

Total No. of Questions : 6]

SEAT No. :

P1869

[Total No. of Pages : 1

[4672] - 1001

M.C.M. (Semester - I)

101 - FUNDAMENTAL OF INFORMATION TECHNOLOGY

(2013 Pattern)

*Time : 2½ Hours]*

*[Max. Marks : 50*

*Instructions to the candidates:*

- 1) *Question No. 1 and 6 are compulsory.*
- 2) *Solve any three from the remaining.*
- 3) *Figures to the right indicate full marks.*

**Q1)** a) Explain Second Generation of Computer. [5]

b) What do you mean by topology? Explain universal topology. [5]

**Q2)** a) Explain laser printer, characteristics, advantages & disadvantages. [5]

b) Explain Cache Memory. [5]

**Q3)** What do you mean by Communication Media? Explain. [10]

**Q4)** a) Explain Unicode. [5]

b) Convert the following numbers (Any Two) [5]

i)  $9BC = ?_{10}$

ii)  $234 = ?_8$

iii)  $54 = ?_2$

**Q5)** Explain different Functions of operating System. [10]

**Q6)** Write Short Notes on (Any Two) [10]

a) Bar Code readers.

b) Pen Drive.

c) Multiprogramming.



Total No. of Questions : 7]

SEAT No. :

P1870

[Total No. of Pages : 2

[4672] - 1002

M.C.M. (Semester - I)

102 : 'C' PROGRAMMING AND DATA STRUCTURE

(2013 Pattern)

*Time : 3 Hours]*

*[Max. Marks : 50*

*Instructions to the candidates:*

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

**Q1)** A) Find and explain output of the following programs - Assume suitable header files. **[6]**

a) 

```
# define CUBE (x)  x*x*x
Void main()
{
int a, b= 3;
    a= CUBE (b++);
    printf ("a= %d, b=%d", a,b);
}
```

b) What will the content of 'file.c' after executing the following program?

```
Void main()
{
FILE * fp1, fp2;
fp1= fopen ("file.c","w");
fp2 = fopen ("file.c", "w");
fputc ('A', fp1);
fputc ('B', fp2);
fclose (fp1); fclose (fp2);
}
```

**P.T.O.**

- B) Explain the following (Any Two) [4]
- a) Linked list
  - b) Recursive function.
  - c) Pointer.

**Q2)** Write a program to display following pattern using nested loops. [10]

```
1
2 3
4 5 6
7 8 9 10
```

**Q3)** Write a program to accept two string from the user and copy the contents of second string at the end of first string. [10]

**Q4)** Write a recursive function which receives two numbers and return the multiplication of two numbers without using multiplication operator. [10]

**Q5)** Write a program to accept billno, date, amt of 30 bills. display all the records having billing amount greater than 1000. [10]

**Q6)** Write a program to accept file name from the user and count the number of alphabets digits and special characters present in the file. [10]

**Q7)** Write a program to accept the number from the user and display by converting to binary number. [10]



Total No. of Questions : 5]

SEAT No. :

**P1871**

[Total No. of Pages : 2

**[4672] - 1003**

**M.C.M. (Semester - I)**

**103 - SOFTWARE ENG. WITH UML**

**(2013 Pattern)**

*Time : 2½ Hours]*

*[Max. Marks : 50*

*Instructions to the candidates:*

- 1) *Q. 1 & Q.5 are compulsory.*
- 2) *Solve any two from remaining.*
- 3) *Neat diagram carry marks.*

**Q1)** 'Bhojan' - a well-known restaurant wants to start home delivery of food. Following information has been gathered by system Analyst.

- Customer places order by phone in person.
  - Reception Clerk fills the order form in duplicate one for kitchen manager & other for office copy.
  - Kitchen prepares food as per order sends to reception along with signed copy of KoN.
  - KON - Kitchen order Note prepare by kitchen manager in triplicates. Two copies for kitchen and one for A/c department.
  - Delivery boy delivers food to customer along with Bill.
  - Customer pays the Bill in cash & Submitted to A/c dept.
- a) Draw ER Diagram. [7]
  - b) Design suitable layout of daily cash received and daily order booking. [7]

**Q2)** a) Explain various phases of SDLC. [6]

b) Explain function Decomposition in detail. [6]

**P.T.O.**

**Q3)** a) Design state transition Diagram for Chess Game. [6]

b) Explain prototyping model of SDLC. [6]

**Q4)** Consider whole transaction of online Reservation system.

a) Draw a Use - Case Diagram for online Reservation system [6]

b) Draw Class - Diagram for online Reservation system. [6]

**Q5)** Write Short Note (Any Three) [12]

a) Decision Tree & Decision Table.

b) Data Abstraction & Data Encapsulation.

c) RUP.

d) SSAD & OOAD.



Total No. of Questions : 7]

SEAT No. :

P1851

[Total No. of Pages : 2

[4672]-101

M.C.M. (Semester - I)

101 : FUNDAMENTALS OF INFORMATION TECHNOLOGY

(2012 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Q. 1 and Q. 7 are compulsory.
- 2) Solve any 4 questions from the remaining.

**Q1)** Draw block diagram of a digital computer and explain characteristics of computer. [10]

**Q2)** Explain working of any 2 output devices. [10]

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

- a)  $(100011)_2 = ( ? )_{16}$
- b)  $(6F)_{16} = ( ? )_2$
- c)  $(345)_{10} = ( ? )_8$
- d)  $(10101101)_2 = ( ? )_8$
- e)  $(544)_8 = ( ? )_{10}$

**Q4)** Explain OSI model with diagram. [10]

**Q5)** Explain networking components in detail. [10]

**Q6)** Differentiate between Windows & Linux Operating System. [10]

**P.T.O.**

**Q7)** Write short notes on (any four)

**[20]**

- a) Compiler and interpreter
- b) Types of Memory
- c) Network topologies
- d) Types of printers
- e) Time Sharing concepts



Total No. of Questions : 7]

SEAT No. :

P1852

[Total No. of Pages : 3

[4672]-102

M.C.M. (Semester - I)

102 : "C" PROGRAMMING & DATA STRUCTURE

(2012 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates :

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

**Q1) A)** Find and explain the output of the following programs. Assume suitable header files. **[12]**

i) Void Main ( )

```
{  
    int a = 3, b = 4, c = 2;  
    a = b >> c;  
    b = a << c;  
    c = c << a >>b;  
    Printf ("a = % d, b = % d, c = % d", a,b,c);  
}
```

ii) Void main ( )

```
{  
    void disp (char *);  
    disp ("Hello");  
}  
Void disp (char * s)  
{  
    If (*s)  
        disp (s + 1);  
    putch (* s);  
}
```

**P.T.O.**



```

iii) Void main ( )
    {
        int x = 2, y = 3;
        x = ++ x * ++ x;
        y = ++ y * ++ y;
        x = x ++ * y ++;
        y = y ++ * x ++;
        printf ("x = % d, y = % d", x,y);
    }

```

```

iv) Void main ( )
    {
        Void swap (int *, int *);
        int a = 5, b = 7;
        swap (&a, &b);
        printf ("a = % d, b = % d", a,b,);
    }
Void swap (int * a, int * b)
    {
        int c = * a;
        * a = * b;
        * b = * c;
    }

```

- B) Explain the following (any two) [8]
- a) Queues.
  - b) Recursive functions.
  - c) Dynamic Memory allocation.

**Q2)** Write a program to Display following pattern using nested loops. [10]

```

1
2 3
4 5 6
7 8 9 10

```

**Q3)** Write a program to accept multiline text from the user ended by character 'g' and the program should display

- a) no. of tab spaces.
- b) no. of blank spaces.
- c) no. of alphabets and
- d) no.of lines in a given text.

