Total No. of Questions : 7]

SEAT No. :

P1900

[Total No. of Pages : 2

[5170]-101
M.C.A.
MANAGEMENT FACULTY
IT - 11 : Computer Organization
(2012 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q1 and Q7 are compulsory.***
2) ***Solve any Four questions from the remaining.***
3) ***Draw neat diagrams whenever necessary.***

Q1) a) Compare 16 bit processor with 32 bit processor architecture with neat diagram. **[10]**

b) Write a brief note on system BW. **[5]**

Q2) Convert the Following..... **[2 × 5 = 10]**

a) $(11001)_2 = (?)_{10}$

b) $(4706)_8 = (?)_{10}$

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

d) $(42)_{10} = (?)_2$

e) $(127.54)_8 = (?)_{10}$

Q3) What do you mean by Flipflop? Explain JK latch in detail. **[2 + 8 = 10]**

Q4) a) Explain mod-10 Counter with neat diagram. **[5 + 5 = 10]**

b) Write a brief note on K map.

P.T.O.

Q5) Explain Instruction pipelining with time space diagram with appropriate example. **[10]**

Q6) a) Compare application Software and system software. **[4]**

b) Explain interface basic with interface block diagram. **[6]**

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

a) Parallel Processing.

b) Software Interrupt.

c) Addressing Modes.

d) Multiplexer.

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Total No. of Questions :8]

SEAT No. :

P1901

[Total No. of Pages :3

[5170] - 102
M.C.A. -I (Management Faculty)
IT 12: C PROGRAMMING
(2012 Pattern) (New) (Semester - I)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Q.1 is compulsory.***
2) ***Solve any six questions from Q.2 to Q.8.***
3) ***Assume suitable data wherever necessary.***

Q1) Find and explain the output of following programme (any four): **[10]**

a)
```
main()
{   char s[]= {'a', 'b', 'c', '\n', 'c', '\0'};
        char *p, *str, *strl;
            p = & s[3];
                str = p;
                strl = s;
        printf("%d", ++*p+ ++ * strl -32);
        }
```

b)
```
main()
    {   int i = 012;
        int j = 046;
        int k = 056;
        printf (" i = %d", i);
        printf (" j = %d", j);
        printf (" k = %d", k);
    }
```

P.T.O.

c)
```
main()
{   int  i = –1, j = –1, k = 0, l = 2, m;
     m = i ++ && j ++ && k ++ || l ++;
     printf ("%d %d %d %d %d", i, j, k, l, m);
}
```

d)
```
main()
{   int  i = 1;
    while ( i < = 5)
        { printf ("%d", i);
          if (i > 2)
          go to here;
          i ++;
        }
    }
  fun()
    { here;
        printf("pune");
    }
```

e)
```
main()
{   unsigned int i = 10;
        while ( i-- > = 0)
            printf ("%u", i);
        }
```

Q2) a) Write a program to print following output. **[5]**

```
x       x
 x     x
  x   x
    x
  x   x
 x     x
x       x
```

b) Write a C program to check whether given number lies on finonnaci sequence or not. **[5]**

Q3) a) Write a C program to find out the sum of series **[5]**

1 ^ 2 + 2 ^ 2 + 3 ^ 2 + --- + n ^ 2.

b) Write a C program for swapping of strings. **[5]**

Q4) Write a C program for multiplication of two [2×2] matrix using pointers. **[10]**

Q5) Write a C program to print first 50 natural numbers using recursion (do not use any loop.) **[10]**

Q6) Write a program that compares two dates. To store a date use a structure that contains three members namely date month and year. If the dates are equal then display message as "dates are equal" otherwise "dates are unequal". **[10]**

Q7) Write a C program which read a file and print it in reverse order. **[10]**

Q8) a) Write a prog to print pie chart with different pattern. **[5]**

b) Write short notes on various operators in C. **[5]**

EEE

Total No. of Questions :6]

SEAT No. :

P1902

[Total No. of Pages :2

[5170] - 103

M.C.A. (Management Faculty)

IT-13: SOFTWARE ENGINEERING

(2012 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Q. 1 and 6 are compulsory.***
2) ***Attempt any three from the remaining.***

Q1) Fluent Technologies Ltd., A Pioneering company into simulation has their calling application for various positions process automated. The company has provided a link on their website for application. Interested candidate can apply for eligible post online.

