

Total No. of Questions :7]

SEAT No. :

[Total No. of Pages : 1

**P2122**

**[5570]-101**

**M.C.A.**

**MANAGEMENT**

**IT - 11 : Computer Organization  
(2012 and 2013 Pattern) (Semester - I)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.1 and Q. 7 are compulsory.*
- 2) *Solve any four questions from the remaining.*
- 3) *Draw neat diagrams wherever necessary.*

**Q1) a) Draw and explain 16 bit (80286) architecture in detail. [10]**

b) Explain the types of software. [5]

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

a)  $(32.5)_{10} = (?)_2$

b)  $(3454)_8 = (?)_{16}$

c)  $(BF2)_{16} = (?)_{10}$

d)  $(1110.01)_2 = (?)_{10}$

e)  $(140.125)_{10} = (?)_{16}$

**Q3) What are Addressing Modes? Explain its types. [10]**

**Q4) Differentiate between RISC and CISC. [10]**

**Q5) Explain with proper diagram multiplexer and Demultiplexer. [10]**

**Q6) What is DMA? Explain DMA transfer modes in detail. [10]**

**Q7) Write short notes on the following (any three). [3×5=15]**

- a) Features of Pentium processors
- b) 1's and 2's complement
- c) System Bus
- d) Memory and its types



Total No. of Questions :7]

SEAT No. :

[Total No. of Pages : 2

**P2123**

**[5570]-102**

**M.C.A.**

**MANAGEMENT**

**IT - 12 : C Programming**

**(2012 and 2013 Pattern) (Semester - I)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question 1 is compulsory.*
- 2) *Solve any five questions from question number 2 to 7.*
- 3) *Assume suitable data whenever necessary.*
- 4) *Figure at right hand indicates full marks.*

**Q1)** Answer the following questions. (any four) : **[4×5]**

- a) What are local static variables? What is their use?
- b) What is the difference between declaration and definition of a variable/function?
- c) What are escape sequences?
- d) List all Dynamic Memory allocation functions.
- e) What are command line arguments? Explain.

**Q2)** a) Write a program to find the length of string using recursion. **[5]**

b) Print Floyd's triangle. **[5]**

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

**Q3)** a) Write a C program that find the sum of minor diagonal elements of matrix **[5]**

b) Write a C program to convert string in upper case without using library function. **[5]**

**P.T.O.**

**Q4) a)** Write a C program to check Most Significant Bit (MSB) of a number is a set or not. **[5]**

b) What is void pointer? **[5]**

**Q5)** Write a C graphics program that display packman. **[10]**



**Q6)** Write a C program to calculate difference between two time periods. (Use structure variable to store time in hour, minute and second) **[10]**

**Q7)** Write a C program to replace first letter of every word with capital letter. **[10]**



Total No. of Questions : 7]

SEAT No. :

**P2124**

**[5570]-103**

[Total No. of Pages : 2

**M.C.A. - I (Management)**  
**IT-13 : SOFTWARE ENGINEERING**  
**(2012 & 2013 Pattern) (Semester - I)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.No.1 and 7 are compulsory.*
- 2) *Attempt any three questions from remaining.*
- 3) *Figures to the right indicate full marks.*
- 4) *Write assumptions whenever necessary.*

**Q1)** 'ABC Travels' want to implement web based system to implement online ticket booking of bus. Any mode of payment is available for booking like debit card, credit card, internet banking, wallet and through UPI. Company has tie-up with various clients and provides various offers to customer related cash back on offline and online transactions. Ticket cancellation is also available with standard deduction in refund amount.

- a) Draw context level & first level DFD. **[5]**
- b) Prepare Software Requirement Specification. **[15]**

**Q2)** Describe Phases of spiral model in detail. **[10]**

**Q3)** Explain Agile process and its importance in IT industry. **[10]**

**Q4)** Explain techniques used to estimate software maintenance cost. **[10]**

**Q5)** Explain how Decision tree and Decision Table help in system analysis and design. **[10]**

**Q6)** Explain the importance of documentation in system design. **[10]**

**P.T.O.**

**Q7)** Write short note on (any 4) :

**[20]**

- a) Reverse Engineering.
- b) FDD.
- c) Web engineering.
- d) GUI design guidelines.
- e) CASE Tools.



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Total No. of Questions :6]

SEAT No. :

[Total No. of Pages : 1

**P2125**

**[5570]-104**

**M.C.A.**

**MANAGEMENT FACULTY**

**BM - 11 :Principles And Practices of Management And  
Organizational Behaviour  
(2012 Pattern) (Semester - I)**

*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) Define management. Explain need and scope of management. [15]

b) “Leadership cannot be taught. It can only be learned.” Comment. [10]

**Q2)** Discuss decision making process and explain Herbert Simon’s model. [15]

**Q3)** Explain Mc Gregor’s theory X and theory Y. [15]

**Q4)** Define Organisational behaviour and state its need and importance in modern era. [15]

**Q5)** Explain the contribution of Henry Fayol in the evolution of management thoughts. [15]

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

- a) Line and Staff managers
- b) Planning and Organisation
- c) Organisational Structure
- d) Conflict management
- e) Transactional analysis



Total No. of Questions : 4]

SEAT No. :

**P2126**

**[5570]-105**

[Total No. of Pages : 3

**M.C.A. (Management Faculty)**  
**MT-11 : 116 : DISCRETE MATHEMATICS**  
**(2012 and 2013 Pattern) (Semester - I)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.No.1 is compulsory.*
- 2) *Solve any two from Question numbers 2, 3 & 4.*
- 3) *Use of statistical table and non programmable calculator is allowed.*
- 4) *Figures to the right indicate full marks.*

