ACCESS MANAGEMENT**  
**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question 1 & 7 are compulsory.*
- 2) *Answer any four questions from remaining questions.*

**Q1)** Explain Active Directory Server Roles in IDA management. **[10]**

**Q2)** Explain how to Deploy certificates by using Active Directory Certification Services and Auto enrollment. **[10]**

**Q3)** Explain how to Configure Active Directory Lightweight Directory Services integration with Active Directory Domain Services. **[10]**

**Q4)** How to Deploy Active Directory Federation Services. **[10]**

**Q5)** How to implement Active Directory Rights Management Services Trust Policies. **[10]**

**Q6)** How to maintain Access Management Solutions? **[10]**

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

- a) Public Key Infrastructure
- b) Installing ADCS
- c) Deploying CA Hierarchy
- d) Solving ADRMS Issues
- e) Troubleshooting ADCS



Total No. of Questions : 7]

SEAT No. :

**P2346**

[Total No. of Pages : 1

**[5470]-4004**

**M.C.A. (Management Faculty) (Semester - IV)**

**T3-IT-41 : E-COMMERCE & KNOWLEDGE MANAGEMENT**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No. 1 & 7 are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Attempt any four from remaining.*

**Q1)** What is electronic payment system? Explain different types of payment systems. **[15]**

**Q2)** Explain different Knowledge Management Tools. **[10]**

**Q3)** What is Ecommerce? Explain different business models for ecommerce. **[10]**

**Q4)** Explain Mcommerce with its advantages. **[10]**

**Q5)** What is Knowledge Management? Explain Knowledge Management Process. **[10]**

**Q6)** How is data & message security ensured in e-business? Discuss in brief. **[10]**

**Q7)** Write Short Notes on : (Any Three) **[15]**

- a) Types of Knowledge
- b) WAP
- c) Digital Signature
- d) Traditional Commerce Vs. Ecommerce



Total No. of Questions : 7]

SEAT No. :

P2347

[Total No. of Pages : 1

[5470]-4005

**M.C.A. (Computer Management) (Semester - IV)**

**T4-IT 41 : NETWORK ADMINISTRATION - II**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.7 is compulsory.*
- 2) *Attempt any five from remaining.*

**Q1)** Explain in brief VLAN and VLAN trunking configuration and verification. **[10]**

**Q2)** Explain ICMP protocol in brief. **[10]**

**Q3)** Explain Several IP routing related protocols in brief. **[10]**

**Q4)** Explain the process of analyzing and predicting normal network operations. **[10]**

**Q5)** Give the overview of dynamic routing protocol. **[10]**

**Q6)** Explain the process of OSPF topology database exchange in detail. **[10]**

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

- a) Configuring static routes
- b) Administrative Distance
- c) OSPF Authentication
- d) IP subnet and VLANs
- e) EIGRP maximum path and variance



Total No. of Questions : 7]

SEAT No. :

P2348

[Total No. of Pages : 2

[5470]-4006

**M.C.A. (Management Faculty)**

**T1-IT 42 : PYTHON PROGRAMMING  
(Software & Application Development)  
(2015 Pattern) (Semester - IV) (Track - I)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. No. 1 & Q.No. 7 are compulsory.*
- 2) *Solve any four questions from Q.2 to Q.6.*

**Q1) a)** What is Dictionaries? Explain following functions with example. [10]

- i) len()
- ii) cmp()
- iii) update()
- iv) get()

b) Explain concept of Modules with example. [5]

**Q2)** Write Python code to find all indices of a substring in the given string. [10]

**Q3) a)** Write a Python function to check if the input year is leap year or not.[5]

b) Write Python code to check if the input number is palindrome or not.[5]

**Q4) a)** Write Python code to multiply two matrices. [5]

b) What is 'set'? Explain union, intersection, difference & symmetric difference operations on set with example. [5]

**Q5) a)** What is file? Explain different modes in which file can be open. [4]

b) Write Python code to create a text file and perform read and write operations on it. [6]

**P.T.O.**

**Q6)** What is Inheritance? Explain multiple inheritance & multilevel inheritance with example. **[10]**

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

- a) User - defined Exceptions.
- b) Immutable & Mutable data types.
- c) Random module.
- d) Tuples.



