Total No. of Questions : 4] **SEAT No. :**

P3295 **[Total No. of Pages : 2**

[4766] - 1001
M.C.A. (Commerce Faculty) (Semester - I)
101 : Fundamental of Information Technology
(Credit System) (2013 Pattern)

Time : 3 Hours] ***[Maximum Marks : 50***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Define and explain in brief any seven of the following : **[7 × 2 = 14]**

a) Types of Software
b) Scheduling and Synchronization
c) Binary Arithmetic
d) Refresh Cathode Ray Tube
e) Digital and Analog Transmission
f) External Storage devices
g) MAN
h) Threads

Q2) Discuss any Three of the following : **[3 × 4 = 12]**

a) Explain instruction set of 8085
b) Explain assembler in detail
c) Explain Flowchart Symbols
d) Explain any External Storage device

Q3) Discuss any Three of the following : **[3 × 4 = 12]**

a) Distinguish between high level and low level language
b) List all output devices and explain any one in detail
c) Explain the term topology and Explain Mesh topology in detail
d) Convert the following
AC7 to Decimal
10001 to Decimal

P.T.O.

Q4) Discuss any Three of the following : **[3 × 4 = 12]**

a) Explain Scheduling in operating system.

b) Draw flowchart to compute roots of quadratic equation.

c) Define the term Primary key and Also Explain Referential Integrity

d) What is a Protocol and Explain Communication Protocol.

♦♦♦♦

Total No. of Questions : 4] **SEAT No. :**

P3297 **[Total No. of Pages : 3**

[4766] - 1003
M.C.A. (Semester - I)
COMMERCE
Elements of Statistics (Part - I)
(2013 Pattern)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculator and statistical tables is allowed.***

Q1) Attempt any TWO of the following: **[14]**

a) Find mode for the following frequency distribution.

Class	5-15	15-25	25-35	35-45	45-55
Frequency	2	9	18	7	4

Also draw histogram and verify mode graphically

b) Obtain correlation coefficient between sales(Y) and Number of sections (X) using following data:

X	3	7	6	6	10	12	12	13	12	13	14	15
Y	33	38	24	61	52	45	65	82	29	63	50	79

c) Given $n = 12$, $\Sigma X = 123$, $\Sigma Y = 621$, $\Sigma XY = 6833$, $\Sigma X^2 = 1421$. Obtain line of regression of Y on X. Also estimate Y when $X = 10$.

Q2) Attempt any TWO of the following: **[12]**

a) Explain the following terms.

i) Coefficient of variation

ii) Probability mass function

iii) Type I error

b) Number of runs scored by cricketers A and B in last 10 innings are shown below:

A	5	20	90	76	102	90	6	108	20	16
B	40	35	60	62	58	76	42	30	30	20

Find which cricketer is more consistent?

P.T.O.

c) Let X be a discrete random variable with p.m.f

$$P(X = x) = \frac{1}{5} \qquad x = 1,2,3,4,5$$

$$= 0 \qquad \text{otherwise.}$$

Find E(X) and V(X).

Q3) Attempt any THREE of the following: **[12]**

a) i) State probability mass function of binomial distribution.

ii) Let $X \rightarrow B(n,p)$. If $E(X) = 4$, $Var(X) = 3$, find n and p. Also find $P(X = 0)$.

b) Obtain quartile deviation for the following frequency distribution:

Income (00 Rs.)	14-16	16-18	18-20	20-22	22-24	24-26
No. of workers	12	30	55	40	35	28

c) Explain the procedure of x^2 test for goodness of fit.

d) A random sample of 27 pairs of observations from a normal population gives a correlation of 0.72. Is it likely that the variables in the population are uncorrelated? (Use 5% L.O.S., Given $t_{25} = 2.060$, $t_{26} = 2.056$, $t_{27} = 2.052$)

e) The following is 2 × 2 contingency table:

Father eye color ↓	Dark eye color in son	Light eye color in son
Dark eye color	23	15
Light eye color	15	47

Test whether the eye color in father in is associated with eye color in son? at 5% L.O.S. Given $\chi_1^2 = 3.81$, $\chi_2^2 = 5.99$, $\chi_3^2 = 7.81$

Q4) Attempt any THREE of the following: **[12]**

a) What do you mean by random variable? Explain the difference between discrete and continuous random variable with an illustration.

b) If X is a Normal variate with mean 30 and SD 5. Find

i) $P(26 \leq X \leq 40$

ii) $P(X \geq 45)$

c) 5 % housewives in Nashik do not use kerosene as a fuel. If a sample of 50 housewives is selected at random in Nashik, what will be the probability that 4 housewives in the sample do not use kerosene as a fuel. [given $e^{-2.5} = 0.218$]

d) A random sample of 100 recorded deaths in the united states during the last year showed an average life span of 71.8 years. Assuming population standard deviation of 8.9 years test the hypothesis that $\mu = 70$ years against $\mu \neq 70$ years at 5 % level of significance.

e) Find mean, median and mode for:
51, 58, 57,52,57.48,53

Total No. of Questions : 5] **SEAT No. :**

P3298 **[Total No. of Pages : 2**

[4766] - 1004
M.C.A. (Commerce) (Semester - I)
104 : FINANCIAL ACCOUNTING
(Credit System) (2013 Pattern)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***Question no. 1 is compulsory.***
2) ***Solve any Three questions from the remaining.***

.

Q1) The following Trial Balance was taken out on 31st March, 2015 from the Books of Bose. You are required to prepare a Trading and Profit and Loss Account for the year ended 3lst March, 2015 and a Balance Sheet as at date, after making the necessary adjustments : **[14]**

Particulars	Dr. Rs.	Cr. Rs.
Wages and salaries	6,600	---
Capital account	---	34,600
Drawings	2,000	---
Purchases & Sales	18,000	26,000
Sales returns / Purchase return	300	460
Office furniture	4,000	---
Buildings	12,000	---
Advertisement	1300	---
Opening stock	5,000	---
Rent, rates and taxes	400	---
Commission	200	---
Bills receivable	800	---
Traveling expenses	600	---
Bad debts	190	---
Provision for doubtful debts	---	1,500
Sundry debtors / Sundry creditors	11,000	2,800
Cash in hand	1,800	---
Bank overdraft	---	1,300
Freight on purchases	260	---
Investments	2,000	---
Income from investments	---	590
Fuel and power (factory)	800	---
Total Rs.	67,250	67,250

P.T.O.