After receiving applications scrutiny is done and interview letters are send to shortlisted candidates through e-mail.

Deserving candidates will be selected through interview and will be appointed as employee.

a) Draw DFD up to First level. **[10]**

b) Prepare SRS for above case. **[10]**

Q2) Explain the role of CASE tools with its advantages in software development life cycle. **[10]**

Q3) Explain various types of documentation in detail. **[10]**

Q4) Explain the relationship among software process, project and product. Elaborate the need of software engineering for software projects. **[10]**

Q5) Design GUI form for entering item details for billing in a shopping mall. **[10]**

P.T.O.

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

a) RAD.

b) Decesion Table.

c) Legacy system.

d) Web Engineering.

e) Skills of system Analyst.

EEE

Total No. of Questions :6]

SEAT No. :

P1903

[Total No. of Pages :1

[5170] - 104

M.C.A. (Management Faculty)

BM-11: PRINCIPLES AND PRACTICES OF MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR

(2013Pattern) (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 team. Explain the stages in team building. What are the key factors to successful performing of a team with suitable example. **[15]**

b) Explain the pyramid of 'level of management'. Which level according to you needs to be closed connected to vision and mission of the organization. **[10]**

Q2) Define the term management. Explain functions of management in detail. How we can manage the problems with the help of operational management. **[15]**

Q3) What is the decision making environment? Explain how Herbert Simon model is used in decision making process. **[15]**

Q4) Define motivation? Explain theory of motivation in detail. **[15]**

Q5) Define conflict. What are the causes of organizational conflict? Explain how Johari Window can be applied to resolve interpersonal and intrapersonal conflict. **[15]**

Q6) Short notes (Any Three): **[15]**

a) Maslow Theory.

b) Transaction Analysis.

c) Organization behavior.

d) Structure of Organization.

e) Qualities of a leader.

EEE

Total No. of Questions :4]

SEAT No :

P1904

[Total No. of Pages :3

[5170] - 105
M.C.A. (Management Faculty)
MT–11:DISCRETE MATHEMATICS
(2012 Pattern) (Semester - I) (New)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Question No. 1 is compulsory.***
2) ***Solve any TWO questions from question Nos.2,3,and 4.***
3) ***Use of Scientific Calculator and Statistical Tables are allowed.***
4) ***Figures to the right indicate full marks.***

Q1) a) Show the following equivalence: **[5]**

$(\neg(P \rightarrow \neg Q) \rightarrow R) \Leftrightarrow (P \rightarrow (Q \rightarrow R))$

b) Obtain PDNF of the following: **[5]**

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

c) Find the number of integers between 100 and 300, both inclusive, which are divisible by 3,5 and 7. **[5]**

d) Find the number of permutations of the letters from the word DIFFERENT such that i) 2 F's are together and ii) 2 E's are not together. **[5]**

e) Let * be defined as a * b = (a+b–ab) over the set of real numbers.Determine <R,*> is group or not. **[5]**

f) Let R={<x, x>, <y, x>, <z, z>} and S= {<x, x>, <x, y>, <y, z>, <z, y>}. Find $R \bullet S$,$(R \bullet R) \bullet S$ and S^2. **[5]**

Q2) a) Write the following in symbolic form: **[5]**

If today is Tuesday, then there is a test in Computer Science or Discrete Mathematics. If the Discrete Mathematics Professor is sick, then there will be no test in Discrete Mathematics.Today is Tuesday and Discrete Mathematics is not sick.

P.T.O.

b) Find the coefficient of the term $x^6 y^2 z^6$ from the expansion of $(2x^3 - 3y + 4z^2)^8$. **[5]**

c) Prove that the conclusion $Q \rightarrow S$ is valid from the statements: **[5]**

P, $(P \wedge Q) \rightarrow R$, $\neg S \rightarrow \neg R$ using CP Rule.

d) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises **[5]**

$P \vee Q$, $Q \rightarrow R$, $P \rightarrow M$, $\neg M$

Q3) a) Find the transitive closure for the relation **[5]**

R = {<1,2>,<1,4>,<2,2>,<2,3>,<3,1>,<3,4>,<4,1>}

defined over the set A ={1,2,3,4}.

b) For the given relation matrix, find the relation set and draw its digraph. **[5]**

