

Total No. of Questions : 7]

SEAT No. :

**P3874**

**[4875]-101**

[Total No. of Pages : 2

**M.C.A. (Management Faculty)**  
**IT 11: COMPUTER ORGANISATION**  
**(2012 Pattern) (Semester - I) (New)**

*Time : 3 Hours ]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question No.1 and 7 are compulsory.*
- 2) *Answer any Four (4) From Questions No 2 to 6.*
- 3) *Figures to the right indicate full marks.*
- 4) *Draw neat diagram wherever necessary.*

**Q1) a)** Discuss 32- bit processor architecture (80486) with neat diagram. **[10]**

b) Discuss any two types of addressing modes. **[5]**

**Q2) a)** Construct 8×3 Encoder and explain its truth table. **[5]**

b) Construct RS Flip flop and describe its functions. **[5]**

**Q3) a)** Convert the following **[5]**

i)  $(127.6)_8 = ( )_{16}$     ii)  $(AFED.15)_{16} = ( )_{10}$

b) Solve  $F(A, B, C, D) = \Sigma(1, 3, 5, 9, 13, 15)$  using Karnaugh's Map. **[5]**

**Q4)** What is DMA? Draw the block diagram of DMA controller and explain DMA transfer operation. **[10]**

**P.T.O.**

**Q5)** Draw and explain the state diagram of instruction execution cycle with interrupts. [10]

**Q6)** a) Compare RISC Vs CISC architecture. [5]

b) What is pipelining? Discuss Instruction pipelining with flow diagram. [5]

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

a) Types of parallel processors.

b) Assembler.

c) Superscalar concept.

d) Micro programmed control memory.

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Total No. of Questions : 7]

SEAT No :

**P3875**

**[4875]-102**

[Total No. of Pages : 2

**M.C.A. - I (Management Faculty)**  
**IT - 12 -C PROGRAMMING**  
**(2012 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) *Figures at right hand indicates full marks.*

**Q1)** Answer the following questions. (any four)

**[20]**

- a) Differentiate between structure and union.
- b) What is indirection operator? Give an example.
- c) Explain any two string handling functions with example.
- d) Explain the different storage classes in C in detail.
- e) How does Switch statement differ from Nested if?

**Q2)** a) Write a recursive function to find square root of a number.

**[5]**

b) Write a C Program to find the sum of following series.

**[5]**

$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \dots + \frac{x^n}{n!}$$

**Q3)** a) Write a C program that find the sum of upper triangular elements of matrix.

**[5]**

b) Write a function to find the given string is palindrome or not.

**[5]**

**P.T.O.**

**Q4) a)** Write a C program to swap the two numbers using bit-wise operators. **[5]**

b) Write a C program to find the roots of a quadratic equation. **[5]**

**Q5)** Write graphics C programs that draw an ASHOK CHAKRA. Use suitable radius. (In a circle draw 24 line from center to perimeter with equally space). **[10]**

**Q6)** Write a menu driven C program to perform addition, subtraction, multiplication and division of two complex numbers. (Use structure variable to store complex numbers real and imaginary part.) **[10]**

Addition:  $(a + bi) + (c + di) = (a + c) + (b + d)i$

Subtraction:  $(a + bi) - (c + di) = (a - c) + (b - d)i$

Multiplication:  $(a + bi)(c + di) = (ac - bd) + (bc + ad)i$

Division:

$(a + bi)/(c + di) = ((ac + bd) / (c^2 + d^2)) + ((bc - ad)/(c^2 + d^2))i$

**Q7)** Two files DATA 1 and DATA 2 contain sorted list of student names. Write a C program to produce a third file DATA which hold a single sorted, merged list of these two lists. **[10]**



Total No. of Questions :7]

SEAT No. :

**P3876**

**[4875]-103**

[Total No. of Pages :2

**M.C.A. (Management Faculty)**  
**IT-13 -103: SOFTWARE ENGINEERING**  
**(2012 & 2013 Pattern) (Semester - I)**

*Time : 3 Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Q.1 Q.7 are compulsory.*
- 2) *Attempt any three from Q.2 to Q.6.*
- 3) *Draw neat diagrams.*
- 4) *Write assumption whenever necessary.*

**Q1)** Cool cloth stores have several different sales counters. Every counter is provided with a PC. When customer selects cloth at a counter, the entry is made on a respective PC. At the end, a bill is prepared at the cash counter taking all entries made for the customer at various counters. Bill amount is accepted either by cash or credit card.

As a consultant

- a) Prepare SRS for above case. **[15]**
- b) Draw context level DFD for the above case. **[5]**

**Q2)** A Limited company, decided to give Diwali bonus to all its employees for which the management has divided the employees into three categories, namely, Administrative. **[10]**

Staff(AS) Office Staff(OS), Workers(W) and considered 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 & Decision Table to represent the above case.

**P.T.O.**

- Q3)** Design web-based GUI form for entering registration details for all India Entrance Examination of MCA. **[10]**
- Q4)** Explain FDD & E-R Tools with their importance. **[10]**
- Q5)** Explain the role of documentation in maintenance and types of documentation in maintenance and types of documentation. **[10]**
- Q6)** Explain Various tools available for project management support in case tool. **[10]**
- Q7)** Write short note on (any 4): **[20]**
- a) Fact finding techniques.
  - b) Reverse Engineering.
  - c) Code design.
  - d) Web Engineering.
  - e) JAD.