**Q1)** Attempt the following :

- a) Test the validity of the following argument : [5]

$$P_1: \neg P \vee Q, P_2: \neg(Q \wedge \neg R), P_3: \neg R, C: \neg P.$$

- b) Let  $A = \{a, b, c, d\}$  and  $R = \{(a, b), (b, a), (b, d), (c, d), (d, a)\}$ . Find  $R^+$  (Transitive closure) by using Warshall's algorithm. [5]

- c) How many seven place secret codes are possible when three of the places are occupied by letters and remaining four are occupied by digits? [5]

- d) Find the number of integer valued solutions of the following equation. [5]

$$x_1 + x_2 + x_3 = 33 \quad x_1 > 4, x_2 \geq 3, x_3 > 5.$$

- e) State and prove Principle of inclusion and exclusion for 'n' sets. [5]

- f) Show that  $(3\mathbb{Z}, +)$  is an abelian group. Where  $3\mathbb{Z}$  is a set of all integers that are multiples of 3. [5]

**Q2)** Solve the following :

- a) Obtain PDNF for the following : [5]

$$(P \vee Q) \wedge (\neg P \vee Q) \wedge (P \vee \neg Q)$$

**P.T.O.**

- b) Let  $X = \{a, b, d\}$  and  $f, g$  and  $h$  be relations defined on  $X$  given by :[7]

$$f = \{(a, a), (a, b), (b, a), (c, a)\}$$

$$g = \{(a, b), (b, c), (c, a)\}$$

$$h = \{(a, b), (b, b), (c, b)\}$$

Determine which of the above relations are function, injective function and surjective function.

- c) i) Find the coefficient of  $x^4y^3z^2$  in the expansion of  $(2x^2 + 3y^3 - z^2)^4$ . [8]  
 ii) How many different necklaces can be designed from 6 different colours using one bead of each colour?

**Q3)** Solve the following :

- a) Indicate the variables that are free and bound. Also show the scope of the quantifiers in the following : [5]

i)  $(x)(P(x) \wedge R(x)) \rightarrow (x)P(x) \wedge Q(x).$

ii)  $(x)P(x) \leftrightarrow Q(x) \wedge (\exists x)R(x) \wedge S(x).$

- b) Write code words generated by  $H$  where : [7]

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

What is the minimum weight of the non-zero code word in the above code words? How many errors can the code generated by  $H$  detect?

- c) i) Using combinatorial argument prove the following binomial identity. [4]

$$\binom{n}{r} + \binom{n}{r-1} = \binom{n+1}{r}$$

- ii) Among 100 students 32 studying Mathematics, 20 studying physics, 45 studying Biology, 15 studying Mathematics and Bio, 7 studying Mathematics and Physics, 10 studying Physics and Bio, 30 do not study any of 3 subject find : [4]

1) Number of students studying all 3 subjects.

2) Number of students studying only Mathematics.

**Q4)** Solve the following :

a) Let  $X = \{1, 2, 3, 4, 5\}$  and  $R: X \rightarrow X$  be defined as : [5]

$R = \{(1, 3), (2, 4), (2, 5), (3, 5), (4, 1), (5, 3), (4, 5), (5, 1)\}$  find :

i) Converse of relation  $R$ .

ii) Relation matrix.

iii) Graph of relation.

b) Test the validity of the following argument : [7]

The assignment will be complete if and only if Mahesh does the field work fast. Either Mahesh does the field work fast or he reads a book. Mahesh does not read a book. Therefore the assignment will be incomplete.

c) i) If  $\sigma = (1, 3, 2)(4, 5, 7)(3, 7) \in S_7$ , express  $\sigma$  as products of disjoint cycles. Also find  $\sigma^2$ . [8]

ii) Show that every cyclic group is abelian.



Total No. of Questions :6]

SEAT No. :

**P2127**

**[5570]-201**

[Total No. of Pages : 3

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

**IT- 21 : OBJECT ORIENTED PROGRAMMING WITH C++  
(2013 Pattern) (Semester-II)**

*Time : 3Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No.1 and 8 is compulsory.*
- 2) *Solve any five from question No.2 to 6.*

**Q1)** Answer the following.

**[10]**

Explain what will be the output of following program.

a)

```
void main()
{
int a, *pa, &ra;
pa= &a; ra=a;
cout <<"a="<<a
<<"*pa="<<*pa<<"ra"
<<ra;
}
```

b)

```
c)
class some
{
public:
~ some()
{
cout<<"some's
destructor"<<endl;
}
};
void main()
{
some s;s.~ some();}
```

**P.T.O.**

- c) `int main()`  
`{`  
`float a = 12.5;`  
`printf("%d\n",a);`  
`printf("%d\n",*(int*)&a);`  
`return 0;`  
`}`
- d) `# include <iostream.h>`  
`# include<conio.h>`  
`int m=10;`  
`main ()`  
`{`  
`int m = 20;`  
`{`  
`int k=m;`  
`int m= 30;`  
`cout<<"k=" <<k<<"\n";`  
`cout<<"m="<<m<<"\n";`  
`cout<<"::m=" <<::m<<"\n";`  
`}`  
`cout<<"m="<<m<<"\n";`  
`cout<<"::m=" << ::m <<"\n";`  
`}`
- e) `void main ()`  
`{`  
`int a = 65;`  
`int* const p = &a;`  
`cout<<char(*p);`  
`*p=66;`  
`cout<<char(*p);`  
`(char*)p++;`  
`court<<char(*p);`  
`getch();`  
`}`