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

c) Define 'congruence modulo n'relation and show that it is an equivalence relation. **[5]**

d) Let A={1,2,3,4}and R: A→A where R={<1,2>,<2,1>,<2,2>,<3,4>,<4,1>}

find its complement and converse. **[5]**

Q4) a) Find the number of non negative integer solutions for $x_1 + x_2 + x_3 = 37$.

where $x_1 \geq 3$, $x_2 > 8$ and $x_3 \geq 7$. **[7]**

b) Find the code words generated by the parity check matrix **[7]**

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

c) Prove the following binomial identity by combinatorial arguments. **[6]**

$$\binom{m+n}{n} = \binom{m}{0}\binom{n}{n} + \binom{m}{1}\binom{n}{n-1} + \ldots + \binom{m}{n}\binom{n}{0} \text{ where } m \geq n$$

Total No. of Questions : 7]

SEAT No. :

P1910

[Total No. of Pages : 2

[5170]-301
M.C.A.
MANAGEMENT FACULTY
IT - 31 : Web Technologies
(2012 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q1 is compulsory.***
2) ***Solve any Five questions from Q2 to Q7.***
3) ***Draw neat diagram wherever necessary.***

Q1) a) What is httpd.conf? Explain various configuration directives mentioned in it. **[10]**

b) Explain XML schema and XSLT with example. **[10]**

Q2) What is css? Explain properties of text, Border, list and Background with example. **[10]**

Q3) Design HTML form for online Voter Card registration. Assume suitable fields. Validate fields using Javascript. **[10]**

Q4) Explain chaining, Getters and setters in jQuery with examples. **[10]**

Q5) Explain SAX and DOM parsers. **[10]**

P.T.O.

Q6) Explain Window navigator, History object and location with example. **[10]**

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

a) Virtual Host.

b) AJAX methods.

c) Javascript Maths and Date objects.

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Total No. of Questions :8]

SEAT No. :

P1911

[Total No. of Pages :1

[5170] - 302

M.C.A. (Management Faculty)

312-IT-32: DATA COMMUNICATION & COMPUTER NETWORKS

(2012 & 2013 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Q.1 & Q.8 are compulsory.***
2) ***Attempt any five from remaining.***
3) ***Neat diagram must be drawn wherever necessary.***

Q1) Explain OSI reference model in detail? **[10]**

Q2) Explain different switching techniques in detail. **[10]**

Q3) What are the advantages of using virtual path in ATM. Explain traffic Mgt in ATM? **[10]**

Q4) Define VPN? Explain the working of VPN? What are the advantages of using VPN? **[10]**

Q5) What is DNS? Explain Resource Records & SOA records in DNS? **[10]**

Q6) Describe Ethernet in terms of standards, frame formats & specifications? **[10]**

Q7) Explain IP addressing schemes with example. **[10]**

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

a) Telnet.

b) Addressing scheme of IPV6.

c) Grid computing.

d) P2P protocol.

EEE

Total No. of Questions :7]

SEAT No. :

P1912

[Total No. of Pages :2

[5170] - 303

M.C.A. (Management Faculty)

313 - IT33:DATA STRUCTURE USING C++

(2012 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

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

Q1) Answer the following questions (Any four): **[4×5=20]**

a) Given the base address = 1000. Find out the address of cell A[3][2][4][2] of an array int A[4][3][6][4] using row representation. Assume an integer representation takes 2 bytes.

b) Differentiate between linear and non-linear data structures.

c) Define strictly binary tree, complete binary tree and almost complete binary tree.

d) Write short notes B* tree.

e) What is D-Queue? Give the data structure of D-Queue.

Q2) Obtain a AVL tree by inserting one integer at a time in the following sequence.

150, 155, 160, 115, 110, 140, 120, 145, 130, 147, 170, 180

Draw a tree at each stage of insertion. Mention the rotaion applied if any at each stage. **[10]**

Q3) a) Write a function for pre-order traversal of right-in threaded binary tree. **[5]**

b) Write a function to add an element after k^{th} element in singly linked list. **[5]**

P.T.O.

Q4) Construct the binary search tree for the following elements.