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Total No. of Questions : 8]

SEAT No. :

P2349

[Total No. of Pages : 2

[5470]-4007

M.C.A. (Semester - IV)

T2-IT42 : IT ADVISORY SERVICES

(Track II : Infrastructure and Security Management)

(2015 Pattern)

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q1 is Compulsory.*
- 2) *Attend any six from the remaining.*
- 3) *Figures to the right indicate full marks.*

*Q1)* Explain the various Pre-requisites and Major obstacles of an Advisory Services Organization. [10]

*Q2)* How are Technical language skills important for an IT Consulting? Explain with a suitable example. [10]

*Q3)* Who is a Consultant? Explain the role of a consultant and explain the various types of consultants. [10]

*Q4)* Explain the various Transactional and currency issues in global Trending. [10]

*Q5)* Explain in detail regarding the various Strategic issues which may affect mergers and acquisitions. [10]

*Q6)* What are the various Major obstacles in IT advisory services. [10]

*P.T.O.*

**Q7)** Explain the various Pre-requisites of contracts.

**[10]**

**Q8)** Write Short Notes (Any Two) :

**[10]**

- a) Trade-marks and copy right issues
- b) Advisory skills
- c) Objectives of IT Advisory Services.



*munotes.in*

Total No. of Questions : 7]

SEAT No. :

**P2350**

[Total No. of Pages : 2

**[5470]-4008**

**M.C.A. (Computer Management) (Semester - IV)**  
**T3-IT 42 : CYBER LAWS & INTELLECTUAL PROPERTY**  
**RIGHTS**  
**(Information Management & Quality Control)**  
**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.No. 1 and 7 are compulsory.*
- 2) *Attempt any four from remaining.*

**Q1)** Pune police arrested a person based on FIR registered by “Dreamlad Travelling Services”. The travelling agency has noticed that the person against whom the FIR registered was a former employee of their organization. After few days he left the organization he started anti-organizational activities which include:**[15]**

- i) At the time of leaving organization, he copied the confidential information on USB stick, which is further sell to the other business rivalries.
  - ii) Tampered the client information stored on the organizational computer.
  - iii) Sent the mails containing bad publicity about the organization.
  - iv) Publishes and transmitted obscene material through email containing material, which false under sexually explicit act by creating fake email Id.
- a) Identify all the offences made by them.
  - b) What are the sections/subsections associated with the offences you identified.
  - c) What are the provisions for the punishments as per IT-Act 2000 and 2008 amendments?

**Q2)** Highlight upon Cybercrime law in Asia.

**[10]**

**Q3)** Enlist various agencies responsible for Intellectual Property registration Also, discuss about the international organizations, agencies and treaties in the above context.

**[10]**

**P.T.O.**

**Q4)** What is e-Commerce? What are the risks associated with electronic transaction?  
What are the preventive measures to make secure transactions? [10]

**Q5)** Comment on "Security of cyber consumers in India". [10]

**Q6)** Discuss Foreign judgments in India w.r.t. Jurisdiction in the cyber world.[10]

**Q7)** Write Short Notes : (Any three) [3 × 5 = 15]

- a) Cybercrime legislation in African region
- b) Cybercrimes against organization
- c) Cybercrimes and information security
- d) E-Governance



Total No. of Questions : 7]

SEAT No. :

P2351

[Total No. of Pages : 1

[5470]-4009

**M.C.A. (Computer Management) (Semester - IV)**

**T4-IT 42 : INTERNET OF THINGS**

**Networking**

**(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)** What is IoT? Why it is preferred by organizations today? Explain advantages of IoT with suitable example. **[15]**

**Q2)** Elaborate the role of IoT with respect to wired and wireless communication. **[10]**

**Q3)** Discuss the advantages of IoT in terms of oil and Gas industry. **[10]**

**Q4)** Explain following terms in brief. **[10]**

- a) Grouping of stations
- b) Target Wake Time

**Q5)** Explain end-to-end security. **[10]**

**Q6)** Explain Data Aggregation for IoT in smart cities. **[10]**

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

- a) RF 101
- b) SPMI
- c) Zigbee
- d) CDMA



Total No. of Questions : 7]

SEAT No. :

P2352

[Total No. of Pages : 2

**[5470]-4010**  
**M.C.A. (Management)**  
**T1-IT43 : ADVANCE DBMS**  
**Software & Application Development**  
**(2015 Pattern) (Semester - IV)**

*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) *Simple Calculator is allowed.*

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

**Q2)** Explain Inter-query and Intra-query parallelism in detail. [10]

**Q3)** Compare RDBMS, OODBMS, ORDBMS. [10]

**Q4)** Apply Apriori Algorithm to the following data-set [10]

TID	Items Purchased
1	Bread, Cheese, Egg, Juice
2	Bread, Cheese, Juice
3	Bread, Milk, Yogurt
4	Bread, Juice, Milk
5	Cheese, Juice, Milk

And find

- a) All Frequent Item list.
- b) Strong Association Rules.