*EEE*

Total No. of Questions : 6]

SEAT No. :

**P3877**

**[4875]-104**

[Total No. of Pages : 1

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

**BM.11 - 104 : PRINCIPLES AND PRACTICES OF MANAGEMENT  
AND ORGANIZATIONAL BEHAVIOR**

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

*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) a)** Define the term Management with its Definition, need and scope. Also discuss the various managerial Functions. **[15]**

b) “Johari window helps any one to understand self and individual behaviour”  
- Justify the conflict. **[10]**

**Q2)** What is conflict management? Discuss various strategies need to be adopted to resolve the conflict. **[15]**

**Q3)** Define Group Dynamics? How effective teams play important role in the organizational effectiveness. **[15]**

**Q4)** Explain the ego states and its relevance to Transactional Analysis. **[15]**

**Q5)** What is Organizational Behaviour? Discuss its importance in 21<sup>st</sup> century. **[15]**

**Q6)** Short Notes (Any three) **[15]**

- a) Decision made under Risk.
- b) HR Approach.
- c) Programmed and Non programmed Decision.
- d) Theory X.
- e) Team Building.

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Total No. of Questions : 04]

SEAT No. :

**P3878**

**[4875] -105**

[Total No. of Pages : 2

**M.C.A. - (Management Faculty)**  
**MT-11-105: DISCRETE MATHEMATICS**  
**( 2012 Pattern) (Semester-I)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Question 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) Show the following equivalences without truth table: **[5]**
  - i)  $A \rightarrow (P \vee C) \equiv (A \wedge \neg P) \rightarrow C$
  - ii)  $(P \rightarrow C) \wedge (Q \rightarrow C) \equiv (P \vee Q) \rightarrow C$
- b) Let  $A = \{1, 2, 3, 4, 5\}$  and  $B = \{1, 3, 5\}$   
Let R be the relation from  $A \rightarrow B$  defined by "x is greater than y". Write the relation R, its matrix and draw its graph. **[5]**
- c) How many ways 4 couples can be seated on a table in a row if **[5]**
  - i) With no restriction
  - ii) One couple insist that they must sit together
- d) Find the number of non-negative integer solutions for **[5]**  
$$x_1 + x_2 + x_3 = 21$$
  
where  $x_1 > 2, x_2 > 4, x_3 > 5$
- e) How many integers between 1 and 500 (both inclusive) are divisible by 3 or 5 or 7? **[5]**
- f) Consider the binary operation  $*$ :  $Q \times Q \rightarrow Q$  which is defined by **[5]**  
 $a * a = a + b + ab \quad \forall a, b \in Q$ , determine if:
  - i)  $*$  is commutative
  - ii)  $*$  is associative

**P.T.O.**



- Q2)** a) Obtain the PDNF [5]  
 $(P \wedge \neg Q) \vee (Q \wedge \neg P) \vee (R \wedge P)$
- b) Let  $A = \{1, 2, 3, 4\}$  and  $R = \{(1,2), (2,1), (2,3), (3,4)\}$ . Find transitive closure using Warshall's algorithm. [7]
- c) i) Find the coefficient of  $xyz^2$  in the expansion of  $(x - 2y + 3/z)^4$  [4]  
 ii) How many permutations can be formed from the word UNUSUAL? How many if vowels are always together? [4]

- Q3)** a) If it rains heavily, then travelling will be difficult. If students arrive on time, then travelling was not difficult. They arrived on time. Therefore it did not rain heavily. Prove the validity of the above statement. [5]
- b) Find the code words generated by the parity check matrix H given below. [7]

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

- c) i) Prove that  $\binom{2n}{n} = \binom{n}{0} + \binom{n}{1} + \binom{n}{2} + \dots + \binom{n}{n}$  [4]
- ii) Six persons are assigned six seats in a row. How many different ways can they occupy these seats, [4]
- 1) Two of them do not occupy their assigned seats.
  - 2) None of them occupy their assigned seats.

- Q4)** a) Let  $R = \{(x,x), (y,x), (z,z)\}$  and  $S = \{(x,x), (x,y), (y,z), (z,y)\}$  [5]
- i) Find  $(R \circ R) \circ S$
- ii)  $S \circ S$
- b) Show that following premises are inconsistent. [7]  
 If Jack misses many classes through illness then he fails high school.  
 If Jack fails high school, then he is uneducated.  
 If Jack reads a lot of books, then he is not uneducated.  
 Jack misses many classes through illness and reads a lot of books.
- c) How many ways can a student schedule 15 hours study in five days period, if [8]
- i) He can study for any number of hours on a day?
  - ii) He must study atleast one hour each day?
  - iii) He must study atmost five hours each day?



Total No. of Questions : 8]

SEAT No. :

**P3879**

**[4875]-201**

[Total No. of Pages : 5

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

**IT - 21 : OBJECT ORIENTED PROGRAMMING WITH C++  
(2012 Pattern) (Semester - II)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.1 and 8 are compulsory.*
- 2) *Solve any five from Q.2 to 7.*
- 3) *Figures to the right indicate full marks.*

**Q1)** Solve any five:

**[5 × 2]**

- a) Explain new operator in C++.
- b) Which operators we cannot overload by using friend function and why?
- c) What is the use of copy constructor?
- d) What will be the output of the following code? (Explanation required)

```
#include<iostream.h>
```

```
Class Base
```

```
{
```

```
public:
```

```
Virtual void fun()
```

```
{
```

```
cout << "fun of Base";
```

```
}
```

```
void run ()
```

```
{
```

```
fun ();
```

```
}
```

```
};
```

**P.T.O.**

```

class Derived : Public Base
{
public :
    void fun()
    {
        cout << "fun of Derived";
    }
};
void main()
{
    Derived d;
    d.run();
}

```

```

e) #include <iostream.h>
class outer
{
    class inner
    {
        int data;
    } i;
public:
    void create ()
    {
        i. data = 100;
    }
    void display ()
    {
        cout <<i.data;
    }
};

```

```

void main()
{
    outer obj;
    obj.create ();
    obj.display ();
}
f) #include <iostream.h>
using namespace std;
class P{
    public:
        void print ()
        {
            cout<<"inside P!!";
        }
};
class Q : public P
{
    public :
        void print ()
        {
            cout << "Inside Q";
        }
};
class R : public Q {
};
int main (void)
{
    R r;
    r. print ();
    return 0;
}

```

**Q2)** Solve the following (any two): **[2 × 5]**

- a) What is namespace conflict? How is it handled in C++?
- b) What is generic program? How it is implemented in C++?
- c) What is container? Explain types of container?