**[10]**

**Q4)** Write a recursive function which receives the number and return the factorial value of that number. **[10]**

**Q5)** Write a program to accept if code, desc, rate and qty of 30 items Display all the records in tabular form. **[10]**

**Q6)** Write a program to accept the two filenames from the user and copy the contents of first file to the second file. **[10]**

**Q7)** Write a program to accept the 10 numbers and display the lowest, highest and average value from these numbers. **[10]**



Total No. of Questions : 7]

SEAT No. :

**P1853**

[Total No. of Pages : 2

**[4672]-103**  
**MCM (Semester - I)**  
**103 : SOFTWARE ENG. WITH UML**  
**(2012 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) *Q. 1 and Q. 7 are compulsory.*
- 2) *Solve any 4 questions from remaining.*
- 3) *Neat diagram carry marks.*

**Q1)** Bank collected fix deposits from general public. Fixed Deposits carry different interest rates according to their duration. Customers have to fill FD application from mentioning duration, amount, nominee etc. FD's can be owned individually or jointly. Customer can withdraw it prematurely. (with same interest deduction)

- a) Draw DFD **[5]**
- b) File Design any Two **[5]**
- c) Context level Diagram **[5]**

**Q2)** Draw use case & class Diagram for online Hall Booking system. Customer Book hall online for specific date (s) and time along with Lunch, dinner. etc. **[10]**

**Q3)** Explain Decision Tree and Decision Table with suitable example. **[10]**

**Q4)** Draw Activity Diagram for on-line matrimonial portal. **[10]**

**Q5)** Explain different users involved in SDLC and also explain their role in detail. **[10]**

**P.T.O.**

**Q6)** Explain SRS in Details.

**[10]**

**Q7)** Write short notes (any three)

**[15]**

- a) RAD
- b) Input / Output Design
- c) Fact finding Techniques
- d) CRC



Total No. of Questions : 7]

SEAT No. :

P1826

[Total No. of Pages : 3

**[4672] - 11**  
**M.C.M. (Semester - I)**  
**101 : 'C' PROGRAMMING**  
**( 2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:-*

- 1) *Question No. 1 is compulsory.*
- 2) *Solve any five from the remaining.*

**Q1) A)** Find and explain output of the following code. Assume suitable header files. (Any 3) **[12]**

i) `main()`

```
{  
  
    int a = 25;  
  
    printf ("\t %d\t\t%d\t\t%d", a>25, a = 50, a == 50);  
  
}
```

ii) `# define CUBE(a) a * a * a`

```
void main()  
  
{  
  
    int a;  
  
    a = CUBE (5 - 3);  
  
    printf ("\n a = %d", a);  
  
}
```

**P.T.O.**

```

iii) void main()
    {
        void swap (int, int);
        int a = 5, b = 7;
        swap (a,b);
        printf ("\n a = %d, b = %d", a,b);
    }
void swap (int a, int b)
{
    int  c = a ;
        a = b ;
        b = c ;
}
iv) void main ()
    {
        int x ;
        for (x = 0; x <=5; x ++ )
        {
            switch (x)
            {
                case 2 :  printf ("A");
                           continue;
                case 3 :  break;
                case 4 :
                case 5 :  printf ("BB"); break;
                default : printf ("C");
            }
        }
    }

```

- B) Explain the following (Any Two) : [8]
- i) Data storage classes
  - ii) Command line arguments
  - iii) String functions

**Q2)** Write a program to Display following pattern using nested loops. [10]

```
    1
   2 2
  3 3 3
 4 4 4 4
```

**Q3)** Write a program to accept two  $3 \times 3$  matrices and display the subtractions on the screen. [10]

**Q4)** Write a recursive function which receives the 2 numbers and return the multiplication of two nos. without using multiplication operator. [10]

**Q5)** Write a program to accept billno, custcode, name and amount of 100 bills and print all the details by sorting them on amount in descending order. [10]

**Q6)** Write a program to accept two file names from the command line & copy the contents of first file to second file. [10]

**Q7)** Write a program to accept the 10 numbers & display the numbers by sorting them in ascending order. [10]



Total No. of Questions : 7]

SEAT No. :

P1827

[Total No. of Pages : 2

[4672] - 12

M.C.M. (Semester - I)

**FUNDAMENTALS OF INFORMATION TECHNOLOGY**

( 2008 Pattern)

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:-*

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

**Q1) a)** Define Computer. Discuss various Computer Generations with its advantages and disadvantages. **[12]**

b) Differentiate between Multiprogramming and Multiprocessing. **[8]**

**Q2)** Classify the Computer Memories. Explain any two Secondary storage devices in detail. **[10]**

**Q3)** Define Operating System. Explain the functions of an Operating System. **[10]**

**Q4)** Define Computer Network and explain various types of it in detail. **[10]**

**Q5)** Elaborate OSI Model with the help of a neat diagram. **[10]**

**P.T.O.**



**Q6)** Explain BCD and EBCDIC in detail.

**[10]**

**Q7)** Solve the following :

**[10]**

a)  $(254)_{10} = (?)_2$

b)  $(10100011)_2 = (?)_{10}$

c)  $(754)_8 = (?)_{10}$

d)  $(FEE)_{16} = (?)_{10}$

e)  $(122)_8 = (?)_2$



Total No. of Questions : 6]

SEAT No. :

P1828

[Total No. of Pages : 2

[4672] - 13

M.C.M. (Semester - I)

**103 : SOFTWARE ENGINEERING AND BUSINESS PROCESS**

**( 2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:-*

- 1) *Question Nos. 1 and 6 are compulsory.*
- 2) *Solve any three from Q. Nos. 2 to 5.*
- 3) *Write assumptions if necessary.*

**Q1)** In a library material like books, journals, magazines and CDs are stored. This materials are of various subjects of various courses run by the Institute and within the subject there are various topics for which these materials can be used. One material can be used for many subjects and for many courses. The members like students, teaching staff, visitors and non-teaching staff can get issued these materials on their names and the materials issued are return after seven days. If it is not return on time, a fine Rs-1 per day is charged to the member.

- a) **Draw ER Diagram.** [10]
- b) **Any two Output Reports.** [10]

**Q2)** A company has set of departments. Each department has a set of employees, a set of projects and a set of offices. Each employee has a job history (set of jobs that employee has held). For each such a job the employee also has salary history (set of salaries received while employed on that job). Each office has a set of phones. **Draw use case diagram for the above.** [10]

**P.T.O.**

**Q3)** ABB Co. Ltd. Decides to give festival bonus to all its employees for which the management has divided the employees into three categories, namely, Administrative Staff (AS), Office Staff (OS), and Workers (W) by considering the following rules.

- a) If the employee is permanent and in the AS category the bonus amount is three months salary.
- b) If the employee is permanent and in the OS category the bonus amount is two months salary.
- c) If the employee is permanent and in the W category the bonus amount is one month's salary.
- d) If the employees are temporary then half of the amount is given to them as per the permanent employee's bonus amount.

**Draw a decision tree to represent the above case. [10]**

**Q4)** Explain different users involved in Software Development Life Cycle and also explain their roles in detail. [10]

**Q5)** Explain various skills required by Software Engineer. [10]

**Q6)** Give short notes : (Any Four) [20]

- a) Types of System
- b) Reverse Engineering
- c) CASE Tools
- d) Feasibility Study
- e) Software Implementation Strategies
- f) Feasibility Study
- g) Role of System Analyst



Total No. of Questions : 7]

SEAT No. :

P1830

[Total No. of Pages : 2

[4672] - 15

M.C.M. (Semester - I)

105 : WEB PROGRAMMING AND E-COMMERCE

( 2008 Pattern)

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:-*

- 1) *Question Nos 1 & 7 are compulsory.*
- 2) *Attempt any four from the remaining.*
- 3) *Figures to the right indicate full marks.*
- 4) *Draw neat diagrams wherever necessary.*

**Q1)** What is E-Commerce? Explain various E-Commerce models and anatomy of E-commerce application. **[10]**

**Q2)** Define Internet. Discuss in detail Architectural framework for E-Commerce with suitable diagram. **[10]**

**Q3)** What is software agent? Explain their characteristics. **[10]**

**Q4)** Discuss in detail various online payment methods. **[10]**

**Q5)** List and explain various types of firewall with their advantages and disadvantages. **[10]**

**P.T.O.**

**Q6)** What is Internet Service Provider? Explain various types of ISP. **[10]**

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

- a) Direct Marketing
- b) PCI - DSS
- c) EDI
- d) Online profit building of consumer
- e) Virus and its types



Total No. of Questions : 5]

SEAT No. :

P3117

[Total No. of Pages : 1

[4672]-2002

M.C.M. (Semester - II)

**202 : Principles of Management and Organizational Behavior  
(2013 Pattern)**

*Time : 2.5 Hours]*

*[Max. Marks : 50*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *All questions carry equal marks.*

**Q1)** Define management. Explain various functions of management.

OR

Explain various skills required for manager.

**Q2)** Elaborate the contributions put forth by F.W Taylor towards evolution of management thoughts.

OR

Explain process of decision making under uncertainty.

**Q3)** Explain various types of decisions to be taken by manager.

OR

Define OB. Explain different concepts in OB.

**Q4)** Explain advantages and disadvantages of group formation.

OR

Define leadership. Explain the various styles of leadership.

**Q5)** What is conflict? Explain various types of conflict.

OR

Explain X and Y theory of Motivation.