40, 50, 30, 35, 45, 31, 46, 20, 60

Show each step diagrammatically, find pre-order , in-order, post order traversal of tree. Lastly delete node 35, 50 and 40. **[10]**

Q5) Define a generalized list. Give the data structure of a generalized list in C++ using the above structure give the diagrammatic representation of the following list

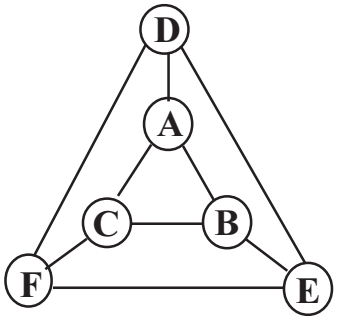
Book = (C1, C2,(S2.1, S2.2, (S2.2.1, S2.2.2), S2.3), C3, C4)

Where C stands for chapters and S stands for sections. **[10]**

Q6) a) Write Push and Pop functions for stack. Where stack is implemented using linked list. **[5]**

b) Write a function for Fast Transpose of Sparse Matrix. **[5]**

Q7) Show the following graph implementation diagrammatically using array, array and linked list (mixed) and linked list representation. And also traversal the graph DFS and BFS way. **[10]**



EEE

Total No. of Questions :7]

SEAT No. :

P1913

[Total No. of Pages :1

[5170] - 304

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) ***Question No. 7 is compulsory.***
2) ***Solve any five questions from 1 to 6.***
3) ***Qu. 7 carries 20 marks, Qu. 1 to 6 carries 10 marks.***

Q1) Explain in detail Transaction Server Process Structure. Draw a neat diagram.

Q2) Define Parallelism on Multicore processors. Explain in brief Inter-query and Intra-query parallelism.

Q3) Compare with example homogeneous and heterogeneous database.

Q4) What is mobile database? Explain architecture, advantage and disadvantage of mobile database?

Q5) Explain in detail data warehousing. Explain its functions.

Q6) How Data mining as a part Knowledge Discovery process.

Q7) Write short notes (any Four):

a) Association rule.

b) Data Preprocessing.

c) XML Schema.

d) SOAP.

e) Mobile databases.

EEE

Total No. of Questions : 7]

SEAT No. :

P1914

[Total No. of Pages : 2

[5170]-305
M.C.A.
MANAGEMENT
IT - 35 : Object Oriented Analysis and Design (OOAD)
(2013 Pattern) (Semester III)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.1 & Q.7 are compulsory.***
2) ***Solve any Four from the remaining.***
3) ***Mention assumptions wherever necessary.***

Q1) A mobile-App is to be designed to store the information of all the restaurants and hotels available in a particular region. User may search restaurants/hotels according to following criteria:

a) Availability of room/rooms in the hotel.

b) Availability of different facilities.

c) Location requirement.

d) Budget set, etc.

Booking can be done online. Payment can be done online with the help of third party gateway or using debit or credit card.

Draw:

i) Usecase diagram **[10]**

ii) Class diagram **[10]**

Q2) a) Explain Testing Strategies. **[4]**

b) Design a diagram online job portal registration collaboration. **[6]**

P.T.O.

Q3) Compare Object Oriented Design Methodology with object Modeling Technique. **[10]**

Q4) a) Customer request for purchase to be made on credit card,

- Shop owner swap the card and request for the card and amount verification.
- This request first goes to local service provider, which will be then routed to card provider bank.
- This bank then verifies the card details and purchase amount and response back to shop owner.

Draw a sequence diagram. **[8]**

b) Explain inheritance. **[2]**

Q5) a) Explain the difference between Object Oriented and Relational Database. **[5]**

b) Explain different types of pattern. **[5]**

Q6) Consider an automatic water level control system, Which is used for controlling the water flow. Identify different states and draw a state transition diagram (STD). **[10]**

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

a) Multi-tiered architecture.

b) Rational Unified Process (RUP).

c) Object persistance.

d) Anti-pattern.

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Total No. of Questions : 8]

SEAT No. :

P1915

[Total No. of Pages : 2

[5170]-401
M.C.A. (Management Faculty)
IT-41:JAVA PROGRAMMING
(2013 Pattern) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Question No.1 and 8 are compulsory.***
2) ***Answer any five from Q.No.2 to 7.***
3) ***Figures to the right indicate full marks.***
4) ***Draw Neat diagram wherever necessary.***

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

a) Describe Garbage Collection?

b) Explain Applet Life Cycle?

c) What is reflection API? How are they implemented?

d) Explain Proxy Servers in detail?

e) What are Runtime exceptions?