- Q2)** a) What is parameterized constructor? Explain mechanism of passing Parameters to the base class constructor in multilevel inheritance. Explain with example. [5]
- b) Write a program to display the number of objects created using static data member. [5]
- Q3)** Design a string class and overload. [10]
- a) + operator to contact two strings
- b) <and> to compare two strings.
- Q4)** Write a program to demonstrate the use of friend function to swap the private data members of two classes. [10]
- Q5)** What is private inheritance? Explain protected inheritance with suitable example. [10]
- Q6)** a) Illustrate virtual base class with sample program. [5]
- b) Explain constructor overloading with suitable example. [5]
- Q7)** a) What is a friend function? Explain with suitable example. [5]
- b) What is a dynamic constructor? Explain with suitable example. [5]
- Q8)** Write short notes on: (Write any 2) [10]
- a) Pure virtual function
- b) Polymorphism
- c) Abstract class



Total No. of Questions :6]

SEAT No. :

**P2128**

**[5570]-202**

[Total No. of Pages : 3

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

**IT- 22 : DATABASE MANAGEMENT SYSTEM**

**(2012 & 2013 Pattern) (Semester-II)**

*Time : 3Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.1 and Q.6 are compulsory.*
- 2) *Solve any three from the remaining.*
- 3) *Mention assumptions made for solving the case study.*
- 4) *Figures to the right indicate full marks.*

**Q1)** Draw ER diagram and normalize the following upto. 3 NF.

**[20]**

Customer\_id  
Customer\_Name  
Customer\_Address  
City  
Pin\_Code  
Phone\_Number  
Email  
Arrival\_date  
Departure\_date  
Arrival\_time  
Departure\_time  
Room\_No  
Room\_Type  
Room\_Rate  
Hotel\_Branch\_id  
Hotel\_Name  
Hotel\_Address  
Hotel\_City  
Hotel\_pin\_code  
Central\_gst  
State\_gst  
Bill\_No  
Bill\_date  
Bill\_Amount  
Total\_Amount

**P.T.O.**

**Q2)** Explain 3 tier architecture of database management system. [10]

**Q3)** Explain deadlock handling and preventions techniques in detail. [10]

**Q4)** Explain two phase locking protocol for concurrency control. [10]

**Q5)** Consider the following Entities and Relationships (Solve any five) [10]

Employee (empno, name, address, city, deptname)

Project (pno, pname, status)

Employee and Project are related with **many-to-many** relationship with **descriptive attribute no. of days** employee worked on the project.

Constraints : Primary key

Foreign key

Project status constraints : C - completed

P - Progressive

I - Incomplete

Write queries for the following

- Add constraint c1 : Project name must not be null and lower case.
- Add one more column as phone\_no in Employee.
- List the names of employees in which second character is 'a' or 'r'
- List the name of employee who have worked on any project more than 35 days.
- List the project names and total number of employee worked on project having status "progressive"
- List project wise names of employees along with project status.

**Q6)** Write a short note on following (any 4)

**[4×5=20]**

- a) Codd's Rule
- b) RAID
- c) Relational Operators
- d) States of transactions
- e) Aggregation



Total No. of Questions :7]

SEAT No. :

**P2129**

**[5570]-203**

[Total No. of Pages : 2

**MCA (Management Faculty)**  
**IT-23: OPERATING SYSTEM CONCEPT**  
**(2012 Pattern) (Semester-II)**

*Time : 3Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question 1 is compulsory.*
- 2) *Solve any 5 from remaining.*
- 3) *Black figures to the right indicate full marks.*
- 4) *Draw neat diagrams wherever necessary.*

**Q1) a)** Assume 5 jobs in ready queue in order 1,1,2,3,4 time unit with following burst time and priority below.

Jobs	Burst Time
A	10
B	5
C	2
D	11
E	2

- Higher number indicates higher priority.

Using Gantt chart calculate Turnaround time and waiting time using round robin and SJF algorithm. Consider Time Quantum=2 Time Unit.

[12]

b) Explain RAID Structure in detail.

[8]

**Q2) a)** Explain abstract view of OS.

[2]

b) Differentiate Distributed and Centralized OS.

[8]

**Q3) a)** Define page Fault

[2]

b) Calculate the number of page fault for the following reference string for 3 frames for LRU and Optimal Page replacement algorithm.

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

[8]

*P.T.O.*

**Q4)** Consider the following snapshot of a system

**[10]**

Process	Allocation			Maximum			Available		
	A	B	C	A	B	C	A	B	C
P0	0	0	1	0	0	1	2	2	2
P1	1	0	0	1	7	5			
P2	1	3	5	2	3	5			
P3	0	6	3	0	6	5			

Check

- a) The system is in safe state.
- b) If a request of resources (0,4,2) arise from Process P3, Can the request be granted immediately.

**Q5) a)** Describe disk performance issues. **[5]**

b) Explain dining philosopher problem using semaphore. **[5]**

**Q6) a)** Explain NOS Architecture in detail. **[7]**

b) Explain thrashing. **[3]**

**Q7)** Write short notes (Any two) **[10]**

- a) Context Switch
- b) TLB
- c) IPC



Total No. of Questions : 7]

SEAT No. :

**P2130**

**[5570]-204**

[Total No. of Pages : 1

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

**BM21 - MANAGEMENT INFORMATION SYSTEM AND BUSINESS  
INTELLIGENCE**

**(2012-2013 Pattern) (Semester - II)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.7 is compulsory.*
- 2) *Attempt any five questions from Q.1 to Q.6.*

**Q1)** What is system? Explain types of system in detail. **[10]**

**Q2)** Explain role of M.I.S. in today's business world. Write the M.I.S. structure based on M.I.S. functions. **[10]**

**Q3)** Define Decision making process. Explain Herbert-Simon model of decision making. **[10]**

**Q4)** Define DSS. Explain characteristics and capabilities of DSS. **[10]**

**Q5)** What is Expert system? Differentiate conventional VS Expert system. **[10]**

**Q6)** Define the term B.I. Explain its needs. Draw and Explain B.I. architecture in detail. **[10]**

**Q7)** Write short notes. (any four) **[4×5=20]**

- a) Data Mart.
- b) OLAP.
- c) Characteristics of EIS.
- d) Heuristic programming.
- e) Quality of Information.
- f) BI Tools.