Total No. of Questions : 5]

SEAT No. :

**P1874**

[Total No. of Pages : 2

**[4672] - 2003**

**M.C.M. (Semester - II)**

**203: ADVANCED RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS) USING ORACLE  
(2013 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 50*

*Instructions to the candidates:*

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

Consider the following tables to solve queries and PL / SQL given below-  
EMPLOYEE (E \_ No, Ename, Job, Mgr, Hiredate, Salary, Comm, Deptno)  
DEPARTMENT (Deptno, Dname, Location)

**Q1) Solve any ten Queries given below:- [20]**

- i) Create two tables EMPLOYEE and DEPARTMENT with primary key and foreign key constraint.
- ii) Find the average salary of all CLERKS Location - wise.
- iii) Find total and average salary of the employees department - wise.
- iv) Display the Number of Employees who are getting any commission.
- v) Display the Number of Employees job - wise.
- vi) Display the Name of the Employees whose salary is not in the range of Rs. 5000 to Rs. 12000.
- vii) Delete the records of Employees whose salary is less than Rs. 12000.
- viii) Increase the salary of employee by 10% who are CLERK.
- ix) Give the 10% commission to the employees who are 'SALESMAN' (Commission on the basis of salary).
- x) Display the Name of the employees who are working in ACCOUNT department.
- xi) Add a constraint NOT NULL to column HIREDATE, if the table is already created.

**P.T.O.**

- Q2)** Write a cursor that allows you to pass Deptno. Then it computes the total salary paid to employees to that department. It also determines how many employees have salaries higher than Rs. 35000/-. **[10]**
- Q3)** Write a Function Get\_Name () which accepts the E\_No and return Name of the employee. Also write a PL / SQL block to CALL this function and display the Name of the employee. **[10]**
- Q4)** Write a procedure which checks whether E.No 1007 exist or not in the Employee table and if not then display a message "Employee no is not Valid". **[10]**
- Q5)** Create a trigger that allows changes to Employee table only during business hours from 8 : 00 A.M. to 5 : 00 P.M. **[10]**





Total No. of Questions: 7]

SEAT No. :

P1875

[Total No. of Pages : 2

**[4672] - 2004**  
**MCM (Semester - II)**  
**204 - JAVA PROGRAMMING**  
**(2013 Pattern)**

*Time : 2½ Hours]*

*[Max. Marks : 50*

*Instructions to the candidates:*

- 1) *Question No.1 is compulsory.*
- 2) *Solve any four from the remaining.*
- 3) *All questions carry equal marks.*

**Q1)** Solve the following:

- a) What is private access specifier?
- b) What is method overloading?
- c) What is use of super keyword?
- d) What is package?
- e) What are the stages of Thread Life Cycle?

**Q2)** Write application that will read a text file. Count number of characters, words and lines in a file.

**Q3)** Write an applet to display a line between two points on a mouse click.

**Q4)** Write application that will accept a number from user and divide it by zero. Write exception handling code (zero dividend)

**Q5)** Write threaded Application where first thread prints even numbers from 1 to 100 and other thread to print alternative characters from A to Z.

**P.T.O.**

**Q6)** Write abstract class staff with abstract method, calculate salary() and instance method Lint - Data ( int no, string name).

Write Typist class as sub - class of staff with speed as instance variable, if speed is less than 40, then salary 4000 else 5000.

Write main class to implement above classes.

**Q7)** Write notes on (any 2)

- a) Adapter Class.
- b) Random Class.
- c) Features of Java.



Total No. of Questions : 6]

SEAT No. :

P1856

[Total No. of Pages : 2

[4672] - 202

**M.C.M. (Semester - II)**

**202 : PRINCIPLES AND PRACTICES OF MANAGEMENT AND  
ORGANIZATIONAL BEHAVIOR  
(2012 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 different organizational structures with suitable example. **[15]**

b) Explain the group development life cycle. **[10]**

**Q2)** Explain the Henri Fayol's management principles. **[15]**

**Q3)** Justify decision making is an essential function of management and explain the steps of decision making process. **[15]**

**Q4)** In today's world motivation to the employees is the most critical need explain using IT industry example. Discuss Maslow's need hierarchy theory. **[15]**

**Q5)** Define group dynamics? How effective teams play vital role in organizational effectiveness. **[15]**

**P.T.O.**

**Q6)** Short notes (any three):

**[15]**

- a) Territorial organization.
- b) Leadership styles
- c) Need of group
- d) Line and staff organization.
- e) Ego states.



Total No. of Questions : 7]

SEAT No. :

P1857

[Total No. of Pages : 2

[4672] - 203

M.C.M. (Semester - II)

203 - ADVANCED RDBMS USING ORACLE

(2012 Pattern)

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) *Q. Nos. 1 and 7 are compulsory.*
- 2) *Attempt any three from the remaining.*
- 3) *Figure to the right indicate full marks.*
- 4) *Draw Neat diagrams wherever Necessary.*

Consider the following tables to solve Queries and PL/SQL below:-

Book (Book\_No, Book\_Name, Subject, Publisher, price, Author \_ id)

Author (Author\_id, Author \_ Name)

**Q1)** Solve any ten Queries given Below :-

**[20]**

- a) Create two tables with constraints.
- b) Display the books whose author is 'S. K. SINGH'
- c) Modify the price of the Book 'Marketing Mgnt' written by "M. SHARMA" and set it as Rs. 500/-
- d) Delete the records of all the books whose publisher is 'TMH'
- e) Display total Number of books of 'HR' subject
- f) Display author name who has not published any book on 'HR' subject.
- g) Display the Name of the book which contains 'Finance' word.
- h) Display the Maximum number of books published by each Author.
- i) Display the cheapest book in every subject.
- j) Display the books in the price range Rs. 300 to Rs. 500.
- k) Add a new column 'E-mail-id' in Author table.
- l) Display the Book Name with Author Name.

**P.T.O.**

**Q2)** Write a PL/SQL program to Accept Book\_No and print Book\_Name, Price and Author Name. **[10]**

**Q3)** Write a cursor which will display top 5 costly Books (Display Book \_ Name, Author \_ Name and Price of the Book). **[10]**

**Q4)** Write a function which will Accept Book\_No and Return the Book details with Author Name. **[10]**

**Q5)** Write a package specification which contains following :- **[10]**

- a) A procedure which Accept the Number and calculate the factorial of given Number.
- b) A function which Accept a Number and return the square of that Number.

**Q6)** Write a trigger, which will not allow the User to update the records on 'Book' table after 5 p.m. **[10]**

**Q7)** Write Short Notes (Any four) **[20]**

- a) Data Types in oracle
- b) Exception Handling.
- c) Group by ----- Having clause
- d) Types of Joins in oracle
- e) To \_ Char ()



Total No. of Questions : 7]

SEAT No. :

P1858

[Total No. of Pages : 2

**[4672] - 204**  
**M.C.M. (Semester - II)**  
**204 - JAVA PROGRAMMING**  
**(2012 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) *Question 1 is compulsory.*
- 2) *Solve any five from remaining.*

**Q1) a)** Solve the following **[10]**

- i) Give class hierarchy for Exception class.
- ii) What is thread priority? What is default priority?
- iii) Which are different types of constructors?
- iv) Explain applets tag's any four attributes.
- v) What are adapter classes?

**b)** Write java program to generate following output **[10]**

```
1                                     1
1  2                                 2  1
1  2  3                               3  2  1
1  2  3  4                             4  3  2  1
1  2  3  4  5                           4  3  2  1
```

**Q2)** Write program to create following threads. **[10]**

- a) To print squares of first 25 natural numbers
- b) To print 50 terms of fibonacci series (0,0,1,2,3,5,8,13.....)

**P.T.O.**

**Q3)** Write applet application to accept student information using suitable user interface, Display accepted information after clicking Show button. **[10]**

**Q4)** Write java application that accepts a number on command line and show sum of its digits as output. Display error if argument is not passed or argument is not numeric. (Use user defined exception). **[10]**

**Q5)** Define interface stack with variable maxSize, methods push () that adds element of array (after accepting value from user) and pop () that retrieves a value from array. Implement the interface and show the functionality. **[10]**

**Q6)** Write notes on (Any 2) **[10]**

- a) Layout managers
- b) Access modifiers
- c) Explain the terms final, finally and finalize

**Q7)** Write a program to read content of file and replace 'the' word with 'other'. **[10]**





Total No. of Questions : 7]

SEAT No. :

P1832

[Total No. of Pages : 2

[4672] - 22

M.C.M. (Semester - II)

**202 : DATABASE MANAGEMENT SYSTEM (D.B.M.S.)**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:-*

- 1) *Question No. 1 is compulsory.*
- 2) *Solve any five from the remaining questions.*

**Q1) a)** Normalise the following case upto 3 NF : **[12]**

Daulatnagar Electric Company is a distributor of electricity in a small town having about 10,000 consumers. The consumers are divided into three categories i.e. Agriculture, Commercial, Domestic for whom different rates per unit are chargeable according to a slab-wise table. There is also minimum charge for each category. The billing is made according to reading which was reported by meter readers working with the company. The bills are paid by the consumers at a central collection center of the company.