Q2) Write JDBC application for Hostel admission registration. Assume suitable structure. **[10]**

Q3) Write an applet to display scrolling text left to right in window.Using thread, accept test as parameter. **[10]**

Q4) Write JDBC application that will accept name of Constituency. List signs and names of candidates who got party tickets from given constituency. Assume suitable table structure. **[10]**

Q5) Write a Java Socket Program to accept file name at client side, and server accepts file name and sends no.of words in the file or indicate that the file doesn't exit. **[10]**

P.T.O.

Q6) Write a java application that reads lower case stream from command line and writes it to file strcomp.txt in upper case. **[10]**

Q7) Explain Architecture of RMI and write RMI application to check whether entered No.is prime or Not-prime. **[10]**

Q8) Short notes on (any Two). **[10]**

a) Rules for writing Java Bean Class.

b) Package.

c) JBDC Drivers.

Total No. of Questions : 8]

SEAT No. :

P1916

[Total No. of Pages : 1

[5170]-402
M.C.A.(Management Faculty)
IT - 42 : MOBILE COMPUTING
(2012/2013 Pattern) (Semester-IV)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.1 & Q.8 are compulsory.***
2) ***Answer any three from the remaining.***
3) ***Neat diagrams must be drawn where necessary.***
4) ***Figures to the right side Indicate full marks.***

Q1) a) Write a android application to using view flipper for flipping of images. Take four buttons for Start, Stop, Previous and Next buttons. Give Design, XML and Java code. **[10]**

b) What is MANET. Explain Advantages and Applications of MANETS. **[10]**

Q2) What is Intent? Explain the Types of Intents. **[10]**

Q3) Explain Architecture of Android with neat Diagram. **[10]**

Q4) What is Handoff. Explain the types of Handoff. **[10]**

Q5) State and Explain the steps for publishing Android app to google market. **[10]**

Q6) What is GPRS. Explain its features and Advantages of is GPRS. **[10]**

Q7) Explain the views and Layouts in Android. **[10]**

Q8) a) Explain the architecture of Palm OS with neat diagram. **[10]**

b) What is Bluetooth. Explain the features & applications of Bluetooth. **[10]**

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Total No. of Questions : 7]

SEAT No. :

P1917

[Total No. of Pages : 1

[5170]-403

M.C.A. (Management Faculty)

413 - 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 & 7 are compulsory.***
2) ***Solve any four questions from Q.2 to 6.***

Q1) Govt. of India want to outsource the project of converting lands records of individuals (like 7/12) into online format to the external agency. In this regard, you as a auditor discuss: **[10]**

a) Risks associated with outsourcing.

b) Phases of outsourcing lifecycle.

Q2) Explain ISO 27001 security standard in detail. **[10]**

Q3) Explain various Threats and Risks to information security. **[10]**

Q4) Explain BCP process in detail. **[10]**

Q5) What is IT-Governance? Explain COBIT model of IT-Governance in detail. **[10]**

Q6) What is IS audit? Explain in detail the needs of IS Audit. **[10]**

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

a) CIA Triangle.

b) PDCA model.

c) Physical access security controls.

d) Ethical Hacking.

e) Security System Development Life cycle.

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Total No. of Questions : 8]

SEAT No. :

P1918

[Total No. of Pages : 2

[5170]-404

M.C.A. (Management Faculty)

IT - 44 : DESIGN AND ANALYSIS OF ALGORITHMS

(2012 & 2013 Course) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 70*

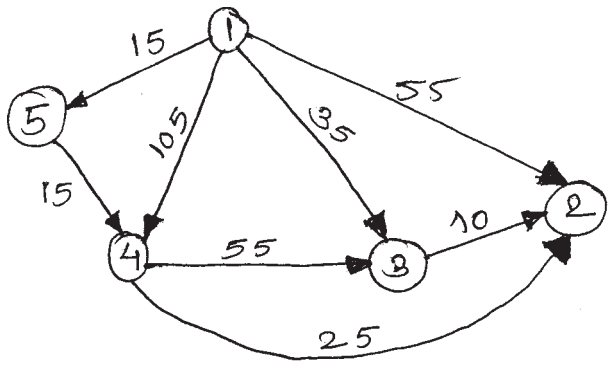
Instructions to the candidates:

1) ***Q.1 and Q.8 are compulsory.***
2) ***Solve any five questions from Q.2 to Q.7.***
3) ***Figures to the right indicate full marks.***
4) ***Make suitable assumptions, if necessary.***

Q1) a) Explain space & time complexity. **[5]**

b) What is step count table? Explain with suitable example. **[5]**

Q2) Find the minimum spanning tree for the following use Dijkstra's shortest path algorithm. **[10]**



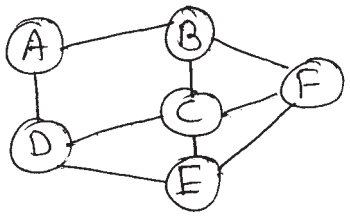
Q3) Sort the following using heap sort show all the steps

65, 70, 75, 85, 80, 60, 55, 45 **[10]**

P.T.O.

Q4) a) Explain 4 queens problem using backtracking method. **[5]**

b) Apply back traking graph coloring method for the following graph. **[5]**



Q5) Solve the following Travelling salesman problem using dynamic programming.

Edge length matrix given as below. **[10]**

0	7	3	12	8
3	0	6	14	9
5	8	0	6	18
9	3	5	0	11
18	14	9	8	0

Q6) Write an algorithm for Binary search method. Trace the Binary search algorithm for the following. **[10]**

-5, -8, 0, 17, 65, 8, 6

Q7) Find the optimal solution for the following. **[10]**

Use fractional knapsack strategy.

N = 3, M = 40, $(P_1, P_2, P_3) = (50, 48, 30)$ and $(W_1, W_2, W_3) = (72, 60, 40)$

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

a) Non-deterministic Algorithms.

b) Branch and Bound strategy.

c) Sorting in linear time.

Total No. of Questions : 5]

SEAT No. :

P1919

[Total No. of Pages :4

[5170]-405
M.C.A. (Management Faculty)
(MT - 41) OPTIMIZATION TECHNIQUES
(2013 Course) (Semester - IV)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Question No. 1 is compulsory.***
2) ***Solve any Three questions from question Nos. 2, 3, 4 and 5.***
3) ***Use of Scientific Calculator and Statistical Tables are allowed.***
4) ***Figures to the right indicate full marks.***

Q1) a) Find the optimal solution to the given transportation problem. **[7]**

Sources	Destination			
	A	B	C	Supply
X	20	40	40	152
Y	80	120	80	164
Z	40	80	120	154
Demand	144	204	82	

b) A small project consists of seven activities, the details of which are given below: **[7]**

Activity	Time Estimate			Preceding Activity
	Most Likely	Optimistic	Pessimistic	
A	3	1	5	-
B	6	2	16	A
C	3	3	3	A
D	10	4	22	B,C
E	7	3	17	B
F	5	2	14	D,E
G	4	4	4	D

i) Draw the Project Network.

ii) Find the critical path and the expected project completion time.

iii) What is the probability that the project will be completed in 34 days?

P.T.O.

c) A mechanic can install mufflers in cars at a rate of 3 per hour. Customers arrive at a rate of 2 per hour. **[7]**

Calculate

i) The number of cars waiting in the system.

ii) The average time a car spends in the system.

iii) The percentage of time the mechanic is busy.

d) An electric generator costs Rs. 1,00,000, operating costs (in rupees) are given in table below: **[7]**

Year	1	2	3	4	5	6	7
Operating Cost	2000	5000	10000	18000	30000	45000	70000

Assuming 10% cost of money per year, find the optimum length of time to keep the machine before replacing it.

Q2) a) Solve using Two, Phase simplex Method.

Maximize $Z = -2x_1 - x_3$ subject to

$$x_1 + x_2 - x_3 \geq 5$$
$$x_1 - 2x_2 + 4x_3 \geq 8$$
$$x_1, x_2, x_3 \geq 0$$

[7]

b) Seven jobs are to be processed through 2 machines A and B. Processing times (in hours) are given below: **[7]**

Jobs	1	2	3	4	5	6	7
Machine A:	10	9	7	15	18	20	14
Machine B:	12	8	7	12	10	6	13

Find the elapsed time and idle times for Machines A and B.