**Q3)** Explain types of inheritance? Write program to pass parameters to the base class constructor in multi level inheritance? **[10]**

- Q4)**
- a) What is polymorphism? What is difference between compile time and runtime polymorphism explain with example? **[5]**
  - b) Explain with example, conversion from class type to built in type? **[5]**

- Q5)**
- a) Write a program that reads a text file & create another file that is identical except that every sequence of consecutive blank spaces is replaced by a single space. **[5]**
  - b) Write a program for sum of array using templates. **[5]**

**Q6)** a) Design classes Kilometer & Meter such that they support the following statements **[5]**

Kilometer KM1, KM2;

Meter M1, M2;

KM1 = M1;

M2 = KM2;

- b) Explain any five manipulators with suitable example. **[5]**

**Q7) a)** Design a class employee (name, dept, salary). Write a C++ program that should throw an exception when salary is less than 0. **[5]**

b) Define a base class “Item” (item\_no, name, price). Derive a class “Discounted\_Item” (discount\_percent). A customer buys ‘n’ items. Calculate the total price, total discount and display the bill using appropriate output formats. **[5]**

**Q8) Write short notes on (any two) **[2 × 5]****

- a) Friend function & friend class.
- b) Standard Template Library.
- c) Run Time Type Identification (RTTI)



Total No. of Questions : 6]

SEAT No. :

**P3880**

**[4875]-202**

[Total No. of Pages : 2

**M.C.A. (Management Faculty)**  
**IT - 22 : DATABASE MANAGEMENT SYSTEM**  
**(2012 Pattern) (Semester - II)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.No.1 & Q.No.6 are compulsory.*
- 2) *Solve any three questions from remaining.*
- 3) *State assumption wherever necessary.*

**Q1)** The management of “General Hospital” has decided to computerize their operations. The following information is provided by the management.

There are two categories of doctors. One category of doctor is of permanent employees of the hospital. They getting fixed salary per month. So personnel information like name, address, DOB, as well as salary information of these doctors is required to be recorded. Another category is of consulting doctors for this doctors name, contact number, specialization is important information to be recorded. Consulting doctors visit the hospital at fixed time every day which varies from doctors to doctors. Their charges are calculated as per the charges slip submitted by the doctor for every patient. Patients are admitted to the hospital. The particulars about the patient which include the name, address, name & address of contact person blood group, date and reason of the admission are recorded. Patient is admitted to the room, which are of the different types per day charges of the room depends on room type for the above case study, draw the E-R diagram and normalized (3NF) file layout. **[20]**

**Q2)** What is Data Independence? Explain characteristics of DBMS. **[10]**

**Q3)** What is deadlock? Explain deadlock prevention mechanism. **[10]**

**Q4)** Explain log. based Recovery techniques in details. **[10]**

**P.T.O.**

**Q5)** Write SQL statements for the following (any five) **[10]**

Book (Book\_no, Book\_name, subject, publisher, price, author\_id, sup\_id)

Author (author\_id, author\_name)

Supplier (sup\_id, sup\_name, sup\_city)

- a) Delete the records of all the books whose publisher name starts with "H".
- b) Modify the price of book "Marketing man't" and set it as Rs.200.
- c) Display total no. of books of C++ subject.
- d) Display the list of books along with the author.
- e) Display supplier who live in Mumbai.
- f) Display Books Supplier Wise.

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

- a) Non-SQL.
- b) Data dictionary storage.
- c) Discretionary access control mechanism.
- d) E.F. Codd's Rule (any five)
- e) Types of keys in Database.





Total No. of Questions :7]

SEAT No. :

**P3881**

**[4875]-203**

[Total No. of Pages :1

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

**IT-23: OPERATING SYSTEM CONCEPTS**

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

*Time : 3 Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Question 1 & 7 are compulsory.*
- 2) *Solve any 4 from remaining.*
- 3) *Make suitable assumptions & draw neat diagrams if required.*

**Q1) a)** What is logical & physical addresses ? Explain paging H/W in detail.[10]

b) Discuss various parameters to decide best disk scheduling algorithm.[5]

**Q2)** Given memory partition of 100k, 500k, 200k, 300k & 600k in order. How would each of the first fit, best fit & worst fit algorithm place processes of 212k, 417k, 112k & 426k in order. Which algorithm makes the most efficient use of memory? [10]

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

**Q4)** How communication in client-server takes place? Explain sockets, RPC's & RMI in detail. [10]

**Q5)** Explain RAID structure in detail. [10]

**Q6)** Explain FCFS & SJF non-preemptive scheduling algorithms with example.[10]

**Q7)** Write short note on (any 3): [15]

- a) Virtual machine
- b) Android OS
- c) Deadlock recovery
- d) Process control block

*EEE*

Total No. of Questions : 7]

SEAT No :

**P3882**

**[4875]-204**

[Total No. of Pages : 1

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

**BM- 21-204: MANAGEMENT INFORMATION SYSTEM &**

**BUSINESS INTELLIGENCE**

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

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.7 is compulsory.*
- 2) *Attempt any 5 from Q1. to Q.6.*

**Q1)** What is BI? Draw & Explain BI Architecture in Detail. **[10]**

**Q2)** Define DSS. Explain phases of Decision Making Process in Detail. **[10]**

**Q3)** Define MIS. Explain MIS structure based on Management activities. **[10]**

**Q4)** Explain Expert system. What are its uses? Differentiate between Expert system Vs Conventional system. **[10]**

**Q5)** Define Information & Explain different Quality factors of Information. **[10]**

**Q6)** Explain the Concept of Data Warehousing & Data Marts in detail. **[10]**

**Q7)** Write short Notes (any 4): **[4×5=20]**

- a) Characteristics & benefits of EIS.
- b) Characteristics & Capabilities of DSS.
- c) Law of requisite variety.
- d) Simulation Technique.
- e) BI Tools.