b) Explain various types of attributes in ER Diagram. **[8]**

**Q2)** Explain differences between NDM and RDM with proper example. **[10]**

**Q3)** Explain Codd's Rule. **[10]**

**Q4)** Explain Concept of Checkpoint. State when and how it occurs. **[10]**

**P.T.O.**

**Q5)** Explain Three Tier Architecture of DBMS; its advantages and disadvantages. **[10]**

**Q6)** Explain any five operations in Relational Algebra. Write suitable example of each. **[10]**

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

- a) Data Warehousing
- b) Data Distribution Techniques
- c) Time - Stamps



Total No. of Questions : 5]

SEAT No. :

P1833

[Total No. of Pages : 2

[4672] - 23

M.C.M. (Semester - II)

203 : ORACLE

(2008 Pattern)

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:-*

- 1) *Question no. 1 and 5 are compulsory.*
- 2) *Attempt any 2 from the remaining.*
- 3) *Write your assumptions.*
- 4) *Figure to right indicate full marks.*
- 5) *Draw neat diagrams wherever necessary.*

**Q1)** Consider the following tables to solve any 10 SQL queries given below: **[20]**

**Emp** (eno, e\_name, dob, gender, sal, deptno, design, address, city, date\_of\_join)

**Dept** (deptno, dept\_name, loc)

- a) Create **Dept** table with constraints.
- b) Create **Emp** table with constraints.
- c) Display department wise total number of employees.
- d) Display list of employees who joined before '01-Jan-2013'.
- e) Display list of employees whose name begins with 'R'.
- f) Display list of female employees whose designation is 'Mgr'.
- g) Display the employee details along with dept name.

**P.T.O.**

- h) Display the list of all employees whose salary is greater than 5000 and their city is 'Pune'.
- i) Display list of employees whose salary is in between 12000 and 25000.
- j) Update the list of employees whose city is Nashik by adding 1000 to their salary.
- k) Delete the records of employees whose salary is less than 1 lakh.

**Q2)** Solve the followings : **[10]**

- a) Write a PL/SQL program to print factorial of 5.
- b) Explain cursors in detail.

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

- a) Write a PL/SQL program to print sum of two numbers.
- b) Write a trigger will not allow any operation on EMP table on Sunday.  
Table : **EMP** (Eno, Ename, Dno)

**Q4)** Solve the followings : **[10]**

- a) Write a Function **Stud\_insert** which will accept student details (Stud\_no, stud\_name, course) and insert the record in STUD table and return proper message.
- b) Write a Procedure **P\_even\_odd** which will accept a number & print whether it is even or odd.

**Q5)** Write short notes on (**any 6**) : **[30]**

- a) Constraints
- b) Date Functions
- c) Group Functions
- d) Set Operators
- e) Data types in Oracle
- f) Joins
- g) Numeric Functions.



Total No. of Questions : 7]

SEAT No. :

P1834

[Total No. of Pages : 3

**[4672] - 24**  
**M.C.M. (Semester - II)**  
**204 : BASIC JAVA**  
**( 2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:-*

- 1) Question Nos. 1 and 7 are compulsory.*
- 2) Solve any three from Q.2 to 6.*
- 3) Figures to the right indicate full marks.*

**Q1)** Predict the outputs for the following and give an explanation : (Any Three)[15]

- i) What is the output of the following program?

```
class A
{
public static void main(String[]s)
{
System.out.println(s[1]+s[2]+s[3]);
}
}
```

Program is run as-java A 1 2 3 4

**P.T.O.**

```

ii) class arr{
    public static void main(String args[])
    {
        int var [] = new int[10];
        for (int i = 0; i < 10; ++i) {
            var [i] = i + 1;
            System.out.print(var[i]+ " ");
        }
    }
}

```

iii) What is the output of the following program?

```

int f = 1, i = 2;
do
{
    f *= i;
} while (++i < 5);
System.out.println(f);

```

```

iv) String s1 = "hello world";
    s1.toUpperCase( );
    System.out.println(s1);

```

**Q2)** Create a form with check boxes-books, CD, Journals. Every item carries equal price Rs. 100. Have a button on the form. When user selects the items and clicks on the button, display the total for selected items in the label. **[15]**

**Q3)** Create an interface Manager with methods show details. Implement the interface for HRManager class. In main class create the objects for the concrete classes HRManager and call the method. **[15]**

**Q4)** Write an application that will create the following threads : **[15]**

- a) To display the following sequence (1,2,3,4,5.).
- b) The series A,B,C,D.

**Q5)** Write an application to accept the name and age of an employee through command line. If age of user is < 21 years throw user defined exception "InvalidAgeException". **[15]**

**Q6)** Write an application to accept two file names. Copy the contents of file 1 to file 2. Perform necessary validations. **[15]**

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

- a) Vector
- b) Thread Synchronization
- c) Applet Life Cycle



Total No. of Questions : 3]

SEAT No. :

P1835

[Total No. of Pages : 3

[4672] - 25

M.C.M. (Semester - II)

205 : CORE RUBY

( 2008 Pattern)

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No. 1 and 3 are compulsory.*
- 2) *Neat Diagrams carry marks.*

**Q1)** Find the output (Any 5) :

**[15]**

i) `h = {"a" =>101, "b"=>201, "c"=>301}`

`h.values_at("a","c")`

`h.values_at("a","c","z")`

`h.default = "cat"`

`puts h.values_at("a","c","z")`

ii) `puts 12345.to_s`

`puts 12345.to_s(2)`

`puts 12345.to_s(8)`

`puts 12345.to_s(10)`

`puts 12345.to_s(16)`

`puts 12345.to_s(36)`

**P.T.O.**



```

iii) def say_goodnight(name)
      result = "Good night, #{name}"
      return result
    end

    puts say_goodnight ('Papa')

iv)  song = 1
      sam = " "
      def sam.play(a)
        "duh dum, da dum de dum..."
      end

      puts "gin joint".length
      puts "Rick".index("c")
      puts - 1942.abs
      puts sam.play(song)

v)   square = 2
      while square < 1000
        puts square = square*square
      end

vi)  a = [3.14159, "pie", 99]
      puts a.class
      puts a.length
      puts a

vii) a = [1, 3, 5, 7, 9]
      puts a[1..3]
      puts a[3..3]
      puts a[-3..-1]

```

**Q2) Solve (Any Four) :**

**[40]**

- a) Design a class Student with instance variables (rollno, name, total\_present\_day). Write a calculate\_fine method to calculate fine of the student (assume total number of lectures = 40 and fine for each day is rs 15. Fine should be calculated if percentage of lecturers attended is less than 70%.
- b) A company wants to insured his employees. Write a ruby program to display employees are insured or not, input following variables (name, gender, age, status) consider following assumption :
  - i) Married
  - ii) Male and age greater than 35
  - iii) Female and age greater than 25
- c) If cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss also determine how much profit he made or loss he incurred.
- d) Create a class to specify data of students given below : Rollno, Name, Course, Year of admission assume that there are more than 450 students in the college, create a function to print names of all students who admitted in particular course.
- e) Write a ruby program to display stock, use class item\_Stock with two methods Purchase and sell accept item\_code, description, quantity, rate, date  
When item is purchased stock must be updated.  
When item is sold stock must be updated.

**Q3) Short notes : (any 3)**

**[15]**

- a) Mutable and immutable object
- b) Hashes
- c) Explain regular express with suitable example
- d) Symbols
- e) Block and procs.



Total No. of Questions : 7]

SEAT No. :

**P1836**

[Total No. of Pages : 2

**[4672] - 26**

**M.C.M. (Semester - II)**

**206 : OBJECT ORIENTED DESIGNING**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No. 1 is compulsory.*
- 2) *Answer any five from the remaining.*
- 3) *Mention assumptions made for solving case study.*

**Q1) a)** Draw Class and Use case diagram for following : **[15]**

Placement agency site provides the facility for candidates to register with their academic details, personal details and skill set. Site also gives provision to update their profiles. Organization can also register with their requirements. Search facility is provided to search the job and suitable candidates.

b) Explain in Aggregation & Composition with example. **[5]**

**Q2)** Describe RUP in detail. **[10]**

**Q3) a)** Draw a sequence diagram for sending SMS. **[5]**

b) Explain Object Persistence. **[5]**

**Q4)** Explain Grady Booch Methodology in detail. **[10]**

**P.T.O.**

**Q5)** Draw Activity Diagram for following case study : **[10]**

Students have to register for online project entrance exam conducted by the company. The students have to select the project subject and give the online test. After the declaration of the result, the project is allocated by company along with the guide & confirmation details are sent to student & company.

**Q6)** Draw state transition diagram for the Washing Machine. **[10]**

**Q7)** Write a short note on (Any Two) : **[10]**

- a) Patterns.
- b) How to design Test Plan.
- c) Approaches for Identifying Classes.