Total No. of Questions :7]

SEAT No. :

[Total No. of Pages : 1

**P2132**

**[5570]-301**

**M.C.A.**

**MANAGEMENT**

**IT - 31 : Web Technologies**

**(2012 - 2013 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.1 and Q. 7 are compulsory.*
- 2) *Solve any 4 questions from remaining questions.*
- 3) *Draw neat diagrams.*

**Q1) a)** Write XML code to display cricket player information and convert XML file to HTML format. **[10]**

b) What is CSS? Explain text and border properties with examples. **[10]**

**Q2)** Design university online examination form which accepts examination details and validate any five fields using Javascript. **[10]**

**Q3)** Explain DOM objects in Javascript. **[10]**

**Q4)** Explain .D access and .D passed file and how can they be configured to implement authentication. **[10]**

**Q5)** What is jQuery? List out the advantages of jQuery. **[10]**

**Q6)** Explain following tags : **[10]**

- a) `<MAP>`   b) `<Frameset>`   c) `<Div>`   d) `<Form>`

**Q7)** Write short notes (any 2) : **[10]**

- a) SOAP
- b) Date and Math object in Javascript
- c) 3 - tier architecture



Total No. of Questions : 7]

SEAT No. :

**P2133**

[Total No. of Pages : 1

**[5570]-302**

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

**IT -3 2: DATA COMMUNICATION AND COMPUTER NETWORKS**

**(2012 & 2013 Pattern) (Semester - III)**

*Time :3 Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Q.1 and Q.7 are compulsory.*
- 2) *Solve any FOUR from remaining.*
- 3) *Figures to the right indicate full marks.*

**Q1)** a) Explain IPv4 addressing from point of Network Part, Host Part and Network Mask. [8]

b) Explain OSI Model. [7]

**Q2)** Explain TCP connection with suitable diagram. [10]

**Q3)** Explain Domain Names, Authoritative Hosts and Delegating Authority. [10]

**Q4)** Explain HTTP request headers, Responses and Status codes. [10]

**Q5)** Explain Symmetric and Asymmetric key cryptography. [10]

**Q6)** Explain connection oriented and connection less network. [10]

**Q7)** Write short notes (Any THREE) [3×5=15]

- a) P2P Protocol
- b) SOA records
- c) FTP
- d) LTE
- e) Application Gateways



Total No. of Questions : 5]

SEAT No. :

**P2134**

[Total No. of Pages : 2

**[5570]-303**

**M.C.A**

**FACULTY OF MANAGEMENT**

**IT - 33 : Data Structures Using C++**

**(2012-2013 Pattern) (Semester - III)**

*Time :3 Hours]*

*[Max. Marks :70*

*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.*

**Q1)** Write short notes on any Two:

**[10]**

- a) Application of stock
- b) Binary Tree
- c) Priority queue
- d) Post order Traversal

**Q2)** a) Convert infix to postfix form. Represent operator in stack and expression at each step.  $A * (B - C \wedge D) + E \wedge F * (G/H)$ . **[10]**

b) Write a function in C++ for addition of 2 square matrices **[10]**

**Q3)** a) Draw AVL tree for the following:

**[10]**

Nita, Mark, Prit, Rave, Somu, Jogi, Amar, Parm, Namu, Saru, Sita.

b) Write a C++ code for implementing double link list with insert from beginning, delete from end and display functions **[10]**

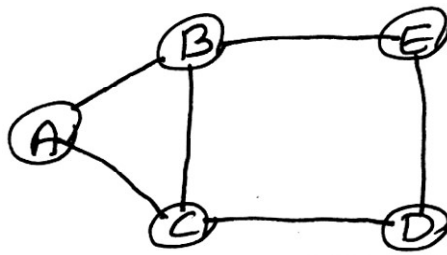
**P.T.O.**

**Q4) a)** Write a program to implement queue using array. [10]

b) Write a C++ code for deleting a node from binary search Tree [10]

**Q5) a)** Draw a binary search tree for following. Also write pre order traversal for this. 40, 20, 10, 50, 90, 30, 60, 70, 95, 55, 25, 80, 45. [10]

b) Generate DFS, BFS starting from node E, adjacency matrix adjacency list for following graph. Also write algorithm for DFS and BFS. [10]



Total No. of Questions : 7]

SEAT No. :

**P2135**

**[5570]-304**

[Total No. of Pages : 1

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

**IT-34 : ADVANCED DATABASE MANAGEMENT SYSTEMS**

**(2013 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.No.7 is compulsory.*
- 2) *Solve any five questions from 1 to 6.*
- 3) *Figures to the right indicate full marks.*
- 4) *Q.No. 7 carries 20 marks, Q.No. 1 to 6 carries 10 marks.*

**Q1)** Explain 3-tier web architecture in detail. Draw a neat diagram.

**Q2)** Define I/O parallelism? What do you mean by Inter-Operations and Intra-operational parallelism? Explain with example.