Total No. of Questions :6]

SEAT No. :

**P3883**

**[4875]-205**

[Total No. of Pages : 1

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

**205-IT-24:ENTERPRISE RESOURCE PLANNING**

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

*Time : 3 Hours]*

*[Max. Marks :70*

*Instructions to students:*

- 1) *Q. No-1 & Q. No-6 is compulsory.(20marks each)*
- 2) *Attempt any three from Q.N-2 to Q. No-5. (10marks each)*
- 3) *Figures to right indicate full marks.*

**Q1)** “E-SALE” is online shopping company providing various buying. Selling of products to many customers. However currently the company is facing lot of problem due to huge competition in E-commerce sector. You as ERP consultant suggest how ERP implementation can prove as better tool to improve companies overall functioning. Discuss all modules & sub-modules of ERP which will be suitable for E-commerce companies. **[20]**

**Q2)** What do you mean by ERP? Explain advantages of ERP for universities.**10]**

**Q3)** What do you mean by OLAP? List and explain 3 different types of OLAP.**[10]**

**Q4)** Explain BPR? Discuss phases in BPR. **[10]**

**Q5)** List & explain critical success factor of ERP implementation. **[10]**

**Q6)** Write short notes on (Any four) **[20]**

- a) End User Training.
- b) Role of Consultant In ERP Implementation.
- c) Data Mart.
- d) DSS .
- e) Human Resource Module.

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Total No. of Questions : 7]

SEAT No. :

**P3884**

**[4875]-301**

[Total No. of Pages : 1

**M.C.A**

**(Management faculty)**

**IT -31: WEB TECHNOLOGIES**

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

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.No. 1 is compulsory.*
- 2) *Solve any five questions from Q.2 to Q.7.*
- 3) *Draw neat diagrams wherever necessary.*

**Q1) a)** Explain SAX and DOM parsers. **[10]**

b) Explain httpd.conf with various configuration directives mentioned in it. **[10]**

**Q2)** Design HTML form for online payment of electricity bill & Assume suitable fields. Validate any 5 different fields using Javascript. **[10]**

**Q3)** Explain CSS in JQuery with suitable examples. **[10]**

**Q4)** Explain with Example Math string and date objects in Java script. **[10]**

**Q5)** Explain XML Schema and XSLT with example. **[10]**

**Q6)** Explain types of CSS. Explain Border and text formatting properties in CSS with example. **[10]**

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

- a) XML namespace.
- b) SSL.
- c) AJAX Methods.

Total No. of Questions : 7]

SEAT No :

**P3885**

**[4875]-302**

[Total No. of Pages : 2

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

**IT-302: DATA COMMUNICATION AND COMPUTER NETWORKS**

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

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

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

**Q1) a) justify with True or False (not more than 60 words). [10]**

- i) In OSI network architecture, the dialogue control and token management are the responsibility of Transport layer.
  - ii) The Circuit-Switching method provide dedicated communication channel between two stations.
  - iii) If a parity setting is even then the sum of all the characters bits plus the parity bit should be equal to an even number.
  - iv) Next hop decision always are based on transit time to avoid endless loops in routing.
  - v) Only the dynamic address allocation scheme is used in DHCP.
- b) Find the transmitted frame, if a series of 8 bit message blocks-11100110 is to be transmitted across a data link using CRC for error detection. The generator polynomial 11001 is to be used.[10]

**P.T.O.**

**Q2)** What is the default mask for the following IP host addresses (Solve with proper procedure) **[10]**

- a) 98.0.46.201
- b) 172.14.6.8
- c) 205.35.66.12
- d) 192.56.78.111

**Q3)** What are the different HTTP Response message status codes? Give the description of each. **[10]**

**Q4)** Why DHCP? What are the options for DHCP? Explain address Discovery process. **[10]**

**Q5)** What is MIME? Explain its purpose and format detail. **[10]**

**Q6)** Define VPN. What are the different protocols used to implement VPN? Explain IPsec. **[10]**

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

- a) Gigabit.
- b) Message Switching.
- c) Application and limitations of IPv6.
- d) Proxy Server.
- e) Grid Computing.



Total No. of Questions : 6]

SEAT No. :

**P3886**

**[4875]-303**

[Total No. of Pages : 2

**M.C.A. ( Management Faculty)  
IT - 33 :DATA STRUCTURE USING C++  
(2012 Pattern) (Semester - III)**

*Time : 3 Hours ]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q1 is compulsory.*
- 2) *Solve any four from remaining.*

**Q1) Write short notes on (Any two) [10]**

- a) ADT and types of data structures.
- b) Sparse matrices.
- c) Depth first search.