Adjustments :

a) Depreciation to be provided on building and furniture at 10%

b) Rent outstanding was Rs. 120.

c) Goods of the value of Rs. 100 were given away free as samples.

d) Closing stock was valued at Rs. 8,200.

Q2) Journalise the following transactions in the books of Victoria. **[12]**

a) Commenced business with goods worth Rs. 50,000/-.

b) Borrowed Rs.50,000/- from Sunita.

c) Deposited Rs.30,000/- with State Bank.

d) Goods sold to Veronica worth Rs.5,000/- and amount received by cheque.

e) Purchased goods worth Rs.50,000 - from M/s Akbar Ali on credit.

f) Placed an order with M/s Deewakar & Co. for goods worth Rs. 20,000/-.

g) Paid Life Insurance Premium of Victoria's policy Rs.500/-.

h) Paid Salaries Rs.1000 - Wages Rs.800/- and 'Telephone Charges Rs. 200/-.

Q3) Ashok limited purchased Machinery on 1st April 2011 for Rs. 50000/- Company decided to charge depreciation dy Written Down Value method @10% p.a. The company sold the machinery on 31st March 2014 for Rs.20000-. **[12]**

Prepare Machinery Account & Depreciation A/c.

Q4) What is Financial Accounting. Explain the scope & limitations. **[12]**

Q5) Write short notes on the following : (Any 3) **[12]**

a) Management Accounting:

b) ERP (Enterprise Resource Planning):

c) Importance of Accounting Standards

d) Money measurement concept:

e) Users of Financial Accounting.

⌘⌘⌘

Total No. of Questions : 6] **SEAT No. :**

P3299 **[Total No. of Pages : 2**

[4766]-1005

M.C.A (Commerce) SEMESTER - I

105 : Principles of Management

(2013 Pattern)

)Time : 2 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question No. 6 is Compulsory Question***
2) ***Attempt any 3 from 1 to 5***
3) ***Draw figures wherever necessary***

Q1) a) Define management.State it's Scope in Business with appropriate examples. **[7]**

b) Explain the roles of manager in detail for business. **[7]**

Q2) a) Explain in brief Modern Approach. Explain any one of the Approaches **[7]**

b) Henry Fayol's contribution in the field of management. **[7]**

Q3) a) Define Organizing. Explain types of organizations in detail **[7]**

b) Define the term Controlling and its techniques **[7]**

Q4) a) Define the term delegation of authority. Discuss the difficulties in delegation of authority. **[7]**

b) Motivation. Explain McClelland's need for achievement **[7]**

P.T.O.

Q5) a) "Doing things right or Right things doing", which is the right form of implementing Management. [7]

b) Application of strategic management in business organization. [7]

Q6) Short Notes (Any Two) [8]

a) Strategic Management

b) Staffing

c) Social responsibility of Management

d) Foresting v/s Planning.

Total No. of Questions : 4]

SEAT No. : ____

P3300

[Total No. of Pages : 2

[4766] - 1006
M.C.A. COMMERCE (Semester - I)
BUSINESS COMMUNICATION
(2013 Pattern)

Time : 3 Hours] ***[Maximum Marks : 50***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right side indicate full marks.***

Q1) What is Business letter? Explain in detail layout of Business letters. **[14]**

OR

Distinguish between Voice mail and Video conferencing. **[14]**

Q2) Define communication. Explain Barriers to communication and overcoming the Barriers. **[14]**

OR

What is listening? Explain in detail types of listening. **[14]**

Q3) a) Write a complaint letter to the sales Manager of M/S L.G. Electronics ltd. Gangadham Nashik from M/S sapnil sound Narayangaon Pune about sending wrong electronics goods. **[7]**

OR

b) i) Write the noun forms of given word. **[2]**

1) Succeed _____
2) Qualify _____

ii) Fill in the blanks with appropriate adverbs given in the bracket :- **[2]**

1) Ambition _____ (urge) me forward.
2) We were very _____ (kind) received.

iii) Define with suitable examples :- **[3]**

1) Verb
2) Interjection
3) Pronoun

P.T.O.

c) Draft an application to M/S Gajanan Company Limited Nagpur for the post of operating Manager. **[7]**

OR

d) i) Fill in the blanks with appropriate preposition :- **[2]**

1) He slept _____ eight o' clock.
2) The cat is _____ the kitchen.

ii) Write the Adjective forms of the following words : **[2]**

1) Hope _____
2) Sense _____

iii) Write the correct tense form :- **[3]**

1) The sun _____ (rise) in the east.
2) I _____ (write) the letter in his presence.
3) It has been _____ (rain) all night.

Q4) Write short notes (Any Two) **[8]**

a) Telex

b) Telegram

c) Negative gestures

d) Scope of business communication.

♦♦♦♦

Total No. of Questions : 4]

SEAT No. : ____

P3301

[Total No. of Pages : 2

[4766] - 2001

M.C.A. (Commerce Faculty) (Semester - II)

201 : DATA STRUCTURE USING C

(2013 Pattern)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right side indicate full marks.***

Q1) a) Answer Any Three of the following. **[12]**

i) Sort the following numbers using bubble sort method 4, 17, 3,9,22, 12, 8.

ii) Write a C function to append element in doubly linked list.

iii) Write a note on priority queue

iv) Explain concept of overflow and method to handle overflow.

b) Answer Any One of the following : **[2]**

i) Define Space complexity & Time Complexity.

ii) Define Complete Binary tree & Strictly Binary tree.