Total No. of Questions : 5]

SEAT No. :

**P1876**

[Total No. of Pages : 1

**[4672]-3002**

**M.C.M. (Semester- III) (Specialization)**

**A - 302 NT : BASICS OF NETWORK TECHNOLOGIES**

**(2013 Pattern)**

*Time : 3 Hours ]*

*[Maximum Marks : 50*

*Instructions to the candidates:*

- 1) All questions are compulsory.*
- 2) Figure to right indicates full marks.*

**Q1)** Compare peer - peer and client - server networks. **[10]**

OR

Differentiate between Internet and Intranet.

**Q2)** Explain various application protocols. **[10]**

OR

Explain Ethernet standards 802.2 and 802.3

**Q3)** Compare cables CAT 5 and CAT 6. **[10]**

OR

Describe various Types of Modems.

**Q4)** Explain steps for Installation of windows 2003 server. **[10]**

OR

Explain steps for implementing Active Directory and Domain.

**Q5)** Explain process management commands in Linux. **[10]**

OR

Explain steps for installation of Linux from Network.



Total No. of Questions : 6]

SEAT No. :

**P1877**

[Total No. of Pages : 1

**[4672]-3003**

**M.C.M. (Semester- III)**

**B : QUALITY CONTROL ASSURANCE**

**(2013 Pattern)**

*Time : 2 ½ Hours ]*

*[Maximum Marks : 50*

*Instructions to the candidates:*

- 1) *Solve any five Questions.*
- 2) *Figures on the right show marks.*

**Q1)** Explain Project Life cycle in detail. **[10]**

**Q2)** a) Distinguish between software quality assurance and software quality control. **[5]**

b) Explain the content of the software quality assurance plan Maintenance. **[5]**

**Q3)** What is Review? what is its purpose? Explain different types of review. **[10]**

**Q4)** What is SEI CMM? Explain different levels of CMM in detail. **[10]**

**Q5)** Describe Software Configuration Management. **[10]**

**Q6)** Write short notes: (Any Two) **[10]**

- a) Verification and Validation
- b) Team Sizing
- c) Release and version control



Total No. of Questions : 7]

SEAT No. :

**P1878**

[Total No. of Pages : 2

**[4672]-3004**

**M.C.M. (Semester- III)**

**SOFTWARE DEVELOPMENT (SPECIALIZATION)**

**C : 302 SD : Programme and Design with ASP.NET**

**(2013 Pattern)**

*Time : 3 Hours ]*

*[Maximum Marks : 50*

*Instructions to the candidates:*

- 1) *Q. No. 1 is compulsory.*
- 2) *Solve any four questions from Q. No. 2 to Q. No. 7.*
- 3) *Figures to right side indicate full marks.*

**Q1)** Design a form and write code to :

**[10]**

- a) Populate and display Author's names in a drop down list.
- b) Select a Author from drop down list and display its details in underlying text boxes.
- c) Add a record  
Use disconnected architecture. Name of Server : MyAspDB (SQL Server)  
Name of Table : AuthorMaster (AuID, FirstName, LastName, City, Email)

**Q2)** Explain Comparison Validators and Range Validators with suitable examples.

**[10]**

**Q3)** Explain Tree View navigation control with the help of web. Sitemap file. **[10]**

**Q4)** Draw and Explain .Net Framework architecture in detail.

**[10]**

**P.T.O.**

**Q5)** Define a class book with appropriate attributes. Write default constructor for the same. Write a method to check book is available in library or not. Write a main program to demonstrate your functionality. **[10]**

**Q6)** Explain the following controls: (Any TWO) **[10]**

- a) File Upload Control.
- b) Image Map Control.
- c) Checkbox List Control.

**Q7)** Write short notes on following: (Any TWO) **[10]**

- a) Creating and Using Master Pages.
- b) Exception Handling.
- c) WPF and WCF.





Total No. of Questions : 5]

SEAT No. :

**P2602**

[Total No. of Pages : 1

**[4672] - 3005**  
**M.C.M. (Semester - III)**  
**303NTA : SERVER & DESKTOP TECHNOLOGIES**  
**(2013 Pattern) (Specialization)**

*Time : 2½ Hours]*

*[Max. Marks : 50*

*Instructions to the candidates :*

- 1) All questions are compulsory.*
- 2) Each question carry equal marks.*

**Q1)** Explain various types RAM.

OR

Explain Graphics adapter card, its specification and functioning.

**Q2)** Explain Interrupt concept and types of Interrupts.

OR

Explain RISC pipelining with example.

**Q3)** Explain 32-Bit Architecture with diagram.

OR

Explain Backup and Restore in Windows XP.

**Q4)** Explain steps for upgrading from Windows XP to Windows 7.

OR

Explain hardware and driver installation in Windows 7.

**Q5)** Explain various parts of printers with their functioning.

OR

Explain Pen Drive with its specifications and functioning



Total No. of Questions : 6]

SEAT No. :

P2603

[Total No. of Pages : 1

**[4672] - 3006**  
**M.C.M. (Semester - III)**  
**B - 303ST : SOFTWARE TESTING PROCESSES AND**  
**DOCUMENTATION**  
**(2013 Pattern)**

*Time : 2½ Hours]*

*[Max. Marks : 50*

*Instructions to the candidates :*

- 1) *Q. Nos. 1 and 6 are compulsory.*
- 2) *Solve any three of the remaining.*
- 3) *Figures to the right indicate full marks.*

**Q1) a) Explain Reducing the frequency of defects in software. [5]**

b) Explain Factors affecting software testing. [5]

**Q2) Explain Static and dynamic testing in detail. [10]**

**Q3) Explain Incremental testing, Thread testing in detail. [10]**

**Q4) Discuss COTS Software Test Process. [10]**

**Q5) Discuss Creation of security awareness policy. [10]**

**Q6) Write short notes on (Any Two) : [10]**

- a) V Concept of testing with testing stages.
- b) Testing of internal controls.
- c) Testing Wireless Technologies.



Total No. of Questions : 5]

SEAT No. :

P3113

[Total No. of Pages : 2

[4672] - 3007

**M.C.M (Semester - III)**

**C - 303SD : MOBILE PROGRAMMING USING ANDROID**

**(2013 Pattern) (Specialization)**

*Time : 2.5 Hours]*

*[Max. Marks : 50*

*Instructions to the candidates:*

- 1) All questions are compulsory.*
- 2) All questions carry equal marks.*

**Q1)** Explain features of Android platform for mobile development.

OR

Explain Building Blocks of Android.

**Q2)** Write xml file code to create table layout containing Name and ContactNo to be shown in row.

OR

Explain method for creating new view with example.

**Q3)** How to Play Audio files provided in URL in Android? Explain with example.

OR

Explain method to store Raw Audio file.

**P.T.O.**

**Q4)** Explain method for creation, insertion and fetching SQLite Database in android.

OR

Explain use of Content Provider with example.

**Q5)** Explain service life cycle in android.

OR

What are preferences? Explain any three common preferences in android.



Total No. of Questions : 7]

SEAT No. :

**P1879**

[Total No. of Pages : 2

**[4672]-3008**

**M.C.M (Semester- III)**

**A:304NT:SYSTEM ADMINISTRATION AND SERVER INTEGRATION**

**(2013 Pattern)**

*Time : 3 Hours ]*

*[Maximum Marks : 50*

*Instructions to the candidates:*

- 1) Question 1 and 7 are compulsory.*
- 2) Answer any three questions from remaining.*
- 3) Figures to the right side indicate full marks.*

**Q1) a) Explain steps for Window 2003 server installation. [10]**

**b) Explain DHCP Server Installation in Linux. [10]**

**Q2) Explain how to manage sites and Active Directory replication in Window 2008. [10]**

**Q3) Explain User management in Linux. [10]**

**Q4) Explain how to manage users and Service Account in Window 2008. [10]**

**Q5) Explain how to configure Domain Name System in Window 2008. [10]**

**Q6) Explain how to configure WSUS in Window 2003 Server. [10]**

***P.T.O.***

**Q7)** Write short notes (any Two)

**[10]**

- a) NOS Architecture.
- b) Virtual Private Networks.
- c) Boot loader.
- d) .NET Framework.
- e) File system in Linux.



Total No. of Questions : 6]

SEAT No. :

**P2604**

[Total No. of Pages : 1

**[4672] - 3009**

**M.C.M. (Semester - III)**

**B - 304ST : SOFTWARE TEST PLANNING AND DOCUMENTATION  
(2013 Pattern) (Specialization)**

*Time : 2½ Hours]*

*[Max. Marks : 50*

*Instructions to the candidates :*

- 1) Q. Nos. 1 and 6 are compulsory.*
- 2) Solve any three of the remaining.*
- 3) Figures to the right indicate full marks.*

**Q1)** Explain risk analysis and risk management. **[10]**

**Q2)** What is test plan? Explain develops a test matrix. **[10]**

**Q3)** Explain test scripts and use cases in detail. **[10]**

**Q4)** Discuss perform integration test in testing. **[10]**

**Q5)** Explain Pareto Charts and voting, Cause and Effect Diagrams in detail. **[10]**

**Q6)** Write short notes on (Any Two) : **[10]**

- a) Regression analysis and Multivariate analysis.
- b) User's Role and tester's role.
- c) Run charts, control charts.