**Q2) a) Write a function in C++ to add two polynomials. [7]**

b) Write a function in C++ to insert an element in doubly linked list. [8]

**Q3) a) Write a function in C++ to convert an infix expression into post fix expression. [8]**

b) Show stack contents to convert given post fix expression into prefix expression. AB\*CD\*-EF-/ [7]

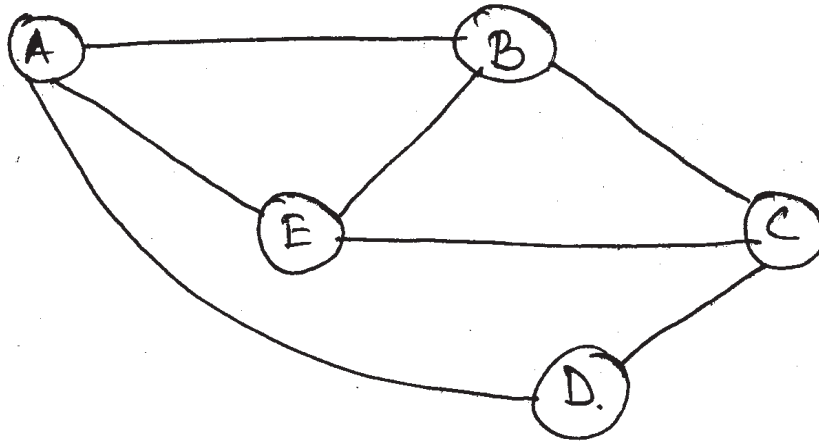
**Q4) a) Write a function in C++ to reverse a stack using queue. [7]**

b) Create AVL tree for following elements Anjali, Anushka, Amrita, Anagha, Asmita, Anupa, Anuja, Arohi, Alapini, Arushi, Anvita, Anjali. [8]

**P.T.O.**

**Q5) a)** Explain B+ tree. [7]

b) Generate BFS, DFS for node E. Write adjacency matrix and adjacency list for the following graph. [8]



**Q6) a)** Write a function in C++ to match parentheses. [7]

b) Write a non-recurssive function in C++ for preorder traversal. [8]

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Total No. of Questions :7]

SEAT No. :

**P3887**

**[4875]-304**

[Total No. of Pages :1

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

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

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

*Time : 3 Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

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

**Q1) a)** Explain the architecture of data warehousing with diagram. **[10]**

b) What is spatial data and geographic database, describe with example.**[10]**

**Q2)** Explain I/O parallelism and design of parallel systems. **[10]**

**Q3)** Explain the DDBMS architecture in detail. **[10]**

**Q4)** What is clustering? Explain K-means algorithm with example. **[10]**

**Q5)** What are the various applications of XML. Also explain X path and Xquery. **[10]**

**Q6)** Explain multimedia architecture and mention the requirements for mobile database. **[10]**

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

- a) Transaction server.
- b) Knowledge discovery process.
- c) Data cube
- d) OLAP.

*EEE*

Total No. of Questions : 07]

SEAT No. :

**P3888**

**[4875] -305**

[Total No. of Pages : 2

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

**IT-35: OBJECT ORIENTED ANALYSIS AND DESIGN (OOAD)**

**( 2012 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 the remaining.*
- 3) *Mention assumptions wherever necessary.*

**Q1)** A mobile App is available for purchasing items. App also provides facility to login, browse through the products, search for particular products from different categories, pay through net-banking as well through debit and credit card. It is possible to maintain the products in shopping cart and finalize the order at later stage.

Draw use-case and class diagram for the above App. **[20]**

**Q2)** Compare and contrast Booch methodology and OMT. **[10]**

**Q3)** a) Draw a sequence diagram for sending sms through mobile phone. **[5]**

b) Draw a state-transition diagram for a tea vending machine. **[5]**

**Q4)** Explain different approaches to identify classes in a given system. Give suitable example for each. **[10]**

**Q5)** a) Compare SSAD and OOAD approach to software development. **[5]**

b) Draw an activity diagram for an ATM software which handles withdrawal of money. **[5]**

**P.T.O.**

- Q6)** a) Explain RUP in detail. [5]  
b) What is object persistence? Explain the same with respect to OORDBMS. [5]

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

- a) Design Refinement.
- b) Types of design patterns.
- c) Requirement Engineering.
- d) Object oriented testing.



Total No. of Questions : 7]

SEAT No. :

**P3889**

**[4875]-401**

[Total No. of Pages : 1

**M.C.A. Management Faculty**  
**IT - 41 : JAVA PROGRAMMING**  
**(2012 & 2013 Pattern) (Semester - IV)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

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

- Q1)** Answer following: **[10]**
- a) What is Nested and Inner Classes?
  - b) Explain Thread Life Cycle.
  - c) What is Enumeration Interfaces?
  - d) Explain Proxy Servers in detail.
  - e) Explain Buffer reader and Buffer writer.
- Q2)** Write JDBC application for robotics event registration. Assume suitable structure. **[10]**
- Q3)** Write multi-threaded server-client chatting application. **[10]**
- Q4)** Write a Java Socket program. Client read the file name and sends to server. Server will accept and read the file & send number of words in the file to the client. Or indicate that the file doesn't exist. **[10]**
- Q5)** Write a Java application that reads lower case stream from command line and writes it to file strcomp.txt in upper case. **[10]**
- Q6)** Explain Architecture of RMI. Write simple RMI application. **[10]**
- Q7)** Short notes (Any Two): **[10]**
- a) Swing Libraries.
  - b) Package.
  - c) JBDC Architecture.