Q2) Answer Any Three of the following. **[12]**

a) Convert the following infix expression into postfix expression A+B*C-D/E*F+G.

b) Explain different any two hashing functions.

c) Write note on row major and column major representation of array.

d) Consruct AVL tree for following data 80, 40, 20, 100, 70, 200, 150.

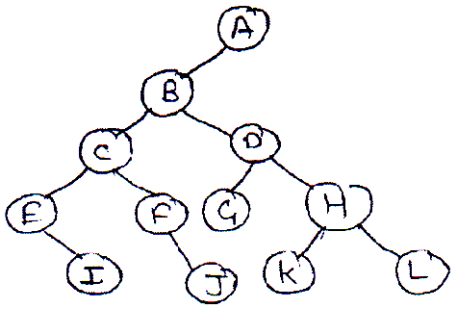
P.T.O.

Q3) Answer Any Three of the following. **[12]**

a) Sort the following numbers in ascending order using heap sort method 108, 97, 71, 23, 57, 93, 100.

b) Write a C function to count total number of leaf nodes in binary tree.

c) Find preorder, inorder & postorder traversal for following binary tree.



d) Write a C function "push" to add elements in dynamic stack.

Q4) Answer Any Three of the following. **[12]**

a) Write an algorithm for BFS traversal of a Graph.

b) What is generalized linked list? Represent the given list (a, (b, c, d), e, f).

c) What is abstract data type? Explain with example.

d) Consider the following adjacency matrix

	1	2	3	4
1	0	1	0	0
2	0	0	1	0
3	0	0	0	1
4	1	0	0	0

i) Draw the Graph

ii) Draw the Adjacency list

iii) Calculate Indegree, Outdegree for each vertex.

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Total No. of Questions : 4]

SEAT No. :

P3302

[Total No. of Pages : 4

[4766] - 2002

M.C.A. (Commerce) (Theory) (Semester - II)

202 : OBJECT ORIENTED PROGRAMMING USING C++

(Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data if necessary***

Q1) Attempt any two : **[2 × 7 = 14]**

a) Write a program which reads a text file and copies every alternate character in another file using command line arguments.

b) Design a class employee which includes the following data members:

i) Emp Number

ii) Emp Name

iii) Basic

Member functions

i) To Assign initial value

ii) To calculate net salary

iii) To display Net salary with employee details.

Calculate the net salary using the formulae

Gross salary = Basic + DA + HRA

Net salary = Gross salary – Deductions

The following conditions apply for the calculations

i) DA is 40% of basic salary

ii) HRA is 30 % of basic salary

iii) PF is deduction is 10 % of the basic salary.

c) Explain Class and Function template with suitable example.

P.T.O.

Q2) Write outputs with explaination (attempt any three) : **[3 × 4 = 12**

a)
```
class Test
{
    static int i ;
    int j ;
} ;
int Test : : i ;
int main ()
{
    cout << size of (Test);
    return 0;
}
```

b)
```
# include < iostream.h >
# include < conio.h >
class base
{
    public:
    void disp ()
    {
    char * ptr = (char*) '0' ;
    int i = 96 ;
    int *j = (int *) & ptr ;
    cout << i/* j ;
    }
};
void main ()
{
    clrscr () ;
    base b;
    b.disp () ;
}
```

c)
```
void main ()
{
    int a = 65;
    int * const p = &a;
    cout << char (*p);
    *p = 66;
    cout << char (*p);
    (char*) p++;
    cout << char(*p);
}
```

d)
```
class sample
{
    int a;
    public:
    explicit sample (int i)
{
    a = i;
}
    void display ()
{
    cout << "Value of A : "<<a;
}
};
int main ()
{
    sample S = 25;
    S.display ();
    return 0;
}
```

Q3) Attempt any three : **[3 × 4 = 12]**

a) What is Operator overloading? Explain Compile and Run Time Polumorphism.

b) Explain types of inheritance with suitable example of each type.

c) What is access specifier? Compare Public, Private and Protected.

d) Write a C++ program to sort n number of elements in descending order using Function Overloading.

Q4) Write short note on (any three) : **[3 × 4 = 12]**

a) Inline function

b) Stream Classes

c) Constructors and Destructors

d) Memory Management operators

● ● ●

Total No. of Questions : 4] SEAT No. :

P3303 [Total No. of Pages : 2

[4766] - 2003
M.C.A. (Commerce) (Semester - II)
203 : ELEMENTS OF MATHEMATICS
(Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

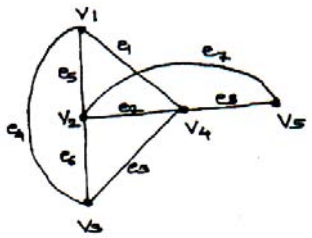
1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***

Q1) Attempt any TWO. **[2 × 7 = 14]**

a) Let A = {1,2,3,4} and R = {(1,2), (2,1), (2,3), (3,4)}. Find R^+ by using Warshall's algorithm.

b) Let A = {1, 2, 3, 4} and let R = {(1,1), (1,2), (1,3), (2,1), (2,2), (2,3), (3,1), (3,2), (3,3), (4,4)}. Show that R is an equivalence relation and also determine the equivalence classes.

c) Define adjacency and incidence matrix and also find the adjacency and incidence matrix of the following graph.



Q2) Attempt any THREE : **[3 × 4 = 12]**

a) Define and explain the concept :
   i) Partition of set ii) Sparse Matrix

b) Draw and determine the number of pendent vertices in a tree, if it has :
   i) 2 vertices of degree 2 and 1 vertex of degree 3
   ii) 1 vertex of degree 4, 2 vertices of degree 3 and 1 vertex of degree2.

c) Prove that, $P \rightarrow (Q \rightarrow R)$ and $(P \wedge \neg R) \rightarrow \neg Q$ are logically equal.

d) Let R and S be the following relations of B = {a, b, c, d}, R = {(a,a), (a,c), (c,b), (c,d) (d,d)} and S = {(b,a), (c,c), (c,d), (d,a)}.
   Find : i) SoR ii) SoRoS

P.T.O.