Total No. of Questions : 5]

SEAT No. :

**P1880**

[Total No. of Pages : 1

**[4672]-3010**  
**M.C.M. (Semester- III)**  
**SOFTWARE DEVELOPMENT**  
**C - 304 SD : Advanced Java**  
**(2013 Pattern)**

*Time : 2 Hours 30 Mints]*

*[Maximum Marks : 50*

*Instructions to the candidates:*

- 1) *Question No. 1 and 4 are compulsory.*
- 2) *Solve any 2 questions from the remaining.*

**Q1) Solve the following** **[15]**

- a) What is Request dispatcher?
- b) Interfaces in JDBC.
- c) Write different ways to create sockets.
- d) Explain factory methods.
- e) What is Resultsetmeta data

**Q2) Write a JDBC code to display students who are studing in III<sup>rd</sup> semester, Assume suitable table structure.** **[10]**

**Q3) Write client server socket program to show chat application.** **[10]**

**Q4) Write a servlet code to accept customer-id and display whether his installment for loan is outstanding.** **[10]**

**Q5) Short notes (Any Three)** **[15]**

- a) JNDI
- b) JSTL tags
- c) Session tracking in servlets
- d) Java beans.





Total No. of Questions : 6]

SEAT No. :

**P1860**

[Total No. of Pages : 1

**[4672] - 302**

**M.C.M. (Semester - III)**

**302 NT : BASICS OF NETWORK TECHNOLOGIES**

**(2012 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) *Q. 1 and Q. 6 are compulsory.*
- 2) *Solve any THREE from remaining.*
- 3) *Figure at right indicates full marks.*

**Q1) a)** Explain steps for installing Linux server from CD. **[10]**

b) Explain configuring DHCP server in windows 2003. **[10]**

**Q2)** Explain user management commands in Linux. **[10]**

**Q3)** Explain steps for implementing web services using IIS in windows server 2003 **[10]**

**Q4)** Explain various Tunneling protocols. **[10]**

**Q5)** Explain various connectivity components used in networking. **[10]**

**Q6)** Write Short Notes (Any Four) **[4 × 5 = 20]**

- a) Peer-Peer Networks
- b) SMTP
- c) Ring Topology
- d) Terminal server
- e) Default Directories in Linux
- f) Partitions in Linux.



Total No. of Questions : 7]

SEAT No. :

P1861

[Total No. of Pages : 2

[4672] - 303

**M.C.M. (Semester - III) (Specialization)**

**B : 302 - ST : SOFTWARE QUALITY ASSURANCE**

**(2012 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) *Question Number 1 and 7 are compulsory.*
- 2) *Solve any four questions from remaining.*
- 3) *Figures to the right indicate full marks.*

**Q1)** Explain project life cycle in detail with the role of stakeholders. Also discuss risk management in software project. **[15]**

**Q2)** Differentiate between software quality assurance and software quality control. **[10]**

**Q3)** Discuss the contract review as pre-project SQA component. **[10]**

**Q4)** Explain the importance of verification, validation, inspection and software testing as SQA components in project life cycle activity. **[10]**

**Q5)** Explain the need of standardization in project management. Also explain ISO 9001 standards. **[10]**

**Q6)** What is software change control? Discuss the software release and software version control in brief. **[10]**

**P.T.O.**

**Q7)** Write notes on (any three)

**[15]**

- a) Staff training
- b) Corrective and preventive actions
- c) Mccall's quality factors under product revision category
- d) Documentation control



Total No. of Questions : 7]

SEAT No. :

P1862

[Total No. of Pages : 2

[4672] - 304

M.C.M. (Semester - III)

SOFTWARE DEVELOPMENT (Specialization)

C - 302 SD : Programme and Design with ASP. NET

( 2012 Pattern)

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:-*

- 1) *Q. No.1 is Compulsory.*
- 2) *Solve any FOUR questions from Q. No.2 to Q. No.7.*
- 3) *Figures to the right side indicate full marks.*

**Q1)** Draw and Explain ASP. NET architecture in detail. **[10]**

**Q2)** Explain various navigation controls in detail. **[15]**

**Q3)** Explain Login Controls in detail. **[15]**

**Q4)** Design a form and write code to: **[15]**

- a) Populate and display books names in a drop down list.
- b) Select a book from drop down list & display its details in underlying text boxes.
- c) Add a record
- d) Delete Selected Record
- e) Edit Selected Record

Use connected architecture. Name of Server : MyAspDB (SQL Server)  
Name of Table : BookMaster (BookID, Title, Author, publisher, Price)

**P.T.O.**

**Q5)** Define a class Book with appropriate attributes. Write default and parameterized constructor for the same. Write a method to check book is available in library or not. Write a main program to demonstrate your functionality. **[15]**

**Q6)** Explain the following controls: (**Any THREE**) **[15]**

- a) Bulleted List Control
- b) View and Multiview Control
- c) Range Validator Control
- d) Literal and Hidden Field Control

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

- a) Creating and Applying Themes
- b) Web service
- c) Ajax Server Control
- d) LINQ



Total No. of Questions : 7]

SEAT No. :

P1863

[Total No. of Pages : 2

[4672] - 305

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

**A - 303 NT : SERVER AND DESKTOP TECHNOLOGIES**

**(2012 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.*

**Q1)** Explain with block diagram the different sections of CPU. **[20]**

**Q2)** What is Interrupt? What are the different types of Interrupts? Explain. **[10]**

**Q3)** Explain with block diagram the 80486 bits microprocessor Architecture. **[10]**

**Q4)** What is Data Hazards and Control Hazards? Explain how to overcome these Hazards. **[10]**

**Q5)** Explain the process of installing H/W devices. Also focus on the security policies in windows XP. **[10]**

**Q6)** Explain different partition types in windows 7. Discuss the process of network installation in windows 7. **[10]**

**P.T.O.**

**Q7)** Write short notes (any four)

**[4 × 5 =20]**

- a) USB
- b) Interrupts
- c) Removable drives
- d) Hardware Installation in Windows-XP
- e) Printers Installation in windows-7



Total No. of Questions : 6]

SEAT No. :

P1864

[Total No. of Pages : 2

[4672] - 306

**M.C.M. (Semester - III) (Specialization)**

**B-303 ST : SOFTWARE TESTING PROCESSES & DOCUMENTATION  
(2012 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

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

**Q1)** a) What is the need of software testing? Explain software testing process in detail with neat diagram. **[10]**

b) A wholesaler sells printer cartridges. The minimum order quantity is 5. There is a 20% discount for orders of 100 or more printer cartridges. Using Boundary Value Analysis prepare test cases for the number of printer cartridges ordered. **[4]**

**Q2)** a) Differentiate Structural testing and functional testing. **[10]**

b) Explain V concept of testing in details. **[4]**

**Q3)** What are various factors affecting the software testing process? What do you mean by acquitted software? Explain various challenges faced by testers for testing acquitted software. **[14]**

**Q4)** Make a detailed test plan for testing an e-commerce application (Make your own assumption for an e-commerce application). **[14]**

**Q5)** What do you mean by tester's workbench? Explain various test tools required during complete test work process. **[14]**

**P.T.O.**



**Q6)** Write short notes on (any two)

**[14]**

- a) Software Test environment
- b) Distributed application testing
- c) Internal control models



Total No. of Questions : 8]

SEAT No. :

P1865

[Total No. of Pages : 2

[4672] - 307

**M.C.M. (Management Faculty) (Semester - III)**  
**303 SD : MOBILE PROGRAMMING USING ANDROID**  
**(2012 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) *Question 1 and 8 are compulsory.*
- 2) *Answer any four questions from remaining questions.*

**Q1)** Answer the following :

**[20]**

- a) Describe the android architecture in detail.
- b) How to create views in android. Explain with the help of example.

**Q2)** Discuss the features and need of SQLite database in android.

**[10]**

**Q3)** Discuss Android features over the other mobile application platform. Describe the software development kit for android in detail.

**[10]**

**Q4)** What are preferences in android. Explain its types in detail.

**[10]**

**Q5)** Explain in detail java classes and objects with suitable example.

**[10]**

**Q6)** Explain Inheritance in detail with suitable example.

**[10]**

**P.T.O.**

**Q7)** What are layouts in android. Explain it with the help of example. **[10]**

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

- a) ADT.
- b) Broadcast receiver life cycle.
- c) Services provided by android.