Total No. of Questions : 7]

SEAT No. :

**P3890**

**[4875]-402**

[Total No. of Pages : 1

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

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q.1 is compulsory.*
- 2) *Solve Any 5 from the remaining.*

- Q1)** a) Explain the various MAC Issues in WLAN. **[5]**  
b) What is GSM? Explain the channel structure in GSM. **[10]**  
c) Write down the Journey of Mobile Technology from 1G to 3G. **[5]**

**Q2)** What is client-server computing? Explain the data recovery Process in detail.**[10]**

**Q3)** What is SDK? Explain the various libraries in Android with their purpose.**[10]**

**Q4)** What are Layouts? Discuss the various Types of Layouts and Explain Any three layout with example. **[10]**

**Q5)** What is Adapter ? Explain the Role of Adapter in Android with suitable example. **[10]**

**Q6)** What are cursors in SQL lite? Explain with a suitable example. **[10]**

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

- a) Android Telephony.
- b) G-Talk Service.
- c) Map Based Activity.



Total No. of Questions :7]

SEAT No. :

**P3891**

**[4875]-403**

[Total No. of Pages :2

**M.C.A. -II (Management Faculty)**  
**IT-43: INFORMATION SECURITY AND AUDIT**  
**(2012 Pattern) (Semester - IV)**

*Time : 3 Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Q.1 & Q.7 are compulsory.*
- 2) *Solve any three from remaining.*

**Q1)** Solve the following case study:

Intellectual property theft:

The complaint (S/W company based in Bangalore) alleged that some of the company's former employees had accessed the company's IT system and tampered with the source code of S/W under development.

- a) What precaution was not taken by organization to prevent it. What is your suggestion in this regard? **[10]**
- b) Write down the steps to investigate & suggest required internal control on this. **[10]**

**Q2)** What is PDCA explain PDCA model in detail. **[10]**

**Q3)** What is cyber crime describe various types of cyber crime with example. **[10]**

**Q4)** Describe 10 major threats to information security. **[10]**

**Q5)** Describe conceptual frame work of ISMS. **[10]**

**P.T.O.**

**Q6)** What is it governance explain ITIL in detail.

**[10]**

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

**[4 x 5 =20]**

- a) Types of Information security policies.
- b) Controls in IT environment.
- c) BCP & DRP.
- d) Auditing standards.
- e) Security standards (ISO 20071 & 27002)

*EEE*

Total No. of Questions : 8]

SEAT No. :

**P3892**

**[4875] -404**

[Total No. of Pages : 2

**M.C.A - (Management Faculty)**  
**IT-44: DESIGN AND ANALYSIS OF ALGORITHMS**  
**( 2012 Pattern) (Semester-IV)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

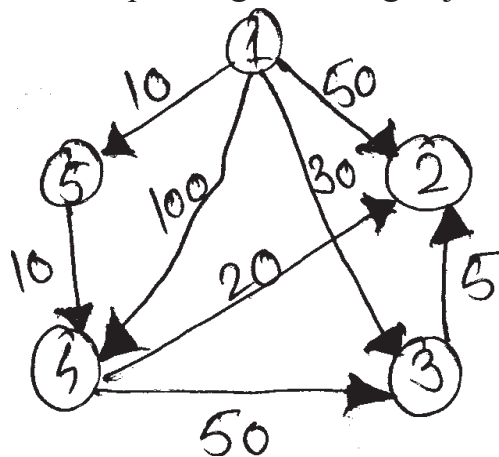
- 1) *Question No. 1 & 8 are compulsory.*
- 2) *Solve any five from Q.2 to Q.7.*
- 3) *Figures to right indicate full marks.*

**Q1) a)** Define algorithm? Explain Space & Time complexity. **[5]**

b) Differentiate between Dynamic programming & branch and bound techniques. **[5]**

**Q2)** Write an algorithm for Merge Sort and Sort the following elements using merge sort 410, 385, 279, 752, 451, 523, 961, 354, 550, 620. **[10]**

**Q3)** Find the Minimum cost spanning tree using Dijkstra's Algorithm. **[10]**

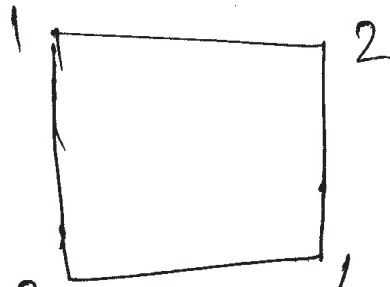


**Q4)** Explain Travelling Sales-Man problem algorithm with suitable example. Use Dynamic Programming approach. **[10]**

**P.T.O.**



**Q5)** What is meant by Graph coloring? Apply backtracking method on the following instance of graph coloring problem of 4 nodes and 3 colors. [10]



**Q6)** Find an optimal solution for Knapsack problem (fractional) where Knapsack capacity = 40,  $N = 3$   $(P_1, P_2, P_3) = (50, 48, 30)$  and  $(w_1, w_2, w_3) = (36, 30, 20)$  [10]

**Q7)** Discuss Branch and Bound technique with suitable example also write algorithm for the same. [10]

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

- a) Characteristics of good Algorithm.
- b) Big-oh & Theta Notations.
- c) Hamiltonian cycle.