Q3) Attempt any THREE : **[3 × 4 = 12]**

a) Define and explain

i) Directed graph

ii) Spanning tree

b) Verify the following implication is a tautology by using truth table

$$\left[\left(P \vee Q\right) \wedge \left(P \rightarrow R\right) \wedge \left(Q \rightarrow R\right)\right] \rightarrow R$$

c) Let f : A→B and A = B = R, $f(x) = 2x^3+1$. Find f^{-1}.

d) Let, $A = \begin{bmatrix} 1 & 3 \\ 2 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 0 & -4 \\ 3 & -2 & 6 \end{bmatrix}$

Find A.B

Q4) Attempt any THREE : **[3 × 4 = 12]**

a) In a group of 120 students studying computer course, 84 can program C++ and 66 can program in Java. If 45 can program in both C++ and Java; how many of the students are not program in either of the language.

b) Define an explain :

i) Bijective function ii) Surjective function

c) Explain the symmetric and asymmetric directed graphs.

d) Explain different types of Logical connectivities with truth table.

Total No. of Questions : 4] **SEAT No. :**

P3304 **[Total No. of Pages : 2**

[4766] - 2004

M.C.A. (Commerce) (Semester - II)

204 : SYSTEM ANALYSIS AND DESIGN

(Credit System)

Time : 3. Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***All Questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***

Q1) Front office of Star Hotel is responsible for room reservations, room allocations and final settlement of bills. Any company or person can reserve rooms for their future stay. They have to indicate the period for which they need the room and the number of rooms rquired. Sometimes the reservations could be cancelled or the dates or number of rooms changed. For reservation; cancellation or modification of rooms, customer receives and acknowledgement from the hotel. **[14]**

a) Draw context level and first level DFD for the above case study.

b) Draw ERD.

Q2) *Attempt the following Questions (Any Two):* **[2 × 6 = 12]**

a) Explain various Phases of System Development Life Cycle.

b) Design a GUI form for opening a saving account in a bank.

c) Explain Role and skills of System Analyst in detail.

P.T.O.

Q3) *Attempt any Three:* **[3 × 4 = 12]**

a) Explain decision tree, decision table with proper examples.

b) Compare Prototyping Model Vs Spiral Model.

c) Explain Feasibility Study in detail.

d) Explain Types of Software Testing in detail.

Q4) *Write short Notes on (Attempt Any Three):* **[3 × 4 = 12]**

a) Agile Process

b) Types of System

c) Reverse Engineering

d) RAD Model

Total No. of Questions : 4] SEAT No. :

P3305 [Total No. of Pages : 3

[4766] - 2005

M.C.A. (Commerce) (Semester - II)

205 : DATABASE MANAGEMENT SYSTEM

(2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data if necessary.***

Q1) a) Attempt any Three : **[3 × 2 = 6]**

i) What is Dataware house?

ii) List Aggregate functions in SQL.

iii) What is strong entity set?

iv) List transaction properties.

b) In a college library books/periodicals are issued to students as well as to faculties. These books are categorized according to subjects. Each book has a unique id. Faculties can give new books/periodicals purchase requirement.

From a given case study list out entities attributes, Primary keys & relationships. Draw an E-R diagram for the same. **[8]**

Q2) Attempt Any Three : **[3 × 4 = 12]**

a) Explain features of good relational database design.

b) Write a note on serializability.

c) Define deadlock. Explain deadlock detection & recovery.

d) Explain recovery with concurrent transaction

P.T.O.

Q3) a) Consider the following relations & solve any two queries in relational algebra. **[2 × 2 = 4]**

Customer (Cno, Cname, City)

Quatation (quot-no, q - date, description, amt - quoted, Cno)

i) List all customers who live in 'Nashik' or 'Baramati'.

ii) Display names of customer having quotation for 'Chair'.

iii) Display names of customers along with city whose amt-quoted as Rs. 2,000

b) Consider the following relations & solve any four queries in SQL **[4 × 2 = 8]**

Doctor (dno, dname, city)

Patient (opdno, pat-name, phno)

Doctor-Patient (dno, opdno)

i) Create table query for patient table by adding primary key constraint & Pat-name should be NOT-NULL

ii) Add disease attribute in patient table.

iii) Insert a row in Doctor table.

iv) Display names of doctor who live in 'Pune' City.

v) Delete all patient details suffering from 'Swine-flu'.

Q4) Attempt Any Three : **[3 × 4 = 12]**

a) Explain various keys in DBMS.

b) Write a note on DBMS Architecture.

c) Following are the log entries at the time of system crash.

[Start - transaction, T_1]

[Write - item, T_1, A, 250]

[Commit, T_1]

[Checkpoint]

[Start - transaction, T_2]

[Write - item, T_2, B, 300]

[Commit, T_2]

[Start - transaction, T_3]

[Write - item, T_3, E, 250] system crash

If deferred update technique with checkpoint is used. What will be the recovery procedure?

d) Following is a list of events in an interleaved execution of set of transaction T_1, T_2, T_3 with two phase locking protocol. Is there a deadlock? If yes which transactions are involved in deadlock?