(Given Support Count is 40% and Confidence = 75%)

**P.T.O.**

**Q5)** Explain the Two-Phase (2PL) Commit Protocol in distributed database system? **[10]**

**Q6)** Explain Relevance Ranking using Terms and Hyperlinks. **[10]**

**Q7)** Write Short Notes on (Any Four) **[20]**

- a) OID and Object Reference
- b) Multimedia Database
- c) Star Schema
- d) Applications of Data Mining
- e) Text Mining
- f) Spatial Database



Total No. of Questions : 7]

SEAT No. :

P2353

[Total No. of Pages : 1

[5470]-4011

**M.C.A. (Management)**

**T2-IT43 : INFRASTRUCTURE SECURITY AND AUDIT  
(Infrastructure and Security Management)  
(2015 Pattern) (Semester - IV)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Q7 is compulsory.
- 2) Solve any 5 from Q1 to Q6.

**Q1)** Define cloud computing. Explain Infrastructure as a Service (IaaS) in detail. **[10]**

**Q2)** Explain the Network Address translation in detail. **[10]**

**Q3)** Discuss the concept of VLAN in brief. **[10]**

**Q4)** What is Security audit? Explain need for security audit in organisation. Also explain auditors responsibility in security audits. **[10]**

**Q5)** What is IT Infrastructure? Discuss system management building blocks. **[10]**

**Q6)** Explain VPN and IDS in detail **[10]**

**Q7)** Write Short Notes : (Any 4) **[4 × 5 = 20]**

- a) BCP
- b) DNS Servers
- c) DMZ
- d) ITIL
- e) Honey Pots
- f) Green IT



Total No. of Questions : 7]

SEAT No. :

P2354

[Total No. of Pages : 2

[5470]-4012

**M.C.A. (Management) (Semester - IV) (Theory)**  
**(T3-BM-43) : CUSTOMER RELATIONSHIP**  
**MANAGEMENT & SUPPLY CHAIN MANAGEMENT**  
**(Information Management & Quality Control)**  
**(2015 Pattern) (Track - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. No. 1 & Q. No. 7 is compulsory.*
- 2) *Solve any 4 from remaining.*
- 3) *Figures to the right indicate full marks.*

**Q1) Case Study :**

**[10]**

Fiat India Ltd. reported saving of \$800 million by restructuring its internal operations and integrating process with suppliers and customers with the help of web-base tools. The Tata Motors & Pandit Auto experiences demonstrate how information sharing can be utilized for mutual advantage. Through sound information, Tata Motor shares point of sale information from its many retail outlet directly with PanditAuto and other major suppliers like Greek auto. Information Technology and its use in Fiat India Ltd. Organizations and across the supply chain has become a determinant of competitive advantage. New Fiat India Ltd. 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, Fiat India Ltd. 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 information technology tools is vital for such efforts. You have been deputed as a SCM consultant to analyse and suggest solutions on following points:

- a) Identify SCM areas of this business use case
- b) Identify challenges in implementing IT in SCM
- c) Suggest IT tools and applications for this SCM
- d) How IT is helping to restructure the entire distribution set up to achieve higher service levels, lower inventory and lower supply chain costs.
- e) Explain the advantage of SCM.

**P.T.O.**

**Q2)** Define CRM. Explain six E's of E-CRM in detail. **[10]**

**Q3)** What are the advantages and disadvantages of Bar Coding? How Bar Coding helps in e-Supply Chain Management? **[10]**

**Q4)** Define SCM. Explain why there is a need SCM in detail. **[10]**

**Q5)** Define Inventory Management. Explain the role of Inventory Control in SCM. **[10]**

**Q6)** Explain the ITR in inventory managing in SCM. **[10]**

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

- a) EDI
- b) Core values of SCM
- c) Use of IT in CRM & SCM
- d) ITR
- e) Six E's of E-CRM



Total No. of Questions : 7]

SEAT No. :

P2355

[Total No. of Pages : 1

**[5470]-4013**  
**M.C.A. (Management)**  
**T4-IT43 : LINUX ADMINISTRATION - II**  
**(Track - 4) Networking**  
**(2015 Pattern) (Semester - IV)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Questions 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)* Explain Linux kernel and kernel configuration in detail. **[10]**
- Q3)* Explain SMTP, IMAP4, and POP3. Also explain MDA, MTA and MUA. **[10]**
- Q4)* Explain the process of configuring and using the digital scanner in Linux. **[10]**
- Q5)* Write in detail about WU - FTPD & steps to configure WU - FTPD server in Linux. **[10]**
- Q6)* Explain sendmail and its configuration in detail. **[10]**
- Q7)* Write short notes on : (Any four) **[20]**
- a) MySQL datatypes
  - b) Postgre SQL
  - c) Using TV and Video in Linux
  - d) FTP server
  - e) PPP server
  - f) Burning CD / DVD in Linux



Total No. of Questions : 8]

SEAT No. :

P2356

[Total No. of Pages : 1

[5470]-4014

**M.C.A. (Management)**

**SOFTWARE & APPLICATION DEVELOPMENT**

**T1-IT 44 : Cloud Computing**

**(2015 Pattern) (Semester - IV)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q1 is compulsory.*
- 2) *Attempt any six from the remaining.*
- 3) *Figures to right indicate full marks.*