Total No. of Questions : 7]

SEAT No. :

**P1866**

[Total No. of Pages : 2

**[4672]-308**

**M.C.M. (Semester-III)**

**304 NT : SYSTEM ADMINISTRATION AND SERVER INTEGRATION**

**(2012 Pattern)**

*Time : 3Hours]*

*[Maximum Marks : 70*

*Instructions to the candidates:*

- 1) Question 1 and 7 are compulsory.*
- 2) Answer any three questions from remaining.*
- 3) Figures to the right side indicate full marks.*

**Q1) a) Explain feature and functions of Active Directory Domain Services. [10]**

**b) Explain steps for Samba Server Installation. [10]**

**Q2) Explain how backup management is perform in Window Server 2003. [10]**

**Q3) Explain Group Implementation in Window 2008 Server. [10]**

**Q4) Explain User management in Linux. [10]**

**Q5) Illustrate network configuration in Linux. [10]**

**Q6) Explain how to configure WSUS in Window 2003 Server. [10]**

**P.T.O.**

**Q7) Write short notes (any Four)**

**[20]**

- a) NOS Architecture.
- b) Virtual Private Networks.
- c) Boot loader
- d) .NET Framework
- e) File system in Linux



Total No. of Questions : 6]

SEAT No. :

**P1867**

[Total No. of Pages : 2

**[4672] - 310**

**M.C.M. (Semester - III)**

**SOFTWARE DEVELOPMENT (Specialization)**

**C - 304 SD : Advanced Java**

**(2012 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Question no. 1 is compulsory.*
- 2) Solve any 4 questions from remaining.*
- 3) Figures to the right indicate full marks.*

**Q1)** Solve the following.

**[10]**

- a) What is Request Dispatcher.
- b) Statements in JDBC.
- c) Code to call stored procedure.
- d) Write different ways to create sockets.
- e) What is UDP.

**Q2)** Write Java programs to implement multithreaded chat application.

**[15]**

**Q3)** Write servlet code to accept information of students applying for scholarship.

**[15]**

**Q4)** Write JDBC code to display details of employees working in Sales Department.

**[15]**

**P.T.O.**

**Q5)** Write an HTML page which accepts faculty details teaching in an institute. Insert details in faculty table using JSP. **[15]**

**Q6)** Write short notes on (any 3) **[15]**

- a) Types of JDBC Drivers.
- b) RMI architecture.
- c) URL class.
- d) Error handling in JSP.

RRR

Total No. of Questions : 7]

SEAT No. :

**P1838**

[Total No. of Pages : 1

**[4672] - 32**

**M.C.M. (Semester - III)**  
**BUSINESS APPLICATIONS**  
**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

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

**Q1)** Draw the first level DFD and normalized database for billing system. **[20]**

**Q2)** List and explain the various activities carried out at shop floor with documentation. **[10]**

**Q3)** Explain utilization of Ratio Analysis with few examples. **[10]**

**Q4)** Design menu driven system for payroll system. **[10]**

**Q5)** Explain LIFO and FIFO methods with example. **[10]**

**Q6)** What are the parameters consider for sales forecasting? Explain in brief. **[10]**

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

- a) Dispatch Note
- b) ROQ
- c) BOM
- d) Employee Training





Total No. of Questions : 6]

SEAT No. :

P1839

[Total No. of Pages : 2

[4672] - 33

**M.C.M. (Semester - III)**

**303 : ADVANCED JAVA**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question one is compulsory.*
- 2) *Solve any four questions from remaining.*
- 3) *Figures to right indicate full marks.*

**Q1)** Answer the following :

**[10]**

- a) Which are methods of javax.servlet.Servlet interface?
- b) What is connection pooling?
- c) List out method signatures of Statement object
- d) What is URL class?
- e) What is difference between <JSP:include> and <JSP:forward>?

**Q2)** Write servlet application to accept student details from html page and insert details of student in underlying table. (Assume suitable structure). **[15]**

**Q3)** Write multithreaded server - client chat application. **[15]**

**Q4)** Write JSP application to accept user name and password from html page and validate user referring underlying table. If user name or password are incorrect display error page (Assume suitable structure). **[15]**

**P.T.O.**

**Q5)** Write JDBC application to accept item code from user display the details of that item and ask user if user wants to modify it. If yes, edit the record after accepting details from user. (Given Structure - ITEM : ItemCd, Description, Quantity Balance, Rate). **[15]**

**Q6)** Write notes on (Any 3) : **[15]**

- a) JNDI
- b) RMI architecture
- c) MVC architecture
- d) Session tracking in servlet



Total No. of Questions : 1]

SEAT No. :

P1840

[Total No. of Pages : 2

[4672] - 34

**M.C.M. (Semester - III)**

**304 : ADVANCED RUBY**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *All questions are compulsory.*
- 2) *Neat diagrams carry marks.*

**Q1) a)** Write short note (Any 5) :

**[30]**

- i) What is Model in Rails? How to generate a model from command prompt?
- ii) Migration & rake
- iii) Differentiate TCP and UDP
- iv) What are Layouts in Rails? What is default layout in Rails?
- v) What is restful Architecture in Rails? Explain with example.
- vi) How to use scaffolding.

**b)** Solve the following (Any Five) :

**[40]**

- i) Write migration for creating table 'Customer' in database having cust\_Id, Cust\_Name, Cust\_Address, Item\_Pur, date columns.
- ii) Create a TK window that has 2 radio buttons 'ASP.Net' and 'Android', a label and a button 'Select'. The label should change its caption to 'Selected ASP.NET' if radio button 'ASP.NET' is selected and 'Selected Android' if radio button 'Android' is selected.

**P.T.O.**

- iii) Write authentication method in student model which will accept roll no. and name as parameters. If student with provided roll no. and name is present in database then return student object and if student is not present then return nil.
- iv) Using Ruby Socket API, write a client that passes a string 'Good' to the server and server responds by appending 'Morning' and sending 'Good Morning' string to the client.
- v) Create a Ruby TK Login window having username, password labels and texts and a login button. If username and password matches then display 'Login Successful' in a lable, otherwise display 'Login Insucessful'.
- vi) Write a SOAP server and SOAP client such that server defines a method that accepts a number as a parameter and returns its prime number. Client invokes this method and prints Prime number returned by the server.



Total No. of Questions : 7]

SEAT No. :

**P1841**

[Total No. of Pages : 2

**[4672] - 35**

**M.C.M. (Semester - III)**

**305 : VB.NET**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. No. 1 is compulsory.*
- 2) *Solve any Four questions from Q.No. 2 to Q. No. 7.*
- 3) *Figures to the right side indicate full marks.*

**Q1)** Explain .net as a better programming platform. Also explain the working of CLR. **[10]**

**Q2)** Design a form and write code to perform Insert, Update, Delete, First, Next, Previous and Last operations on BookTable (BookID, Title, Price, Author, Publisher). Server Name : UOP, User Name : MCM, Password : MCM. **[15]**

**Q3)** Write a program to read and write a data in a file using binary reader and binary writer classes. **[15]**

**Q4)** What do you mean by structured exception handling? Create, check and Throw your own defined "Even Number Exception". **[15]**

**Q5)** Write sectional code for the following :

- a) Design an interface and write a program which will accept two numbers from two text boxes and display prime numbers between them in a list box. **[10]**
- b) Write a function to accept principal amt, rate of interest for the year and return interest amount for the quarter. **[5]**

**P.T.O.**

**Q6)** Explain the following controls (Any Three) :

**[15]**

- a) Checked List Box Control
- b) Data Grid Control
- c) Label Control
- d) Menu Strip Control

**Q7)** Write short notes on following (Any Three) :

**[15]**

- a) Concept of Interfaces
- b) Different Loops in vb.net
- c) Just in Time Compiler
- d) Event driven programming



Total No. of Questions : 7]

SEAT No. :

P1842

[Total No. of Pages : 2

[4672] - 36

M.C.M. (Semester - III)

306 : SOFTWARE PROJECT MANAGEMENT & IT MANAGEMENT  
(2008 Pattern)

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Que. 1 and 7 are compulsory.*
- 2) *Solve any four from remaining.*

**Q1)** Draw PERT diagram for the following project information Find start time, end time and stack time. Also find critical path. **[15]**

Activity	Predecessor	Time (Weeks)
A	-	6
B	-	6
C	A	5
D	B	4
E	B	3
F	D,E	7
G	C,F	8
H	D	5
I	G,H	2

**Q2)** Define Risk management and How to manage them. **[10]**

**Q3)** Describe the importance of software quality standard. Explain CMM. **[10]**

**P.T.O.**

**Q4)** What is acquisition process for Hardware & Software in IT industry. [10]

**Q5)** Explain various practices and control necessary in HR management. [10]

**Q6)** Explain software Testing and its different types and Techniques. [10]

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

- a) Version control
- b) WBS
- c) FPA
- d) Walkthrough





Total No. of Questions : 7]