Q3) a) The demand rate for a particular item is 12000 units/year. The ordering cost is Rs. 100 per order and the holding cost is Rs. 9.60 per item per year. If no shortages are allowed and the replacement is instantaneous, determine: **[7]**

i) The economic order quantity.

ii) The time between orders.

iii) The optimum annual cost if the cost of item is Rs. 20 per item.

b) Solve the following assignment problem. The data given in the table refer to the production in certain units: **[7]**

Operator	Machine			
	A	B	C	D
1	10	5	7	8
2	11	4	9	10
3	8	4	9	7
4	7	5	6	4
5	8	9	7	5

Q4) a) Define the following: **[7]**

i) Group Replacement Policy

ii) Holding Cost

iii) EOQ

iv) Optimistic Time

v) Holding Cost

vi) Critical Path

vii) Float

b) Solve the following LPP by Two-Phase Simplex Method: **[7]**

Min: $Z = 3x_1 + x_2 + 4x_3$

Subject to the constraints:

$$x_1 + x_2 + x_3 \geq 12$$
$$4x_1 - x_2 + x_3 \geq 6$$
$$x_1, x_2, x_3 \geq 0$$

Q5) a) The following is the data regarding a project. **[7]**

Activity	Preceeding Activity	Normal		Crash	
		Time (weeks)	Cost (Rs. '000)	Time (weeks)	Cost (Rs. '000)
A	-	10	20	7	30
B	-	8	15	6	20
C	B	5	8	4	14
D	B	6	11	4	15
E	B	8	9	5	15
F	E	5	5	4	8
G	A,D,C	12	3	8	4

Indirect Cost is Rs. 2800 per week. Find the optimum duration and the associated cost.

b) Customers arrive at a sales counter manned by a single person according to a Poisson process with a mean rate of 20 per hour. The time required to serve a customer has an exponential distribution with a mean of 100 seconds. Find the average waiting time of a customer. **[7]**

Find:

i) The utility factor.

ii) The average number of customers in the queue, waiting for the salesman.

iii) The non-empty queue length.

Total No. of Questions : 7]

SEAT No. :

P1920

[Total No. of Pages : 1

[5170]-501
M.C.A.(Management)
IT - 51 : Software Testing & Quality Assurance
(2013 Pattern) (Semester-V)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.1 & Q.7 are compulsory.***
2) ***Attempt any four from the remaining.***
3) ***Figures to the right side indicate full marks.***
4) ***Draw Diagrams wherever necessary.***

Q1) Write detailed test plan for a mobile app "My_Pharma" which allows user to order medicine as per the prescription. Assume necessary features for this app.

Test plan should include scope, schedule, test strategies, test documents & test deliverables.

Also write suitable test cases for this app. **[15]**

Q2) Explain path, statement, branch and decision coverage in structural testing with examples. **[10]**

Q3) a) Calculate cyclomatic complexity for finding sum of digits of a given number? **[5]**

b) What is process improvement? **[5]**

Q4) a) Compare unit testing and integration testing? **[5]**

b) Compare validation & verification? **[5]**

Q5) Explain testing life cycle in detail? **[10]**

Q6) Explain software reliability and various software reliability models? **[10]**

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

a) CAST.

b) Bug life cycle.

c) Quality factors.

d) Different review types.

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Total No. of Questions : 7]

SEAT No. :

P1921

[Total No. of Pages : 2

[5170]-502
M.C.A. (Management)
IT - 52 : SOFTWARE PROJECT MANAGEMENT
(2013 Pattern) (Semester - V)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.1 and Q.7 are compulsory.***
2) ***Solve any 4 from remaining.***
3) ***Wherever necessary, state a ssumptions give examples & draw diagrams.***
4) ***Calculators are allowed.***

Q1) a) A new project with estimated 400 kLoc systems has to be developed. For development project also requires. **[10]**

i) Software reliability is high (1.15)

ii) Product complexity is high (1.15)

iii) Analyst capability is high (0.86)

iv) Programming language Experience is low (1.07)

v) Remaining all drivers are treated as nominal

Calculate the effort, development time, average staff size & productivity of the project.

b) Draw a network diagram from the given information **[10]**

i) Find start time, End time, total float & critical path

ii) If activity 4-5 crashed by 2 weeks, draw network diagram & find out critical path & shortest path

Activity	Duration in weeks
1 - 2	4
1 - 3	1
2-3	3
2-4	5
2-5	4
3-4	3
3-6	1
4-5	5
4-6	2
5-7	5
6-7	3

P.T.O.