**Q3)** Explain Deadlock handling in DDBMS.

**Q4)** Compare RDBMS, OODBMS and ORDBMS.

**Q5)** Explain in brief dimensional data modeling.

**Q6)** What is clustering? Explain K-means algorithm with example.

**Q7)** Write short notes on (Any Four) :

- a) 2PC.
- b) Knowledge discovery process.
- c) Data cube.
- d) XML Schema.
- e) Spatial data & Geographic database.



Total No. of Questions : 7]

SEAT No. :

**P2136**

**[5570]-305**

[Total No. of Pages : 1

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

**IT-35 : OBJECT ORIENTED ANALYSIS AND DESIGN**

**(2012 & 2013 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.No.1 is compulsory.*
- 2) *Solve any five from the remaining.*
- 3) *Mention assumptions made for solving the case studies.*

**Q1)** The Hotel Management system needs to be done online. System should have following functionalities. **[20]**

- a) Table Booking.
- b) Home Delivery (Food items).
- c) Room Booking.
- d) Hall Booking.

Draw use case diagram and class diagram.

**Q2)** Draw the state transition diagram for Vacuum cleaner. **[10]**

**Q3)** a) Draw the sequence diagram for booking movie ticket. **[5]**

b) Differentiate between Aggregation and composition. **[5]**

**Q4)** Explain OMT methodology in detail. **[10]**

**Q5)** Explain the RUP in detail. **[10]**

**Q6)** Draw the Activity diagram for Railway Reservation System. **[10]**

**Q7)** Write short notes on (any 2) : **[10]**

- a) Object - Relation mapping.
- b) Test Cases Guidelines.
- c) CRC Approach.
- d) Benefits of pattern.



Total No. of Questions :7]

SEAT No. :

**P2137**

**[5570]-401**

[Total No. of Pages : 2

**MCA (Management)**

**IT- 41: JAVA PROGRAMING**

**(2012 & 2013 Pattern) (Semester-IV)**

*Time : 3Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

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

**Q1)** Solve the following questions

**[10]**

- a) What is URL?
- b) What is abstract Class?
- c) Explain thread life cycle.
- d) Explain Buffer Reader and Buffer Writer.
- e) List any four methods of file class.

**Q2)** Write a java program to swap the content of two files.

**[10]**

**Q3)** Explain Applet life cycle with suitable example.

**[10]**

**Q4)** Write a GUI based JDBC application to create login form with all applicable validations.

**[10]**

**Q5)** Write a java program to demonstrate Sorted Map Interface.

**[10]**

**P.T.O.**

**Q6)** Write a client server socket program to delete the duplicated characters from the string. Server will return the string by removing duplicate characters to client. **[10]**

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

- a) Garbage Collection
- b) Layout Manager.
- c) Java Beans.
- d) Swing Libraries.
- e) Event Delegation Model.



Total No. of Questions :8]

SEAT No. :

**P2138**

**[5570]-402**

[Total No. of Pages : 2

**M.C.A.-II Management**  
**IT-42: MOBILE COMPUTING**  
**(2012 & 2013 Pattern) (Semester-IV)**

*Time : 3Hours]*

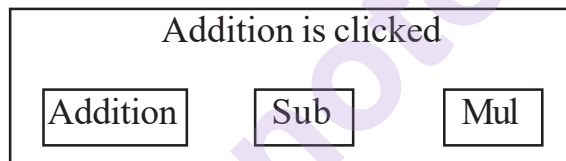
*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No.1 and 8 are compulsory.*
- 2) *Solve any 3 from remaining.*

**Q1)** a) What is cellular communication? Explain the concept of cellular networks.[10]

- b) Write Android application to create option menu as shown below to toast the appropriate message when clicked on the option [Addition option is clicked in the example] [10]



**Q2)** Why do hidden and exposed terminal problems arise? Explain in detail.[10]

**Q3)** Write an Android application for loading & saving a file. [10]

**Q4)** What is location provider? Explain its usage in Android [10]

**Q5)** How chat sessions are managed? Give an example. [10]

**Q6)** Explain in depth the file system in Android. [10]

*P.T.O.*

**Q7)** Discuss the architecture of Android.

**[10]**

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

**[20]**

- a) Windows CE
- b) 3G Technology
- c) GPRS
- d) Android SDK
- e) Map based activation
- f) 802.11



Total No. of Questions : 7]

SEAT No. :

**P2139**

**[5570]-403**

[Total No. of Pages : 1

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

**IT - 43 : INFORMATION SECURITY AND AUDIT**

**(2012 and 2013 Pattern) (Semester - IV)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. No.1 and Q. No.7 are compulsory.*
- 2) *Solve any four questions from Q. No. 2 to Q. No. 6.*
- 3) *Figures to the right side indicate full marks.*

**Q1)** Govt. of India want to out source the project of converting records of Ration Card Data into online Format to the external agency. In this regard, you as a Is auditor discuss :

- a) Risks associated with out sourcing.
- b) Phases of out sourcing life cycle. **[10]**

**Q2)** Explain various threats to information security. **[10]**

**Q3)** Explain BS7799 security policy standard in detail. **[10]**

**Q4)** Explain Logical and physical access controls in detail. **[10]**

**Q5)** What is IT Governance? Explain IT Governance Maturity Model in detail. **[10]**

**Q6)** What is IS Audit? Explain Techniques and methodologies of performing IS Audit. **[10]**

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

- a) Digital signature
- b) DRP
- c) ISMS
- d) Administrative policy
- e) Ethical halking



Total No. of Questions : 7]

SEAT No. :