SEAT No. :

**P1844**

[Total No. of Pages : 2

**[4672] - 42**

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

**402 : ASP.NET**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. No. 1 is compulsory.*
- 2) *Solve any FOUR questions from Q. No. 2 to Q. No. 7.*
- 3) *Figures to the right side indicate full mark.*

**Q1)** Draw and explain ASP.NET architecture in detail. **[10]**

**Q2)** Explain any five validator controls in detail. **[15]**

**Q3)** Explain various navigation controls in detail with the help of web.sitemap file. **[15]**

**Q4)** Design a form and write code to : **[15]**

- a) Populate and display Author's names in a drop down list.
- b) Select a Author from drop down list & display its details in underlying text boxes.
- c) Add a record
- d) Delete Selected Record
- e) Edit Selected Record

Use disconnected architecture. Name of Server : MyAspDB (SQL Server)

Name of Table : Author Master (AuID, FirstName, LastName, City, Email)

***P.T.O.***

**Q5)** Explain Client side state management techniques in detail. **[15]**

**Q6)** Explain the following controls (Any THREE) : **[15]**

- a) File Upload Control
- b) Image Map Control
- c) Wizard Control
- d) Checkbox List Control

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

- a) Creating and Using Master Pages
- b) Exception Handling
- c) Authentication and Authorization
- d) Namespace Concept



Total No. of Questions : 6]

SEAT No. :

**P1845**

[Total No. of Pages : 2

**[4672] - 43**

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

**403 : INFORMATION SECURITY**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. Nos. 1 and 6 are compulsory.*
- 2) *Solve any three from remaining.*

**Q1)** Case study (Solve any one case) :

**[20]**

Computer security is a growing concern for many personal computer owners. Cyber Crime has been on a constant rise. Many house computer owners don't realize that they need to pay attention to computer security very closely. This case describes an investigation on both sides of a cyber attack. We measure activities of a computer's inner working while it is under attack. The intent is to reveal indication that an intrusion has occurred by showing events that occur when a personal computer user's password has been hacked, with this gained knowledge, a system can be put in place that can alert user that his / her computer is under an attacks.

- a) Design a system that is easy for any computer user to use.
- b) Give solutions how to protect your system from network attacks.

OR

As more users are added in an interactive system, response time gets longer. The project manager is perplexed that system can cope up with many more users without noticeable response time. He cannot determine whether the problem occurred is of hardware or software based. He asks you to assist him to identify problem. During your meeting with the project manager, you ask him to provide configuration of hardware and software for the interactive system. Identify system events that might be measured to determine, whether the response time problems are software based or hardware based.

Explain types of measure you would undertake to trace, activate, duration and so on. (State your assumption if any.)

**P.T.O.**

**Q2)** Discuss SSE-CCM model in detail. **[10]**

**Q3)** What are threats in Infrastructure security? **[10]**

**Q4)** What are various ethical issues concerned with the information system professionals? **[10]**

**Q5)** Explain in detail the major pillars of information security. **[10]**

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

- a) Cryptography in RSA
- b) Role of Internet and WWW
- c) Security of VPN
- d) Copyright Act
- e) Security of E-mail system



Total No. of Questions : 6]

SEAT No. :

P1846

[Total No. of Pages : 2

[4672]-44

M.C.M. (Semester - IV)

404 : CYBER LAW

(2008 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:-

- 1) Q. No. 1 & 6 are compulsory.
- 2) Solve any THREE from the remaining.
- 3) Figures to the right indicate full marks.

Q1) Solve any two cases

[20]

### Case 1

The ABC Hospital Management has decided to computerized their hospital i.e. Hospital Management for IPD and OPD System. There are Doctors who are full time. Resident and visiting with various specializations. Consulting doctors visiting hospital at different hours of the week. Charges for the same can vary from doctor to doctor depending on their experience. Patients are admitted to the hospital for various reasons according to the category. Room Charges are also very according to the category of room. In the Hospital Employee are recorded the different information time to time and mention the different records such as Patient Records, Doctors Records, bill Records etc. as security manager suggest different access role and also suggest some access control, security control to maintain system security.

### Case 2

With continuing security concerns for airport operations, the protection of internal operational protocols of an international airport has become more critical than ever before. Therefore, the Information Security System (ISS) was developed for International Airport which can protect the critical information related to airport operations. The ISS was developed in consideration of information life cycle of airport workflow. As a result, it can securely protect the computer system at International Airport by.

**P.T.O.**

- a) Performing real-time encoding of the users who accessed the protected files and folders.
- b) Limiting the user's capability to edit the protected documents.
- c) Tracking transmitted files to the outside companies.
- d) Blocking the user's access to portable storage devices, and
- e) Inserting security water marks on the printed outputs.

With the implementation of the ISS, the real-time information system audit environment has been securely established at the International Airport Corporation

As system Analysis specify the threat and security for above Airport company

### Case 3

Swyam Corporative Bank having multiple branches all over the Maharashtra. Customer can perform the transaction from any branch as well as through Internet. As Security Expert suggest some network threats also suggest security for protecting data from unauthorized access.

**Q2)** Define operating system also mention security for operating system. [10]

**Q3)** Explain Cryptography with its merits & demerits? [10]

**Q4)** What is meaning of distributed network also identify threats for network.[10]

**Q5)** Explain Biometrics technology with its working? [10]

**Q6)** Write short notes on (ANY 4) [20]

- a) Physical Security
- b) Asymmetric Cryptography,
- c) Type of Hackers
- d) Need of information Security
- e) Security Alarm



Total No. of Questions : 7]

SEAT No. :

P1847

[Total No. of Pages : 2

[4672]-45

M.C.M. (Semester - IV)

405 : MULTIMEDIA AND WEB DESIGNING

(2008 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Question No. 1 compulsory.
- 2) Attempt any five from the Q. 2 to 7.

**Q1)** a) Write ASP Code to Accept EMP id display Employee details on page display. asp page if the record is found in database emp. mdb otherwise display error message. [10]

b) Write HTML Code to draw table : [10]

Time Table			
Mon.	Tue.	Wed.	Thu.
SE	BA	WDD	XML
Practical VB. Net			Java
Java	BA	Java	BA

**Q2)** Explain any two Multimedia Data Compression Techniques. [10]

**Q3)** Explain use of function explain string functions in VBScript. [10]

**Q4)** Session Objects with Example in ASP. [10]

**Q5)** Explain Quantization and Transmission of Audio. [10]

**P.T.O.**

**Q6)** Explain various types of Style Sheets in HTML.

**[10]**

**Q7)** Write short notes : (any two)

**[2 × 5 = 10]**

- a) Loop Statement in VB Script
- b) Operators in JavaScript
- c) MIDI
- d) Image File Data Types





Total No. of Questions : 6]

SEAT No. :

**P1848**

[Total No. of Pages : 1

**[4672]-46**

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

**406 : SOFT SKILLS**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) *Q. No. 1 is compulsory and carries 25 marks.*
- 2) *Solve any three questions between Q. 2 to 6 each question carries 15 marks.*

**Q1) a)** What is meant by communication. Highlight principles of communication by giving suitable examples. **[15]**

b) Formal and Non-formal communication comment with examples. **[10]**

**Q2)** Comment on Upward and Down ward communication. What are the methods used to encourage such communication. **[15]**

**Q3)** Discuss the importance of Body language in communication. **[15]**

**Q4)** Comment on “Electronic Media” Plays important role in todays business. Give suitable examples. **[15]**

**Q5)** Highlight on Hearing & Listening process. Why are these processes important in communication? **[15]**

**Q6)** Report writing is an essential in an organisation. Explain types of report.**[15]**



Total No. of Questions : 6]

SEAT No. :

P1849

[Total No. of Pages : 1

[4672]-47

M.C.M. (Semester - IV)

QUALITY CONTROL AND SOFTWARE TESTING

(2008 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) *Q. No. 1 is compulsory.*
- 2) *Solve any four from the remaining.*
- 3) *Figures on the right show marks.*

**Q1) a) What is Quality Assurance? [4]**

b) Write test cases for ball pen. [10]

**Q2) Define Software Quality. Describe reason for poor quality. Explain Concepts of Product Quality and Process Quality. [14]**

**Q3) What is testing tool? Explain Configuration Management Tools in detail. [14]**

**Q4) What is software maintenance? Explain different factors involved in Maintenances. [14]**

**Q5) What is Risk management? Explain different stages involved in Risk Management. [14]**

**Q6) Write short notes : (any two) [14]**

- a) Black Box versus White Box Testing
- b) Review
- c) Foreign Language testing