Q2) What is risk management? Explain the different stages involved in risk management. **[10]**

Q3) Consider a project with the following functional units

a) Number of user Inputs = 50

b) Number of user Outputs = 40

c) Number of user Enquiries = 35

d) Number of external interfaces = 04

In addition to above, system requires

- Significant data communication (4)
- Performance is very critical (5)
- Designed code may be moderately reusable (2)
- System is not designed for multiple installations (0)

Other complexity adjustment factors are treated as average compute the function point for the project. **[10]**

Q4) Describe role of user in project management. **[10]**

Q5) Explain software team structure and discuss about the team communication. **[10]**

Q6) What is software configuration management? Explain in detail the various stages of configuration management. **[10]**

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

a) WBS.

b) Version Control.

c) NPV & ROI.

d) Delphi cost estimation.

Total No. of Questions : 7]

SEAT No. :

P1922

[Total No. of Pages : 1

[5170]-503

M.C.A. - III (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 1 and 7 are compulsory.***
2) ***Solve any four from the remaining.***

Q1) An electronic goods manufacturing company wants to develop an e-commerce website. You as an IT consultant guide them on e-commerce website development. **[15]**

Q2) What is Cloud computing? Explain Cloud Architecture in detail. **[10]**

Q3) What is M-Commerce? Explain attributes of M-commerce. **[10]**

Q4) What is E-learning? Explain its different models. **[10]**

Q5) What is ECM? Describe Enterprise Content Management process with suitable diagram. **[10]**

Q6) What is Social Networking? What to look for in Social Networking? **[10]**

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

a) Standards for e-Learning.

b) Drivers of m-commerce.

c) Web-based CMS tools

d) Cloud Security.

e) Electronic Document Management.

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Total No. of Questions : 7]

SEAT No. :

P1923

[Total No. of Pages : 2

[5170]-504

M.C.A. (Management Faculty)

IT - 54 : ADVANCED DEVELOPMENT TECHNOLOGY

(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 indicates full marks.***

Q1) Explain Data Adapter, Data Set, Data Reader. Command object & connection object in detail. **[10]**

Q2) Explain Client Side State Management Techniques. **[15]**

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

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

a) Populate and display students name in a drop down list.

b) Select a student from Drop Down List and display its details in under lying text boxes.

c) Add a record.

d) Delete selected record.

e) Edit selected record.

Name of Table :- Student Master (StudID, studName,DOB Percentage, Course Name)

Name of Server : MyASPDB (SQL Server)

P.T.O.

Q5) a) Explain ASP.Net Architecture in detail. **[10]**

b) Write a program to implement hit counter using global asax file. **[5]**

Q6) Explain following controls [Any Three]: **[15]**

a) Image Map.

b) Calender Control.

c) Button Control.

d) Wizard Control.

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

a) Name spaces.

b) Ajax Controls.

c) Validator controls (Any two).

d) File Upload Control.

Total No. of Questions :7]

SEAT No. :

P1924

[Total No. of Pages :2

[5170] - 505

M.C.A. (Management Faculty)

IT-55: ADVANCED INTERNET TECHNOLOGY

(2013 Pattern) (Semester - V)

Time : 3 Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Question 1 & 7 are compulsory.***
2) ***Answer any four questions from remaining (Q2-Q6).***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***

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

b) Explain pattern matching in PERL. **[5]**

Q2) Explain CGI architecture. Write a perl program to create a file insert some data and display the contents into that file. **[10]**

Q3) Explain Http Servlet Request and Http Servlet Response with suitable examples. **[10]**

Q4) What is ORM and Hibernate? What are the levels of ORM? **[10]**

Q5) What is thread safe servlet? Write a servlet program to accept online voter details for registration of voters. Assume suitable table structure. **[10]**

Q6) Write PHP code to accept convocation registration information from the student, store it into the database and display the student information. **[10]**

P.T.O.

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

a) Aspect Oriented Programming.

b) Arrays in PHP.

c) JSP elements.

d) Perl array functions.

e) Factors affect the performance of Tomcat server.

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