**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)** What do you mean by Infrastructure as a Service? Why do we need IaaS? Explain. **[10]**

**Q4)** Write down the characteristics of Cloud Computing. **[10]**

**Q5)** Define Web services. Explain its working and their types in detail. **[10]**

**Q6)** What is mean by Data Migration? Discuss Cloud Migration Process. **[10]**

**Q7)** Define Cloud Security. Explain various security issues in Cloud. **[10]**

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

- a) Google App Engine
- b) Hypervisor
- c) Software as a Service



Total No. of Questions : 7]

SEAT No. :

P2357

[Total No. of Pages : 1

[5470]-4015

M.C.A. (Management Faculty)

T2-IT 44 : ENTERPRISE AND SOLUTION ARCHITECTURE

(Infrastructure & Security Management)

(2015 Pattern)

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Q.1 and Q.7 are compulsory.
- 2) Solve any 4 from Q.2 to Q. 6.

**Q1)** a) In detail explain design for infrastructure security. [8]

b) Describe in brief, data qualities and integration. [7]

**Q2)** Explain architecture precursors. [10]

**Q3)** Explain architecture models. [10]

**Q4)** Describe design for business security. [10]

**Q5)** Describe data architecture structure. [10]

**Q6)** Explain component inter operation styles. [10]

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

- a) Infrastructure architecture structure
- b) Architecture governance
- c) Content management
- d) Architecture Domain



Total No. of Questions : 7]

SEAT No. :

**P2969**

[Total No. of Pages : 1

**[5470]-4016**

**M.C.A. (Management Faculty) (Semester - IV)**  
**T3 - IT 44 : SOFTWARE QUALITY ASSURANCE &**  
**CONTROL**  
**(2015 Pattern)**

*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)* Prepare software Inspection checklist for the mobile application “Movie-Masti” which is used for booking online movie tickets. **[15]**

*Q2)* Define Quality Assurance & Quality Control. Compare the term QA & QC. **[10]**

*Q3)* What is the purpose of process and product Quality Assurance? Why Quality assurance for process is important. **[10]**

*Q4)* Explain verification and validation model in detail. **[10]**

*Q5)* Process of training and certification is a major phase of quality infrastructure component. Justify your answer. **[10]**

*Q6)* Explain software quality indicators in detail. **[10]**

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

- a) CMMI
- b) Six sigma
- c) Software quality
- d) Configuration management



Total No. of Questions : 7]

SEAT No. :

P2358

[Total No. of Pages : 1

[5470]-4017

**M.C.A. (Management) (Semester - IV)**

**T4-IT 44 : WIRELESS NETWORKS**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Questions - 1 & 7 are compulsory.*
- 2) *Answer any three questions from remaining.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Draw neat diagram wherever necessary.*

- Q1)** a) Explain with example the fundamental structure of an IEEE 802.11 Wireless LAN. **[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 and their operations. **[10]**
- Q3)** What is MANET? Explain AODV routing Protocol of MANET. **[10]**
- Q4)** Discuss briefly the various ways to achieve interworking between WWAN and WLAN. **[10]**
- Q5)** Explain IMS Architecture and operations. **[10]**
- Q6)** What is LTE network? Explain the services offered by LTE network? **[10]**
- Q7)** Write Short Notes( Any Fours) : **[20]**
- a) Local multipoint distribution system (LMDS).
  - b) 4G features and Challenges.
  - c) Wireless LAN FHSS physical layer.
  - d) Wireless Sensor Network
  - e) Air Interface of 3G network.
  - f) HIPERLAN-2 v/s 802.11 LAN



Total No. of Questions : 8]

SEAT No. :

P2970

[Total No. of Pages : 2

[5470]-5001

M.C.A. III (Semester - V)

MANAGEMENT FACULTY

Software Project Management

(2015 Pattern)

*Time : 3 Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Q.1 and Q.8 are compulsory.*
- 2) *All questions carry equal marks (10 marks).*
- 3) *Use of non-programmable calculator allowed.*
- 4) *Solve any 5 from remainings.*

**Q1)** Draw network diagram from the given information

**[10]**

- a) Find start time, end time, critical path & total float.
- b) If activity E is crashed by 2 weeks, draw network diagram and find out critical path & shortest path.