Time	Transaction	Code
t_1	T_1	lock (A, S)
t_2	T_2	lock (B, S)
t_3	T_3	lock (C, S)
t_4	T_1	lock (C, X)
t_5	T_2	lock (D, X)
t_6	T_1	lock (D, S)
t_7	T_2	lock (A, X)
t_8	T_3	lock (B, X)

Total No. of Questions : 4] SEAT No. :

P3306 [Total No. of Pages : 2

[4766] -2006

M.C.A.Commerce (Semester - II)

HUMAN RESOURCE MANAGEMENT

(CBCS) (2013 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Attempt any two from each question.***
3) ***Figures to the right indicate full marks.***

Q1) a) Define Human Resource management? Explain differece between HRM & personnel management. **[7]**

b) Briefly explain the employee selection process with any real world example. **[7]**

c) Discuss Human resource planning & explain factor considered for Human resource planning. **[7]**

Q2) a) Define Recruitment. Explain the sources of recruitment in brief. **[6]**

b) Explain methods of employee Training in brief. **[6]**

c) Explain the process of performance appraisal. **[6]**

Q3) a) Define HRD? Explain the importance of it. **[6]**

b) Explain the process of job analysis. **[6]**

c) Define union? Explain the reasons behind joining the union. **[6]**

P.T.O.

Q4) a) Explain the process of human resource planning. **[6]**

b) "Collective bargaining is an effective tool for grievances redressal". Explain the process collectivie bargaining . **[6]**

c) What are the challenges of HRM in the global environment? **[6]**

Total No. of Questions : 4] **SEAT No. :**

P3307 **[Total No. of Pages : 2**

[4766] - 3001
MCA (Commerce Faculty) (Semester - III)
(301) : Core Java
(2013 Pattern) (Credit System)

Time : 3 Hours] ***[Maximum Marks : 50***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***All questions carry equal marks.***
4) ***Assume suitable data if necessary.***

Q1) Attempt any seven : **[7 × 2 = 14]**

a) Explain the purpose of Javac and java tool.

b) Difference between print ( ) and println( ) method.

c) Why listIterator ( ) method is used?

d) What is stream?

e) List the methods with syntax used to convert the string in uppercase and lower case.

f) What is the default type of methods in interface?

g) What is the difference between throw ( ) and throws ( )?

h) Which package must be included when creating an applet?

i) Explain the purpose of getText ( ) and set Text ( ) methods.

Q2) Attempt any three : **[3 × 4 = 12]**

a) What is an adapter class? Give suitable example of implementing Window Listener.

b) How to create user defined Exception?

c) Define an abstract class staff with protected members id & name. Define a parameterized constructor. Define one subclass office staff with member department. Create n object of office staff and display all details.

d) Write a java program to accept n strings from the user and display the length of the longest string.

P.T.O.

Q3) Attempt any three : **[3 × 4 = 12]**

a) Define Applet? Explain types of Applet.

b) What is package? Write steps for creating user defined package?

c) Write a java program to implement following options on vectors :

i) Add Elements

ii) Delete elements

iii) Display

d) Write a java program which creates only one object. If user attempt to create second object, he should not create. (Use Exception Handling)

Q4) Attempt any three : **[3 × 4 = 12]**

a) Define Array? Explain its types with example.

b) Explain how java handles multiple inheritance?

c) Write a program to display "All the Best" in 5 different colors on screen. (Using AWT/Swings).

d) Write a simple java program to check whether a given number is Armstrong or not. (Use command line argument).

♦♦♦♦

Total No. of Questions : 4] SEAT No. :

P3309 [Total No. of Pages : 2

[4766] - 3003
M.C.A. (Commerce Faculty) (Semester - III)
303 : Object Oriented Software Engineering
(2013 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt any seven of the following. **[7 × 2 = 14]**

a) What is aggregation?

b) State symbols use in use case diagram?

c) What is the significance of role names in an object diagram?

d) What is object oriented modeling?

e) What is inception?

f) Define team member of agile software?

g) What is Elaboration?

h) What is branching?

i) What is objective of testing?

Q2) Attempt any three of the following: **[3 × 4 = 12]**

a) Explain software development life cycle in details.

b) Explain different types of unified process disciplines.

c) Explain different types of conceptual model of UML.

d) What is collaboration diagram? Explain basic symbol of collaboration diagram.

P.T.O.

Q3) Attempt any three of the following : **[3 × 4 = 12]**

a) Write a note on resource management component.

b) Draw class diagram for ATM banking system.

c) Explain different types of object oriented testing strategies in details.

d) "Aggregation can be recursive" , State true or false Justify.

Q4) Attempt any three of the following : **[3 × 4 = 12]**

a) Explain different types of views.

b) What are the four kinds of things used in the UML? Explain any one in details.

c) Draw state transition diagram for Inventory management system.

d) Explain testing life cycle in detail.

Total No. of Questions : 4]

SEAT No. : ____

P3310

[Total No. of Pages : 2

[4766] - 3004

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

305 : NETWORK OPERATIONS

(Credit System) (2013 Pattern)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***All Questions are compulsory.***
2) ***Figures to the rith indicate full marks.***

Q1) a) Solve any Three : **[3 × 4 = 12]**

i) Explain Ring Topology.

ii) Explain functionality of physical and Data link layer of OSI model.

iii) Write note on sliding window protocol.

iv) Write note on CSMA.

b) Solve any one : **[1 × 2 = 2]**

i) State Nyquist Bit rate formulae.

ii) State goals of computer Network.

Q2) Solve any Three : **[3 × 4 = 12]**

a) Write note on multiplexing and demultiplexing.

b) Compare Manchester and differential Manchester coding.

c) Explain stop and wait ARQ.

d) What is virtual circuit and Datagram? Compare.

P.T.O.

Q3) Solve any Three : **[3 × 4 = 12]**

a) What is use of defacto standards? Explain working of protocol stack.

b) Explain packet switching with its advantages & disadvantages.

c) Write note on IPV6 protocol.

d) What is channelization? Explain its protocols.

Q4) Solve any Three : **[3 × 4 = 12]**

a) Consider extremely noisy channel in which signal to noise ratio is zero. Find out capacity of the channel.

b) Explain logical addressing. Give the IPv4 address structure.

c) Explain coaxial cable with its type.

d) Explain physical address and logical address with the help of example.