**P2140**

**[5570]-404**

[Total No. of Pages : 2

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

**IT - 44 : DESIGN AND ANALYSIS OF ALGORITHM  
(2012-2013 Pattern) (Semester - IV)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. No. 1 and Q. No. 7 are compulsory.*
- 2) *Solve any four from Q. No. 2 to Q. No. 6.*
- 3) *Make necessary assumptions.*
- 4) *Use of non-programmable calculator is allowed.*
- 5) *Figures to the right indicate full marks.*

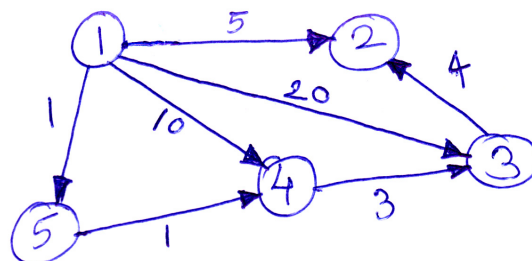
**Q1) a)** Discuss merge sort algorithm with suitable example. **[10]**

b) Define algorithm? Explain space and time complexity with example. **[10]**

**Q2)** Write an algorithm for Heap Sort and Sort the following elements using heap sort. **[10]**

40, 35, 75, 20, 80, 52, 76, 15.

**Q3)** Define minimum spanning tree find MST using Dijkstra's Algorithm for the following. **[10]**



**Q4)** Design an algorithm for fractional knapsack problem using greedy method. Trace it with suitable example. **[10]**

*P.T.O.*

**Q5)** Discuss travelling salesman algorithm using branch and bound technique explain with suitable example. **[10]**

**Q6)** Discuss N-queen problem and find out possible solution set for 4-queen problem. **[10]**

**Q7)** Write a short note on any two of the following. **[10]**

- a) Dynamic programming technique.
- b) OBST.
- c) Hamiltonian cycle.

\*\*\*

Total No. of Questions : 7]

SEAT No. :

P4142

[Total No. of Pages : 2

[5570]-41

**M.C.A. (Management Faculty) (Semester - IV)**  
**BME1: MIS FRAMEWORK AND IMPLEMENTATION**  
**(2008 Pattern) (Elective)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

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

**Q1)** Define MIS with its feature and limitations. **[10]**

**Q2)** Elaborate different benefits IT applications can provide through office automation. **[10]**

**Q3)** In the phase of recession, it is crucial to justify investments in IT. Explain how information systems can help justifying investments in IT. **[10]**

**Q4)** Design and discuss a MIS Framework for e - learning applications. **[10]**

**Q5)** Explain the impact to IT infrastructure on the socio-economic environment of the organization. **[10]**

**Q6)** Explain the importance of information system to handle challenges global scenario. **[10]**

**P.T.O.**

**Q7)** Write short note on (Any Four)

**[20]**

- a) Difference in MIS and EIS.
- b) Experts systems.
- c) GDSS
- d) Cost benefit analysis of information systems.
- e) Threats to IT infrastructure.



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Total No. of Questions : 4]

SEAT No. :

P4143

[Total No. of Pages : 3

[5570]-42

**M.C.A. (Management Faculty) (Semester - IV)**  
**BM E2: FOUNDATION OF DECISION PROCESSES**  
**(2008 Pattern) (Theory)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to candidates:*

- 1) *Question No. 1 is compulsory.*
- 2) *Solve any two questions from remaining.*
- 3) *Figures to the right indicate full marks.*
- 4) *Use of electronic calculator is allowed.*

**Q1) a)** Dr. Strong is a dentist who schedules all his patients for 30 minutes appointments. Some of the patients take more or less than 30 minutes depending on the type of dental work to be done. The following summary shows that the various categories of the work, their probabilities and the time actually needed to complete the work:

Category of (in minutes)	Service Time required	Probability of Category
Filling	45	0.40
Crown	60	0.15
Cleaning	15	0.15
Extraction	45	0.10
Check-up	15	0.20

Simulate the dentist's clinic for four hours and determine the average waiting time for the patients as well as the idleness of the doctor. Assume that all the patients show up at the clinic at exactly their scheduled arrival time starting at 8:00 a.m. Use the following random numbers for handling the above problem: [20]

40 82 11 34 25 66 17 79

b) Explain Markov's Chain and its uses in detail.

[10]

**P.T.O.**

**Q2) a)** The rate of arrival of customers at a Public telephone booth follows a Poisson distribution with an average time of 10 minutes between one customer and the next. The duration of a phone call is assumed to follow exponential distribution with a mean time of 3 minutes. **[10]**

- i) What is the probability that a person arriving at the booth will have to wait?
- ii) What is the average length of the queue.
- iii) The MTNL will install another booth when it is convinced that the customer would have to wait for at least 3 minutes for their turn to make a call. How much should be the flow of the customers in order to justify a 2<sup>nd</sup> booth.

**b)** A manufacturing company has just developed a new product. On the basis of past experience, a production such as this will either be successful, with an expected gross return of Rs.1,00,000 or unsuccessful, with an expected gross return of Rs.20,000. Similar products manufactured by the company have a record of being successful about 50% of the time. The production and marketing costs of the new product are expected to be Rs. 50,000.

The company is considering whether to market this new product or to drop it. Before marketing its decision, a test marketing effort can be conducted at a cost of Rs.10,000. Based on past experience, test marketing results have been favorable about 70% of the time. Furthermore, products favorably tested have been successful 80% of the time. However, when the test marketing result has been unfavorable, the product has only been successful 30% of the time.