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Total No. of Questions :5]

SEAT No. :

**P3893**

**[4875]-405**

[Total No. of Pages :5

**M.C.A. (Management Faculty)**  
**MT-41: OPTIMIZATION TECHNIQUES**  
**(2012 Pattern) (Semester - IV)**

*Time : 3 Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

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

**Q1) a)** A cement company has three factories which manufacture cement which is then transported to four distribution centers. The quantity of monthly production of each factory, the demand of each distribution centre and the associated transportation cost per quintal are given below: **[7]**

		Distribution Centers				Production
		D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	
Factories	O <sub>1</sub>	10	8	5	4	700
	O <sub>2</sub>	7	9	15	8	800
	O <sub>3</sub>	8	10	12	10	1000
Demand		600	500	600	500	

b) The owner of the fast food restaurants is considering a new computer system for accounting and inventory control. A computer company sent the following information about the system in form of activity report which is as follows: **[7]**

**P.T.O.**

Activity	Time Estimate			Preceding Activity
	Optimistic	Most Likely	Pessimistic	
A	4	6	8	--
B	5	7	15	A
C	4	8	12	A
D	15	20	25	B
E	10	18	26	B
F	8	9	16	C
G	4	8	12	E
H	1	2	3	D,F
I	8	7	8	G,H

- i) Draw the project Network.
  - ii) Find the critical path and the expected project completion time.
  - iii) What is the probability that the project duration go beyond 44 days?
- c) The rate of arrival of customers at a internet café follows Poisson distribution with average of twenty minutes between one customer and the next. The duration of service is assumed to follow exponential distribution with mean of six minutes. [7]
- i) What is the probability that person arriving at the café will have to wait?
  - ii) What is the average length of queue?
  - iii) The owner will install another computer if he is convinced that customer has to wait for atleast four minutes. How much should be the flow of customer to justify an additional computer.

d) A manufacturing company has determined from the analysis of its accounting and production data that for a certain part demand is 9000 units per annum which is uniformly distributed over the year. Unit cost price of that part is Rs.3 and ordering cost is Rs.40 per order. Inventory carrying cost is 9% of the inventory value. [7]

i) Find the optimum number of orders per annum.

ii) Optimum Lot Size.

iii) Total cost for economic order quantity.

**Q2) a)** Solve the following LPP by 2-Phase Simplex Method: [7]

$$\text{Max: } Z = 4x_1 + 3x_2$$

Subject to:

$$2x_1 + 3x_2 \leq 6$$

$$3x_1 + x_2 \geq 4$$

$$x_1, x_2 \geq 0$$

b) The distribution of life of a special type of bulb used by a company is as follows: [7]

Life in Months	1	2	3	4	5	6
Proportion of Bulbs failing	0.08	0.12	0.20	0.30	0.20	0.10

The cost of replacing an individual failed bulb is Rs.10/- while the cost when replaced on group basis is Rs. 6/- per bulb. The company has installed 1500 bulbs.

i) Calculate average life in months.

ii) Determine whether the policy of group replacement is superior to the policy of individual replacement?

**Q3) a)** Solve the following assignment problem for minimizing total time for doing all the jobs. [7]

		Jobs				
		J <sub>1</sub>	J <sub>2</sub>	J <sub>3</sub>	J <sub>4</sub>	J <sub>5</sub>
Operator	O <sub>1</sub>	6	3	5	5	6
	O <sub>2</sub>	4	5	8	7	8
	O <sub>3</sub>	7	8	6	9	7
	O <sub>4</sub>	6	5	5	4	9
	O <sub>5</sub>	9	4	8	10	10
	O <sub>6</sub>	5	7	4	6	8

b) Define: [7]

- i) Discount Factor
- ii) Procurement Cost
- iii) Optimum Lot Size
- iv) Degeneracy in LPP
- v) Critical Path
- vi) Float
- vii) Dummy Activity

**Q4) a)** The maintenance crew of a company is divided in two groups C1 and C2 which cares for the maintenance job of the machines. The time required by crews C1 and C2 on different machines which need working on them as given as follows: [7]

		Maintenance						
		Job of	J <sub>1</sub>	J <sub>2</sub>	J <sub>3</sub>	J <sub>4</sub>	J <sub>5</sub>	J <sub>6</sub>
Maintenance Time in Hours	Crew C1	8	6	10	11	10	14	4
	Crew C2	5	3	7	12	8	6	7

b) Solve the following LPP [7]

$$\text{Max: } Z = 2x_1 + 4x_2$$

Subject to:

$$2x_1 + x_2 \leq 18$$

$$3x_1 + 2x_2 \geq 30$$

$$x_1 + 2x_2 = 26$$

$$x_1, x_2 \geq 0$$

Q5) a) The following table gives activities in a construction project and other relevant information. [7]

Activity	Normal		Crash	
	Time (Days)	Cost (Rs.)	Time (Days)	Cost (Rs.)
1 – 2	4	60	3	90
1 – 3	2	38	1	60
1 – 4	6	150	4	250
2 – 4	5	150	3	250
2 – 5	7	115	5	175
3 – 4	2	100	2	100
4 – 5	4	100	2	240

Indirect cost varies as follows:

Days	15	14	13	12	11	10	9	8	7	6
Cost (Rs)	600	500	400	250	175	100	75	50	35	25

- i) Draw an arrow diagram for the project.
- ii) Determine the project duration which will return in minimum total project cost.

b) Describe various Elements of Queuing System. [7]

*EEE*

Total No. of Questions : 6]

SEAT No. :

**P3894**

**[4875]-501**

[Total No. of Pages : 1

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

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

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

*Time :3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Questions 1 and 6 are compulsory.*
- 2) *Attempt any 3 from the remaining.*
- 3) *Write your assumptions clearly.*

**Q1)** Write a detailed test plan for a social messaging application (mobile application) which can be used to connect with your friends and share your photos and allows you to chat.

Also write test case for this application along with test document and test strategies. **[20]**

**Q2)** Write about various types of functional testing such as Equivalence partitioning, BVA and cause effect graph. **[10]**

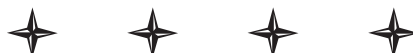
**Q3)** a) Calculate cyclomatic complexity to check positive or negative number. **[5]**  
b) Compare Black box vs white box testing. **[5]**

**Q4)** Explain V & V model in detail. **[10]**

**Q5)** Explain path, statement, branch and decision coverage in structural testing with examples. **[10]**

**Q6)** Write short notes on following: (any four) **[20]**

- a) CAST
- b) Tester workbench
- c) Unit & Integration testing.
- d) Software Reviews
- e) Clean Room Software Development.