Activity	From	To	Duration in weeks
A	1	2	8
B	1	3	6
C	1	5	3
D	2	6	4
E	2	8	4
F	3	2	5
G	3	4	3
H	4	6	4
I	4	7	2
J	6	7	3
K	7	8	2
L	5	8	4

**P.T.O.**

- Q2)** What is use of cocomo in SPM? You as a project manager are required to give efforts estimation for the project of size 340 KLOC for all classes of project. For development project also requires. [10]
- a) Execution time constraint is High - 1.11
  - b) Database size is high - 1.08
  - c) Programmer capability is very High - 0.70
  - d) Modern programming practices very Low - 1.10
  - e) Remaining factors / drives are Nominal
- Q3)** PEI institute of management has decided to opt for automated library management system. You as a project manager [10]
- a) Identify various kinds of risk involved with it and propose the suitable solution for the same.
  - b) Do you agree that role of risk manager is important in SPLC. Justify.
- Q4)** Assume you as a project manager, Explain your role in project management life cycle (PMLC). [10]
- Q5)** Is there difference between change management (CM) & software configuration management (SCM)? Justify. [10]
- Q6)** Explain software quality attributes in detail. [10]
- Q7)** Success of software project development is depends on effective team management. Justify this statement and explain importance of team communication. [10]
- Q8)** Short notes (any two) : [10]
- a) Delphi
  - b) MS-Project
  - c) CMM
  - d) Version & Release Management



Total No. of Questions : 7]

SEAT No. :

**P2359**

[Total No. of Pages : 1

**[5470]-5002**

**M.C.A. (Management Faculty) (Semester - V)**

**T1-IT 51 : ASP .NET USING C#**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Questions No 1 and 7 are compulsory.*
- 2) *Solve any four from remaining.*
- 3) *Figures to the right side indicate full marks.*

**Q1)** Design a form and write a code for online product selling portal to perform following tasks.

- a) Add product details in the database
- b) Display all the products in Grid View Control.

Assume required tables with suitable fields and datatypes **[15]**

**Q2)** Explain .NET framework in detail.

**[10]**

**Q3)** Explain any five validation controls.

**[10]**

**Q4)** What is Web Service? Write steps to create and use web service. Write a Web service to perform multiplication of 2 numbers. **[10]**

**Q5)** What is exception? Explain page level and application level errors in exception handling. **[10]**

**Q6)** Explain Data Adapter, Data set, Data Reader, command and connection object. **[10]**

**Q7)** Write short note (Any three) : **[15]**

- a) Ajax
- b) MVC
- c) Deployment of Web application
- d) Authentication and Authorization



Total No. of Questions : 7]

SEAT No. :

**P2360**

[Total No. of Pages : 1

**[5470]-5003**

**M.C.A. (Semester - V)**

**T2-IT 51 : QUALITY VERIFICATION**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.1 and Q.7 are compulsory.*
- 2) *Attempt any four from Q.2. to Q.6.*
- 3) *Your answers should be specific and to the point.*
- 4) *Support your answers with suitable live examples.*
- 5) *Draw neat diagrams wherever necessary.*

- Q1)* Explain in detail Testing Maturity Model. **[15]**
- Q2)* Explain in detail quality standard TQM. **[10]**
- Q3)* Write a detailed note on Copyrights. **[10]**
- Q4)* Discuss in detail Continuous Quality Verification [CQV]. **[10]**
- Q5)* Explain in detail quality standard ISO 9001 & ISO 27001. **[10]**
- Q6)* Explain in detail Coupling CMMI with Six Sigma. **[10]**
- Q7)* Due to the numerous advantages of IT, SMEs are trying to adopt IT applications to support their businesses. IT adoption by SMEs differs from larger organizations because of their specific characteristics, such as resources constraints. A small 'BUS' part manufacturing unit plan for information system implementation in coming months.  
Define need evaluation strategies and factors deciding adoption of Information System. **[15]**



Total No. of Questions : 6]

SEAT No. :

**P2361**

[Total No. of Pages : 1

**[5470]-5004**

**M.C.A. (Management Faculty) (Semester - V)**

**T3-IT 51 : SOFTWARE TESTING & TOOLS**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q1 and Q6 are compulsory.*
- 2) *Attempt any 3 from the remaining.*
- 3) *Figures to the right indicate marks.*
- 4) *Draw neat labeled diagrams wherever necessary.*

- Q1)** a) Write a detailed test plan for an application which will allow users to enroll for a MOOC (Massive Open Online Course) through a registration process. On the home page, users can find Upcoming courses, Last submitted or Updated courses. Users can also browse by Course categories and attend the same free of charge. Payment for MOOC course materials can be done in net-banking or card payment mode. [12]
- b) Design suitable test cases for testing the above application. [8]
- Q2)** Explain the levels of testing with suitable examples [10]
- Q3)** Define Structural testing. Explain coverage techniques used in structural testing with suitable examples. [10]
- Q4)** Explain different types of reviews involved in static testing. [10]
- Q5)** What is CAST? Explain its types. [10]
- Q6)** Write short notes on (any 4) : [4 × 5 = 20]
- a) Cyclomatic complexity
  - b) Test Metrics
  - c) Non- functional Testing
  - d) Verification & Validation
  - e) Differentiate between Static Testing & Dynamic Testing