What course of action should the company pursue? **[10]**

**Q3) a)** What investment option should the businessman decide to maximize his expected utility? A dealer of bicycles has estimated the following distribution of demand for a particular kind of bicycle. **[10]**

Demand	0	1	2	3	4	5	6
Probability	0.13	0.28	0.27	0.18	0.09	0.04	0.01

Each bicycle costs him Rs.2,000 and he sells them for Rs.5,000 each. Any bicycle that is left unsold at the end of the season must be disposed off for Rs.500 each. How many bicycles should be there so as to maximize his expected profit?

- b) Two organizations are competing for business under the conditions so that one firm's gain is another firm's loss, The pay-off matrix is given below: [10]

		OrgB		
		Nil Advertising	Moderate Advertising	Heavy Advertising
Org A	Nil Advertising	10	5	-2
	Moderate Advertising	13	12	15
	Heavy Advertising	16	14	10

Suggest the optimum strategies for the two organizations.

- Q4) a)** A company has two manufacturing shops and two tool cribs, one for each shop. Both the tool cribs handle almost identical tools, gauges and measuring instruments. Analysis of service time shows an exponential distribution with a mean of 2.5 minutes per workman. An arrival of workman follows Poisson distribution with a mean of 18 per hours. The production manager feels that if tool cribs are combined for both shops efficiency will improve and waiting time in the queue will reduce. Do you agree with his opinion?. [10]
- b) Explain how the statistical analysis can be helpful to business managers in decision making under uncertainty. [10]



Total No. of Questions : 7]

SEAT No. :

**P4144**

[Total No. of Pages : 2

**[5570]-43**

**M.C.A. (Management Faculty) (Semester - IV)**  
**ITE-1 : PROGRAMMING LANGUAGE PARADIGMS**  
**(2008 Pattern) (Elective)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to candidates:*

- 1) Question 1 and 7 are compulsory.*
- 2) Attempt any four questions from the remaining.*

**Q1)** Explain various paradigms of programming languages with examples. **[15]**

**Q2)** Explain phases of source program analysis and object program synthesis with suitable diagram. **[10]**

**Q3)** What is binding time? Explain the classes of binding times. **[10]**

**Q4)** Explain compiler and interpreter with examples. **[10]**

**Q5)** Explain general syntactic criteria of programming languages. **[10]**

**Q6)** Explain actual and formal parameter passing with examples. **[10]**

**P.T.O.**

**Q7)** Write note on (any Three)

**[15]**

- a) Firmware computer
- b) Implicit and explicit sequence control
- c) Scalar data types
- d) Type checking and type conversion



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Total No. of Questions : 7]

SEAT No. :

P4145

[Total No. of Pages : 2

[5570]-44

**M.C.A. (Management Faculty) (Semester - IV)**  
**BME - 4 : COLLABORATIVE MANAGEMENT**  
**(2008 Pattern) (Elective)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to candidates:*

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

**Q1)** "One plus one makes three: this equation is the special alchemy of a merger or an acquisition". State the features of merger and acquisition. **[10]**

**Q2)** "Collaborative management is used to describe various management techniques that promote a sense of unity and teamwork among managers and supervisors within a business organization". Elucidate the statement. **[10]**

**Q3)** Elaborate porter's five forces framework with the help of suitable examples. **[10]**

**Q4)** Discuss the assessment of profiles of products/ businesses and the development cycles of products through BCG matrix. **[10]**

**Q5)** The Mckinsey's 7s frame work model is most often used as a tool to assess and monitor changes in the internal situation of an organization. Elaborate. **[10]**

**Q6)** State and explain the Structural, Functional and Behavioral issues involved in strategy implementation. **[10]**

**P.T.O.**

**Q7)** Write Short notes on (any four):

**[20]**

- a) Value chain
- b) SWOT analysis
- c) Social Responsibility
- d) GE9 Cell Model
- e) Core competencies



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Total No. of Questions : 7]

SEAT No. :

**P2142**

**[5570]-501**

[Total No. of Pages : 1

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

**IT - 51 : SOFTWARE TESTING AND QUALITY ASSURANCE**

**(2013 Pattern) (Semester - V)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. No. 1 and Q. No. 7 are compulsory.*
- 2) *Attempt any four from remaining.*
- 3) *Figures to right indicate marks.*
- 4) *Draw neat diagrams wherever necessary.*

**Q1)** Write a detailed test plan for an “SOS” app for security of citizens. App has following features. **[15]**

- a) Registration through mobile.
  - b) Auto dial to specific number.
  - c) Tracking GPS location and inform nearest police station.
  - d) Registering the complaint.
- Also write test cases for the app.

**Q2)** Explain testing related to specialized systems? **[10]**

- Q3)**
- a) Explain different techniques for system testing. **[5]**
  - b) Compare validation and verification as a part of software testing. **[5]**

**Q4)** Explain different types of software bugs. Also explain bug life cycle? **[10]**

**Q5)** Explain different measures and models of software reliability? **[10]**

- Q6)**
- a) What is regression and smoke testing? **[5]**
  - b) What are different types of reviews? **[5]**

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

- a) CMM.
- b) Clean room software Development.
- c) Quality factors.
- d) Functional vs Non functional testing.



Total No. of Questions : 8]

SEAT No. :

**P2143**

**[5570]-502**

[Total No. of Pages : 1

**MCA - III (Management Faculty)**  
**IT 52 : SOFTWARE PROJECT MANAGEMENT**  
**(2012 & 2013 Pattern) (Semester - V)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Solve any seven questions from Q1 to Q8.*
- 2) *Use of non programmable calculator allowed.*

**Q1)** Calculate Function point value for a software project from given information as follows:

Data Entry Screens : 12

Reports : 15

Enquires : 10

No. of programs : 25

Algorithms : 25

Files : 16

In addition to above, system requires complexity factors are treated as Average.