⌘⌘⌘

Total No. of Questions :4] **SEAT No. :**

P3311 **[Total No. of Pages : 2**

[4766] - 3005
M.C.A. (Commerce Faculty)
306 : OPERATING SYSTEM
(2013 Pattern) (Semester - III)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn whenever necessary..***

Q1) Attempt the following (Any 7): **[7 × 2 = 14]**

a) Define Logical and Physical address.

b) What are system calls used for file system?

c) Define semaphore. State its types.

d) Define Turn around time. State its Formula.

e) Define External Fragmentation.

f) What are interrupts and Exceptions?

g) Define spooling.

h) What is Thrashing

Q2) Attempt the following (Any 3): **[3 × 4 = 12]**

a) What are the services provided by operating system? Explain it.

b) Explain segmentation with paging.

c) What is Reader-writer's problem? Explain it.

d) Calculate Average Turn around Time and Average waiting time for pre-emptive SJF And Non-preemptive SJF. Consider the following processes with their arrival time & Burst time.

Process	Burst Time	Arrival Time
P_1	2	1
P_2	3	2
P_3	5	0

P.T.O.

Q3) Attempt the following (Any 3): **[3 × 4 = 12]**

a) What is Process Control Block (PCB)? Explain it.

b) List the advantages and dis-advantages of Round-Robin scheduling.

c) Explain Deadlock Recovery Methods.

d) Consider following page reference string:

1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5.

assume there are 3 free frames find out page fault for Following?

i) FIFO

ii) LFU

Q4) Attempt the following (Any 3): **[3 × 4 = 12]**

a) What are the different file access method? Explain any one in ditail.

b) Explain SCAN algorithm for disk scheduling.

c) Explain Multiple Contiguous Memory Management scheme.

d) Consider the following snapshot of system A, B, C & D are resources type.

	Allocation			
	A	B	C	D
P_0	0	0	1	2
P_1	1	1	0	0
P_2	1	3	5	4
P_3	0	6	3	2
P_4	1	0	1	4

	Max			
	A	B	C	D
P_0	0	0	1	2
P_1	1	7	5	0
P_2	2	3	5	6
P_3	0	6	5	2
P_4	1	6	5	6

Available			
A	B	C	D
1	4	2	0

Total Resources			
A	B	C	D
4	14	12	12

Answer the following question using Banker's algorithm.

a) What is content of need array.

b) If system is in safe state give the safe sequence.

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Total No. of Questions : 4] **SEAT No. :**

P3312 **[Total No. of Pages : 1**

[4766] - 3006
M.C.A. (Commerce Faculty) (Semester - III)
(307) : M - Commerce
(2013 Pattern) (Credit System)

Time : 3 Hours] ***[Maximum Marks : 50***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Neat diagram must be drawn wherever necessary.***

Q1) Answer the following (Any Two) : **[14]**

a) Explain any three communication technology in detail.

b) Explain mobile voucher, coupons & loyalty cards in detail.

c) Explain role of Emerging wireless LAN's & 3G/4G wireless network.

Q2) Answer the following (Any Three) : **[12]**

a) Define M - Commerce. Explain any one emerging application in M - Commerce with example.

b) Explain concept of Regional server in transaction database access.

c) Explain pricing of mobile commerce services.

d) Explain WML & SMS.

Q3) Answer the following (Any Three) : **[12]**

a) Explain content development in mobile commerce services.

b) Explain mobile financial service management with example.

c) Explain database access in mobile environment.

d) Explain M - Commerce life cycle.

Q4) Write short note on (Any Three) : **[12]**

a) M - Commerce application - content purchase & delivery.

b) Data Reconciliation.

c) Role of wireless network in mobile commerce services.

d) Bluetooth.

♦♦♦♦

Total No. of Questions : 4] SEAT No. :

P3313 [Total No. of Pages : 1

[4766] - 3007

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

308 : MANAGEMENT INFORMATION SYSTEM

(2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Draw a neat labeled diagram whenever necessary.***

Q1) Answer the following (any two) : **[2 × 7 = 14]**

a) What is Decision making? Explain its concept in details.

b) Explain OOSAD Development Life Cycle.

c) What is MIS? Explain MIS and Information Resource Management.

Q2) Answer the following (any two) : **[2 × 6 = 12]**

a) Explain Basic model of organization structure.

b) Explain DM process in detail.

c) Explain method of Data and Information collection.

Q3) Answer the following (any two) : **[2 × 6 = 12]**

a) Explain need of system Analysis of existing system.

b) What is UML? Explain its applications.

c) Explain MIS development process model in details.

Q4) Answer the following (any two) : **[2 × 6 = 12]**

a) Explain OOT and MIS.

b) What is Decision? Explain types of Decision.

c) Explain how is organization a system.

Total No. of Questions : 4]

SEAT No. :

P3314

[Total No. of Pages : 2

[4766] - 4001

M.C.A. (Commerce) (Semester - IV)

401 : ADVANCED JAVA

(2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*

Q1) Attempt any seven from following : **[7 × 2 = 14]**

a) What is JAR file?

b) What is stub?

c) Write JDBC Drivers Name?

d) What are cookies?

e) What is Beans?

f) Explain sever socket?

g) Explain Thread priorities?

h) List all JSP directives?

Q2) Attempt any three from following : **[3 × 4 = 12]**

a) Explain thread life cycle?

b) What is RMI? Explain RMI Architecture?

c) Write a servlet program to display file count?

d) Write JDBC program to delete record from student table who belong to Pune?

P.T.O.

Q3) Attempt any three from following : **[3 × 4 = 12]**

a) What is session? How to handle session in servlet programming explain with example?

b) What are beans? Explain advantages and features of beans?

c) Write JSP program to accept username and age of user and display message on the basis of age whether user is eligible to vote or not?

d) Write JDBC program to display employee names whose salary is 7,10,000/-.

Q4) Attempt any three from following : **[3 × 4 = 12]**

a) What is JSP? Explain JSP Directives?

b) Explain following :

i) Driver Manager

ii) Result Set

c) Write client side program for echo server which request server on port number 5555?

d) Create thread to display odd numbers from 1 to 999, after every 2 seconds?