Total No. of Questions : 6]

SEAT No. :

P2362

[Total No. of Pages : 1

[5470]-5005

**M.C.A. (Management) (Semester - V)**  
**T4-IT51 : NETWORK ROUTING ALGORITHMS**  
**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Questions 1 & 6 are compulsory.*
- 2) *Answer any three questions from remaining.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Draw neat diagram wherever necessary.*

- Q1)** a) What are different types of Routing methods in Telephone Networks? Explain in short their method and procedure. [10]  
b) What is Unicast routing? Explain with example Distance Vector Multicast Routing protocol. [10]
- Q2)** What are different types of Routing algorithms used in Optical Networks and what are with their pros and cons? Explain Fixed Alternate Routing algorithm. [10]
- Q3)** Conceptualize the meaning of Interior and Exterior routing with example. Explain Bellman Ford Distance Vector routing. [10]
- Q4)** What is Cellular IP? "HAWAII works above IP" explain this concept. [10]
- Q5)** What is reactive routing? Explain Destination Sequenced Distance Vector (DSDV) Routing method with example. [10]
- Q6)** Write short notes (Any Four) : [20]
- a) Hierarchical routing in Telephone Networks
  - b) Internet-based mobile ad-hoc networking communication strategies
  - c) Distance Vector Multicast routing protocol
  - d) Rerouting Schemes in optical networks
  - e) Intra domain Mobility management



Total No. of Questions : 7]

SEAT No. :

**P2364**

[Total No. of Pages : 1

**[5470]-5007**

**M.C.A. (Theory Management)**  
**T2-IT52 : INFRASTRUCTURE AUDITING &  
IMPLEMENTATION**  
**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question Sr. No. 1 (10 marks) and Sr. no. 7 (20 marks) are compulsory.*
- 2) *Answer any 4 questions from Sr. No. 2, 3, 4, 5 and 6. (Each carries 10 marks).*
- 3) *Draw diagrams / flow charts to substantiate your answers wherever necessary.*

**Q1)** Explain Infrastructure Audit with different methods and objectives. **[10]**

**Q2)** Explain risk of operator access controls over device and server settings. **[10]**

**Q3)** Elaborate on IT audit and Implementation of security policy. **[10]**

**Q4)** Explain 'Contracting' in relation to IT infrastructure audit and maintenance. **[10]**

**Q5)** Give the overview of strong change management process. **[10]**

**Q6)** Explain long term IT strategy and short range IT plans. Highlight salient differences between the two concepts. **[10]**

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

- a) Entity area risk management.
- b) Business strategy of IT audit.
- c) Information system audit guidelines.
- d) Vendor selection criteria.
- e) Importance of regulation and standards in infrastructure auditing.



Total No. of Questions : 7]

SEAT No. :

**P2365**

[Total No. of Pages :2

**[5470]-5008**

**M.C.A. (Management Faculty) (Semester - V)**  
**T3-BM52 : ENTREPRENEURSHIP DEVELOPMENT**  
**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No. 1 and 7 are compulsory.*
- 2) *Solve any 4 out of the remaining.*
- 3) *Figures to the right indicate full marks.*
- 4) *Draw neat diagrams and quotes examples wherever necessary.*

**Q1) Case Study**

**[10]**

IT movement in India was growing leaps and bounds and the service industry (especially offshore) was growing very fast. In an IT park more than 1 lakh professionals were working. 30% were displaced from Andhra Pradesh due to constant agitation. These professionals were becoming home sick mainly due to lack of authentic food. As an aspiring entrepreneur, identify an opportunity for a startup in the above mentioned scenario. Prepare a detailed Project Report for your business plan.

**Q2) Define term 'Entrepreneur'. Explain the concept and need of Entrepreneurship Development.**

**[10]**

**Q3) Explain "Importance and Significance of Growth of Entrepreneurial". Add a note on characteristics and qualities of Entrepreneur.**

**[10]**

**Q4) What do you understand by the MSME policy? Explain which types of agencies are formulating these policies.**

**[10]**

**Q5) a) Explain different forms of ownership.**

**[10]**

**b) Discuss idea generation techniques.**

**[10]**

**P.T.O.**

**Q6)** How important is the role of Government in promoting Entrepreneurship.  
Support your answer with example. **[10]**

**Q7)** Write short notes on the following (Any 4) :- **[4 × 5 = 20]**

- a) An Entrepreneur v/s a Manager
- b) Social Entrepreneurship
- c) Women Entrepreneurship
- d) Growth of Entrepreneurship in India
- e) Marketing Mix
- f) Limited Liability Partnership



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Total No. of Questions : 7]

SEAT No. :