Total No. of Questions : 8]

SEAT No. :

**P3895**

**[4875]-502**

[Total No. of Pages : 3

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

**502 - IT -52: SOFTWARE PROJECT MANAGEMENT**

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

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Solve any seven questions from Q.No.1 to 8.*
- 2) *Figures to the right indicate full marks.*

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

**[10]**

- a) Find Start Time ,End Time ,Total Float and Critical Path.
- b) If activity F crashed by 2 weeks, draw network diagram and find out critical path and shortest path.

Activity	Predecessor	Duration (Weeks)
A	-	1
B	A	4
C	A	17
D	B	70
E	C	10
F	D	30
G	E	25
H	E	20
I	F	25
J	G,H	20
K	I,J	25

**P.T.O.**



**Q2)** A new project with estimated 255KLOC system has to be developed. For development project also requires. **[10]**

- a) Software reliability is High (1.15).
- b) Product Complexity is High (1.15).
- c) Analyst Capability is high (0.86).
- d) Programming Language Experience is low. (1.07).
- e) Remaining all driver are treated as Nominal.

Calculate the effort , development Time, average staff size and productivity of the project.

**Q3)** Consider a project with the following functional units. **[10]**

- a) Number of User Inputs - 11
- b) Number of User output - 11
- c) Number of User enquiries - 07
- d) Number of User files - 22
- e) Number of external Interfaces - 06

In addition to above, system requires significant Data communication (4)Performance is very Critical - (05)

Designed code may be moderately reusable -02

Other Complexity factors are treated as average . Compute the functional point for the project.

**Q4)** Explain PMLC in detail. **[10]**

**Q5)** What are different between change management and configuration management. **[10]**

**Q6)** Explain the importance of communication? Explain team management and Communication. **[10]**

**Q7)** User Role in PMLC. **[10]**

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

- a) Project Management Tool -MS project.
- b) Risk Management.
- c) Configuration Management.
- d) NPV.



Total No. of Questions : 7]

SEAT No. :

**P3896**

**[4875] - 503**

[Total No. of Pages : 1

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

**IT - 53 : EMERGING TRENDS IN INFORMATION TECHNOLOGY  
(2012 Pattern) (Semester - V)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

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

- Q1)** A deemed university want to implement e-learning model for distance learning programs. As an IT consultant do comparative analysis of various e-learning models and suggest suitable e-learning model to university also justify your suggestion. **[15]**
- Q2)** What is cloud computing? Explain cloud architecture. **[10]**
- Q3)** Explain need of social networking. **[10]**
- Q4)** Explain various electronic payment methods. How transactions are performed in E-banking. **[10]**
- Q5)** Explain telemonitoring and E-coaching. **[10]**
- Q6)** What is e-learning? Explain types of e-learning. **[10]**
- Q7)** Write A short Note (Any 3): **[15]**
- a) Mobile ATM.
  - b) Meeting Tools.
  - c) Cloud computing models.
  - d) POS.
  - e) Applications of m-commerce.



Total No. of Questions : 7]

SEAT No. :

**P3897**

**[4875] - 504**

[Total No. of Pages : 2

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

**IT - 54: ADVANCED DEVELOPMENT TECHNOLOGY**

**( 2012 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 marks.*

**Q1)** Explain server side state Management Techniques in detail. **[10]**

**Q2)** Explain the concept of error pages & error logging with the suitable example. **[15]**

**Q3)** Explain any three validator controls with suitable example. **[15]**

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

- a) Populate & display Product Names in a drop down list.
- b) Select a product from drop down list and display its details in underlying text boxes.
- c) Add a record.
- d) Delete a record.
- e) Edit selected record.

Name of table : Product Master (Product ID, Product Name, Unit Price, Brand Name, Category).

Name of Server: MYASPDB (SQL server).

**P.T.O.**

**Q5) a)** Write a program to pass data of student from one page to other using cookies.

fields: Stud ID, Name, Course, Marks obtained. [7]

b) Explain Tree view Navigation control with the help of web.sitemap file. [8]

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

a) Chart control.

b) Check-Box control.

c) Image Control.

d) Drop Down List Control.

**Q7)** Write short Notes on following (ANY THREE) [15]

a) Web services.

b) Ajax Server Side control.

c) Exception Handling.

d) Namespaces.

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Total No. of Questions : 7]

SEAT No. :

**P3898**

**[4875]-505**

[Total No. of Pages : 2

**M.C.A.**

**(Management Faculty)**

**IT -55: ADVANCED INTERNET TECHNOLOGY**

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

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

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

**Q1) a) What is JSP? Explain JSP elements with example. [10]**

b) Explain HTTP Request and HTTP Response. [5]

**Q2) Write a JAVA program to develop a servlet application with HTML form asking user to input an integer. The response HTML page should show the integer and all the prime numbers smaller than that input integer. [10]**

**Q3) Distinguish between following : [10]**

- a) GET and POST methods in PHP.
- b) Include and Require.

**Q4) Explain CGI architecture and various features of Perl. [10]**

**Q5) Write a JSP code to generate area wise, product sales report, for medical shop. Display the expected report in proper format. [10]**

**Q6) Write a php code for online booking . If new user is there, then display registration form for him and store the details in that table. If user is already registered then accept consumer number and display booking status. [10]**

**P.T.O**

**Q7) Write short notes on ( Any 3)**

**[15]**

- a) PHP mail Function.
- b) JSP directives.
- c) Apache Tomcat and Jasper.
- d) Benefit of Spring framework.
- e) Servlet life cycle.