Total No. of Questions : 4]

SEAT No. : ____

P3315

[Total No. of Pages : 2

[4766] - 4002

M.C.A. (Commerce) (Semester - IV)

402 : VISUAL PROGRAMMING

(2013 Pattern) (Credit System)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***
4) ***All questions are compulsory.***

Q1) Attempt any seven of the following : **[7 × 2 = 14]**

a) What do you mean by a handle?

b) What are queued messages?

c) What do you mean by Peek Message ()?

d) What are virtual keys?

e) Explain Mapping Modes.

f) What is valid and Invalid Rectangle?

g) Differentiate between Draw Text() & TextOut()

h) What are different windows resources?

i) Explain the use of Stock Pens.

j) Explain any two GDI functions.

Q2) Attempt any three : **[3 × 4 = 12]**

a) What is Thread? Differentiate between multitasking and multithreading.

b) Explain the various ways to acquire the handle to the device context.

c) Explain Message Loop in detail?

d) Explain parameters of Create Window ().

P.T.O.

Q3) Attempt any three : **[3 × 4 = 12]**

a) What is Registration of class? Why is it necessary.

b) What is Timer? Explain the applications of timer.

c) How do you create a modal dialog box.

d) Differentiate between Pen and Brush.

Q4) Attempt any two : **[2 × 6 = 12]**

a) Write the program statements using win 32 APIs for the following (Win Main not required).

i) Display caret at the center of the client area and should be moved one character position up, down, left, right when corresponding arrow keys are pressed.

ii) Write a procedure to display two buttons '+' and '–'. The size of window should increase when '+' is pressed and should decrease when '–' is pressed.

b) Write a program to input two integer values using two edit boxes and third box to display factorial of the given values, when ok button is pushed.

c) Write short notes on (any two) :

i) ODBC

ii) WM-PAINT

iii) Hungarian Notation

Total No. of Questions : 4] SEAT No. :

P3316 [Total No. of Pages : 2

[4766] - 4003

M.C.A. (Commerce) (Semester - IV)

CS - 403 : DISTRIBUTED DATABASE SYSTEM

(2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt any seven. **[7 × 2 = 14]**

a) What is Autonomy? Explain different types of Autonomy.

b) What are promises of DDBMS?

c) What is query optimization?

d) State the different steps of query processing in a DDBMS.

e) Differentiate between Horizontal fragmentation & Vertical fragmentation.

f) What are correctness rules for fragmentation?

g) What are different ways in which global directories can be stored in DDBMS?

h) Define the concept of serializability in a DDBMS.

Q2) Attempt any three : **[3 × 4 = 12]**

a) Write a note on Top-Down Approach of DDB design.

b) Explain problems area of distributed database.

c) Write a short note on the "MDBS without a GCS" architecture.

d) Write a note on "Components of DDBMS" with the help of diagram.

Q3) Attempt any three : **[3 × 4 = 12]**

a) Write a note on In-Place-Order.

b) Write a note on Timestamp Ordering protocol in case of DDBMS.

c) Which are LRM commands? Explain any one in detail.

d) Write a note on Hierarchical deadlock detection.

P.T.O.

Q4) Attempt any three : **[3 × 4 = 12]**

a) Consider the following relational schema
Student(Sno, Sname, City, Class)
Subject(Sub_no, Sub_Name)
Stud_Sub(Sno, Sub_No, Marks)
Construct optimized operator tree for the following query.

```
Select Sname, City
from Student, Subject, Stud_Sub
where Student.Sno=Stud_Sub.Sno and
Subject.Sub_no=Stud_Sub.Sub_No and
Class="S.Y. Bcs" and Sub_name="Computer I"
and Marks>80
```

b) Consider the following relational schema
Emp(Eno,Ename,Title)& Pay (Title, sal)
Let P1:Sal<50000 and P2:Sal > 50000 be two predicates. Perform a horizontal fragmentation of relation PAY to obtain fragments PAY1 and PAY2.

c) Consider relation PROJ(Pno,Panme,Budget)
Assume that PROJ relation is horizontally fragmented as

$PROJ_1 = 6_{PNO<=20}(PROJ)$
$PROJ_2 = 6_{PNO>20\text{^}PNO<=50}(PROJ)$
$PROJ_3 = 6_{PNO>50}(PROJ)$

Draw an optimized operator tree for the following query. Convert the generic tree into reduced tree considering the fragmentation format

```
Select Budget
From PROJ
Where Pno = 30;
```

d) Let Q = {q1,q2,q3} be a set of quries, A={A1,A2,A3} be set of attributes and S = {S1,S2} be a set of sites. Matrix
i) below defines the attributes usage values and matrix
ii) defines the application access frequencies. Assume that refi(qk)=1 for all qk and Si and that A1 is key attribute. Use the bond energy and vertical partitioning algorithms to obtain a vertical fragmentation of the set of attributes in A.

	A1	A2	A3
q1	1	1	0
q2	1	0	0
q3	0	1	1

(a)

	S1	S2
q1	12	0
q2	20	20
q3	0	30

(b)

Total No. of Questions : 8]

SEAT No. : ____

P3317

[Total No. of Pages : 2

[4766] - 4004

M.C.A. (Commerce) (Semester - II)

404 : WEB TECHNOLOGIES

(2013 Pattern) (Credit System)

Time : 3 Hours] ***[Max. Marks :50***

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***Figures to the right indicate full marks.***

Q1) Answer the following.

a) Explain image map with example. **[5]**

b) Explain CSS class in detail. **[5]**

Q2) Answer the following.

a) Explain Javascript identifiers in detail. **[5]**

b) Explain PHP & Web server Architecture model. **[5]**

Q3) Answer the following.

a) Explain ordered & unordered list in detail. **[5]**

b) Write a Javascript to find Factorial of given number. **[5]**

Q4) Answer the following.

a) Write a HTML code to display following: **[5]**

<table>
<tr><td colspan="2">First</td></tr>
<tr><td>Second</td><td>Third</td></tr>
<tr><td colspan="2">Fourth</td></tr>
<tr><td>Fifth</td><td>Sixth</td></tr>
</table>

b) Write a vbscript code to display sum of digit of given number. **[5]**

P.T.O.