**P2366**

[Total No. of Pages :2

**[5470]-5009**

**M.C.A. (Management) (Semester - V)**

**T4-IT52 : COMPUTER AND NETWORK SECURITY**

**(2015 Pattern)**

*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) *Figures to right indicate full marks.*
- 5) *Draw neat diagrams wherever necessary.*

**Q1)** Explain the steps to maintain data security. **[10]**

**Q2)** Explain the following defense models. **[10]**

- a) Onion Model
- b) Lollipop Model

**Q3)** What are the roles and responsibilities of a security organization? **[10]**

**Q4)** Explain Information Security Regulations in detail. **[10]**

**Q5)** Explain importance of network administration and steps to harden the Organization's network. **[10]**

**Q6)** Explain web application security in detail. **[10]**

**P.T.O.**

**Q7)** Write short notes on (*Any 4 ONLY*)

**[20]**

- a) D's of security
- b) Anti-Spoofing & source routing
- c) Security operations management
- d) Incident response plans
- e) Database Audit and Monitoring
- f) Risk analysis



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Total No. of Questions : 7]

SEAT No. :

**P2367**

[Total No. of Pages :1

**[5470]-5010**

**M.C.A. (Management Faculty) (Semester - V)**

**T1-IT53 : Big Data Analytics**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No. 7 is compulsory.*
- 2) *Answer any Five questions from Q. 1 to Q.6.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right side indicate full marks.*

**Q1)** What is Big Data? Explain Big Data implications for any 2 industries. [10]

**Q2)** Explain Big data warehouse and analytics. [10]

**Q3)** Explain Big Data analytics methodologies in detail. [10]

**Q4)** What is Hadoop? Explain Hadoop architecture. [10]

**Q5)** Explain NoSQL database concepts. Compare MongoDB & CouchDB. [10]

**Q6)** Explain Big Data workload design approaches. [10]

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

- a) RDBMS Vs. Non-Relational databases.
- b) Map reduce.
- c) Hadoop Framework.
- d) Design for Big Data scale.
- e) Data modeling for Big Data



Total No. of Questions : 8]

SEAT No. :

**P2368**

[Total No. of Pages :1

**[5470]-5011**

**M.C.A. (Semester - V)**

**T2-IT53 : IT Service Management  
(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Attempt any seven questions.*
- 2) Your answer should be specific and to the point.*
- 3) Support your answers with suitable live examples.*
- 4) Draw neat diagrams wherever necessary.*

**Q1)** Explain Vital Business Functions (VBF) in detail. **[10]**

**Q2)** Discuss culture of IBM from the perspectives of IT Service Management. **[10]**

**Q3)** Explain in detail RFID wireless network along with business continuity with IT services on storage management. **[10]**

**Q4)** Explain Proactive Problem Management in detail. **[10]**

**Q5)** Explain underpinning contracts and OLAs. **[10]**

**Q6)** Discuss in detail configuration Items and their relationships. **[10]**

**Q7)** Explain Business Capacity Management & Service Capacity Management in detail. **[10]**

**Q8)** Write a note on implementation of changes. **[10]**



Total No. of Questions : 8]

SEAT No. :

**P2369**

[Total No. of Pages :1

**[5470]-5012**

**M.C.A. (Management Faculty) (Semester - V)**

**T3-IT53 : Decision Support System**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.1 & Q.8 are Compulsory.*
- 2) *Attempt any 5 from remaining.*
- 3) *Figures to right indicate full marks.*

**Q1)** Explain in detail DSS technology levels & tools. **[10]**

**Q2)** What is enterprise information system? Explain evolution of executive & enterprise information system. **[10]**

**Q3)** Explain how an intelligent DSS can be implemented? **[10]**

**Q4)** Define DSS. Explain characteristics & Capabilities of DSS in detail. **[10]**

**Q5)** Explain data collection problems & its quality. **[10]**

**Q6)** Explain prototyping as a DSS development methodology. **[10]**

**Q7)** DSS development platform - Explain. **[10]**

**Q8)** Write short notes on - **[10]**

- a) OLAP
- b) Artificial Intelligence.



Total No. of Questions : 7]

SEAT No. :

**P2370**

[Total No. of Pages : 1

**[5470]-5013**

**M.C.A. (Computer Management) (Semester - V)**

**T4-IT 53 : CLOUD ARCHITECTURE AND SECURITY  
(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.1 and Q.7 are compulsory.*
- 2) *Attempt any four from remaining.*
- 3) *Neat diagram must be drawn whenever necessary.*
- 4) *Figures to the right side indicate full marks.*

**Q1)** Enlist and explain cloud security concepts in brief. **[15]**

**Q2)** Explain the role of virtualization in enabling the cloud. **[10]**

**Q3)** Highlight on "compliance for the cloud provider vs. Compliance for the customer" in the context of cloud computing. **[10]**