**[10]**

**Q2)** Describe role of user in project management. **[10]**

**Q3)** Discuss importance of team management and explain software team structure. **[10]**

**Q4)** Explain COCOMO Technique in detail. What is cost and time required to develop a complete project of 25000 lines of code? **[10]**

**Q5)** What is risk management? Explain the different stages involved in risk management? **[10]**

**Q6)** What is software configuration management? Explain version and release management in detail **[10]**

**Q7)** Describe software project management process in detail. **[10]**

**Q8)** Short note (any 2): **[10]**

- a) MS Project
- b) WBS
- c) Delphi cost Estimation



Total No. of Questions : 7]

SEAT No. :

**P2144**

[Total No. of Pages : 1

**[5570]-503**

**M.C.A. (Mgmt.)**

**IT-53 : EMERGING TRENDS IN INFORMATION TECHNOLOGY  
(2013 Pattern) (Semester - V)**

*Time : 3 Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Question No. 1 and 7 are compulsory.*
- 2) *Attempt any four from remaining.*
- 3) *Figures to the right indicate full marks.*
- 4) *Draw neat diagrams wherever required.*

**Q1)** An autonomous college want to implement e-learning model for distance learning programmes. As an IT consultant do comparative analysis of various e-learning models and suggest e-learning model to autonomous college also justify your suggestion. **[15]**

**Q2)** What is mobile commerce? Also explain its attributes. **[10]**

**Q3)** Explain the standards of e-learning in detail? **[10]**

**Q4)** Explain need of social networking and its different types. **[10]**

**Q5)** What is cloud computing? Explain its architecture. **[10]**

**Q6)** What is CMS (Content management System)? Also give examples. **[10]**

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

- a) ECM Process
- b) POS
- c) Security issues with social networking
- d) Applications of m-commerce
- e) Online meeting tools



Total No. of Questions : 7]

SEAT No. :

**P2145**

[Total No. of Pages : 2

**[5570]-504**

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

**IT - 54 : ADVANCE DEVELOPMENT TECHNOLOGY  
(2012 & 2013 Pattern) (Semester - V)**

*Time : 3 Hours]*

*[Max. Marks :70*

*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)** Draw and explain ADO. net architecture. **[10]**

**Q2)** Design a form and write code to :- **[15]**

- a) Populate and display student name in a drop down list.
- b) Select a student name and display it's details in under lying text boxes.
- c) Add a record.
- d) Delete selected record.
- e) Edit selected record.

Name of table :

Student Master (studentid, name, address, date - of - birth, phone No)

**Q3)** Explain any five login controls in detail. **[15]**

**Q4)** Explain server - side statemanagement techniques in detail. **[15]**

**Q5) a)** Write a program to implement hit counter using globol . asax file. **[7]**

- b) Write a program using file upload control to upload a file. Aslo check that file should not be greater than 2 MB. **[8]**

**P.T.O.**

**Q6)** Explain the following controls (Any three)

**[15]**

- a) Link button control
- b) Tree view control
- c) Drop down control
- d) Adrotator control

**Q7)** Write short note on the following (Any three)

**[15]**

- a) Validation control (Any two)
- b) AJAX server side control
- c) Login control (Any three)
- d) Namespaces



Total No. of Questions : 7]

SEAT No. :

**P4758**

[Total No. of Pages : 2

**[5570]-505**

**MCA (Management Faculty)**

**IT-55 : ADVANCED INTERNET TECHNOLOGY**

**(2012 & 2013 Pattern) (Semester - V)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Q1 & Q7 are compulsory.*
- 2) Answer any four questions from remaining (Q2 & Q6).*
- 3) Neat diagram must be drawn where ever necessary.*
- 4) Figures at the right side indicates full marks.*

**Q1)** a) What are JSP actions? Explain error handling in JSP with example. **[10]**

b) Explain PERL array functions with example. **[5]**

**Q2)** Write PHP code to accept voter registration details from voter and store it into the database. **[10]**

**Q3)** What is CGI architecture? Write a PERL program to create a file, insert some data into it and display the same content. **[10]**

**Q4)** Explain how we can manage COOKIES with suitable example in servlet. **[10]**

**Q5)** What is ORM and Hibernate? What are the levels of ORM? **[10]**

**Q6)** What is thread safe servlet? Write a Servlet program to accept online voter details for voter registration. (assume suitable table structure) **[10]**

**P.T.O.**

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

**[15]**

- a) JSP elements
- b) PERL array functions
- c) AOP in spring
- d) require() and include() in PHP
- e) Arrays in PHP



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Total No. of Questions : 7]

SEAT No. :

**P4147**

[Total No. of Pages : 1

**[5570]-51**

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

**HUMAN COMPUTER INTERFACE**

**(2008 Pattern)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No. 1 is compulsory.*
- 2) *Answer any five from remaining.*
- 3) *Figures at right hand indicate full marks.*

**Q1)** Answer any four.

**[4 × 5 = 20]**

- a) What are the guidelines for data entry.
- b) What are the goals of system engineering?
- c) Explain individual window design.
- d) Write icon-specific guidelines.
- e) Explain presentation styles for error messages.

**Q2)** Explain OAI model for web site Design.

**[10]**

**Q3)** Explain four phase framework for textual search.

**[10]**

**Q4)** Explain eight golden rules of interface design.

**[10]**

**Q5)** Explain three pillars of design.

**[10]**

**Q6)** Explain Goals of co-operations.

**[10]**

**Q7)** Write short note on (any two)

**[10]**

- a) Response time and display rate.
- b) Speech recognition
- c) Surveys.