Q5) Answer the following.

a) Write steps for installing PHP. **[5]**

b) Explain client side web scripting in vbscript. **[5]**

Q6) Answer the following.

a) What is URL. Explain in detail. **[5]**

b) Explain text formating properties in CSS. **[5]**

Q7) Answer the following.

a) Explain SAX in detail. **[5]**

b) Explain validation of Javascript in detail. **[5]**

Q8) Answer the following.

a) Explain XML Schemas. **[5]**

b) Explain features of XML. **[5]**

Total No. of Questions : 4] SEAT No. :

P3318 [Total No. of Pages : 2

[4766] - 4005

M.C.A. (Commerce Faculty) (Semester - IV)

406 : IT PROJECT MANAGEMENT

(2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Attempt the following (Any 7) : **[7 × 2 = 14]**

a) Define project. Give examples.

b) What are the major processes involved in project integration management?

c) Write formula for Cost Performance Index (CPI).

d) What are the processes of project cost management?

e) Enlist the tools & techniques used for quality control.

f) What are the types of power?

g) Define Project Risk.

h) Which are the processes involved in project human resource management?

i) What you mean by quality assurance?

Q2) Attempt the following (Any 3) : **[3 × 4 = 12]**

a) Explain project life cycle & its phases.

b) Write note on Risk avoidance.

c) Explain COCOMO model.

d) Explain role of testing in software development.

P.T.O.

Q3) Attempt the following (Any 3) : **[3 × 4 = 12]**

a) Explain team development planning in project Human Resource Management.

b) Write note on configuration management.

c) What are the three main categories of outputs of quality control? Explain it.

d) What is Risk Response control? What is the need of it?

Q4) Attempt the following (Any 3) : **[3 × 4 = 12]**

a) Explain different types of cost estimation.

b) Write note on risk management.

c) What is the user role in system implementation?

d) Explain project organization structure with its merits and demerits.

Total No. of Questions : 4] SEAT No. :

P3319 [Total No. of Pages : 2

[4766] - 4006

M.C.A. (Commerce Faculty) (Semester - IV)

407 : CYBERLAW AND INFORMATION SECURITY

(2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Neat diagrams must be drawn whenever necessary.***
2) ***Figures to the right indicate full marks.***

Q1) Define and explain in brief any seven of the following : **[7 × 2 = 14]**

a) Copyright.

b) Importance of Information security.

c) Attribute of electronic Records.

d) Caeser cipher.

e) Cryptology.

f) Cipher.

g) SSL Record Format.

h) Trade Marks.

Q2) Discuss any three of the following : **[3 × 4 = 12]**

a) What are the essential ingredients of a symmetric cipher.

b) Briefly define the caeser cipher.

c) Explain the basic principles of Information Security.

d) Infringement of patent and remedies.

P.T.O.

Q3) Discuss any three of the following : **[3 × 4 = 12]**

a) Explain IP security Architecture.

b) Discuss simple columnar transposition technique with example.

c) Explain Brute force search technique.

d) Briefly explain IPR.

Q4) Discuss any three of the following : **[3 × 4 = 12]**

a) Explain the ESP packet format.

b) What are the principal elements of a public-key cryptosystem.

c) What is a transposition cipher?

d) What is steganography?

Total No. of Questions : 8] **SEAT No. :**

P3320 **[Total No. of Pages : 3**

[4766] - 4007

M.C.A. (Commerce Faculty) (Semester - IV)

408 : ADVANCED NETWORKING

(2013 Pattern) (Credit System)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates :

1) ***Answer any five questions.***
2) ***Figures to the right side indicate full marks.***

Q1) Attempt the following.

a) How SHTTP is different from SSL? **[4]**

b) What are the problems for full implementation of voice over IP? Do you think we will stop using the telephone network very soon? **[4]**

c) What is flow lable? State its significance. **[2]**

Q2) Attempt the following.

a) Explain how certificate-based authentication work. **[4]**

b) Discuss double DES? What is the idea behind meet in the middle attack? **[4]**

c) State and define types of multiplexing in the transport layer. **[2]**

P. T. O.

Q3) Attempt the following.

a) Write a short note on electronic money transfer. **[4]**

b) Define a routing protocol. Explain the types of routing with their respective routing protocols & implementations. **[4]**

c) Calculate the HLEN value if the total length is 1200 bytes, 1176 of which is data from upper layer. **[2]**

Q4) Attempt the following.

a) What is improvement over clear text passwords? What are its drawbacks? **[4]**

b) Alice meets Bob & says zewfidrkzfe. If she is using modified version of caesar cipher, what does she want to convey? **[4]**

c) List all SET participants. **[2]**

Q5) Attempt the following

a) Given two prime numbers P=19 & Q=7. Find out N,E & D in an RSA encryption process. **[4]**

b) Why does UDP exist? Would it not have been enough to just let user processes send raw IP packets? Explain in detail. **[4]**

c) What is Kerberos? State the Parties involved in it. **[2]**

Q6) Attempt the following

a) Explain the structure of a router. **[4]**

b) What would be the transformation of message HAPPY BIRTHDAY TO YOU using railfence technique? **[4]**

c) In the standard Ethernet, if the maximum propagation time is 25.6 μ s., what is the minimum size of frame? **[2]**

Q7) Attempt the following

a) Write a short note on 3-D secure protocol. **[5]**

b) What are the typical contents of digital certificates? **[5]**

Q8) Attempt the following

a) List the different technologies used to connect two remote devices in point to point WAN. Explain any one in detail. **[5]**

b) Write a note on ICMPV4 package. **[5]**