**Q4)** Discuss IBM security virtual server protection to enhance virtualization based security. **[10]**

**Q5)** Discuss different attacks on virtual machine. **[10]**

**Q6)** Discuss various Virtualization System Vulnerabilities. **[10]**

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

- a) Public cloud
- b) Public-key cryptography
- c) Hyperjacking
- d) Virtualization-based Sandboxing



Total No. of Questions : 7]

SEAT No. :

**P2371**

[Total No. of Pages : 1

**[5470]-5014**

**M.C.A. (Management Faculty) (Semester - V)**

**T1-IT54 : MOBILE APPLICATION DEVELOPMENT**

**(2015 Pattern)**

*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 Q.2 to Q.6.*
- 3) *Make suitable assumptions wherever required.*

- Q1)** a) Draw and Explain Architecture of Android. [10]  
b) Write an android code to play audio file. [10]
- Q2)** Explain following Widgets. (Any Two) [10]  
a) Edit Text  
b) Text View  
c) Image View
- Q3)** What is Intent and Explain different types of Intent. [10]
- Q4)** Write an application to display list of fruits using adapter class. [10]
- Q5)** Explain CRUD operations, for person table using SQLite database. [10]
- Q6)** Write an android code to turn ON and OFF bluetooth. [10]
- Q7)** Write Short Notes : (Any Two) [10]  
a) Publishing Android Application  
b) Internal and External Storage  
c) Forward and Reverse Geocoding  
d) Android Telephony Manager



Total No. of Questions : 9]

SEAT No. :

P2372

[Total No. of Pages : 1

[5470]-5015

**M.C.A. (Management Faculty)**

**T2-IT-54 : DIGITAL AND E-BUSINESS**

**INFRASTRUCTURE AND SECURITY MECHANISM**

**(2015 Pattern) (Semester - V)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Solve any seven questions.*
- 2) *Each question carries equal marks.*

**Q1)** What is Digital signature? Explain various ways to provide security in E-Commerce. **[10]**

**Q2)** Explain the Web Browser Security aspects in detail. **[10]**

**Q3)** Explain the authentication and authorization certificates and their use. **[10]**

**Q4)** Explain the security aspect in Mobile Code. **[10]**

**Q5)** Explain Security Life Cycle in detail. **[10]**

**Q6)** Explain auditing and network monitoring strategy. **[10]**

**Q7)** Explain copyrights and Intellectual property regulations. **[10]**

**Q8)** Explain common steps for designing Network Infrastructure Security. **[10]**

**Q9)** Write Short Notes : (Any 2) **[2 × 5 = 10]**

- a) Digital Certificates
- b) SSL
- c) Vulnerability Trends
- d) Environmental Threats



Total No. of Questions : 7]

SEAT No. :

**P2373**

[Total No. of Pages : 1

**[5470]-5016**

**M.C.A. (Management Faculty)**

**T3-IT 54 : BUSINESS ARCHITECTURE**

**(2015 Pattern) (Track - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question 7 is compulsory..*
- 2) *Answer any 5 questions from (Q1 to Q6).*
- 3) *Draw neat & labeled diagram wherever necessary.*

**Q1)** What is Business architecture? What are standard and regulatory requirement for business. **[10]**

**Q2)** What is TOGAF? Explain TOGAF concepts of Boundary less information flow. **[10]**

**Q3)** a) What is Partfolio management? **[5]**

b) What is architecture change management? **[5]**

**Q4)** Explain concept of federated transaction across a distributed database? **[10]**

**Q5)** Explain Integrated Information Infrastructure Reference Model (III-RM)?**[10]**

**Q6)** What is agile development? Explain its phases in detail? **[10]**

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

- a) Content Management
- b) DMZ
- c) ETL
- d) Virtualization
- e) Master data Management



Total No. of Questions : 7]

SEAT No. :

P2374

[Total No. of Pages : 1

[5470]-5017

**M.C.A. (Computer Management) (Semester - V)**

**T4-IT 54 : UNIFIED COMMUNICATION**

**(2015 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question 7 is compulsory.*
- 2) *Attempt any five from remaining.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right side indicate full marks.*

**Q1)** Explain all SIP methods types w.r.t. their RFC standards. **[10]**

**Q2)** Describe the bandwidth saving techniques. Write in brief differences between circuit switched and packet switched. **[10]**

**Q3)** Explain Security issues in VOIP. **[10]**

**Q4)** Explain in brief dicing and splicing voice streams. What is Voice Encoding? **[10]**

**Q5)** What is Facsimile transmission? Explain Facsimile on the PSTN. **[10]**

**Q6)** Explain Stream Control Transmission Protocol in detail. **[10]**

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

- a) TOM and Packet Telephony
- b) VOIP
- c) H 323 Architecture
- d) Session Description Protocol (ABNF)
- e) IP Phones

