

Total No. of Questions :12]

SEAT No. :

P1919

[4861]-101

[Total No. of Pages :3

**F.Y. M.C.A. (Engineering)
C AND C++ PROGRAMMING
(2013 Course) (Semester - I) (310901)**

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data, if necessary.*

Q1) a) What is procedure oriented programming? Why C programming is called top down design approach? **[4]**

b) Find output of the following program: **[4]**

i)

```
#include<stdio.h>
int main()
{
    int i;
    for(i=0;i<5;i++)
    {
        int i=10;
        printf("%d",i);
        i++;
    }
    return 0;
}
```

ii)

```
void main ( )
{
    char M [ ] = "Hello";
    int i ;
    for (i = 0 ; M [i] ; i ++ )
    {
        printf ("\n %c %c %c %c", M [i], * (M+i), * (i+M), i [M]);
    }
}
```

OR

P.T.O.

Q2) a) What is constant? List data types in C. Explain any three data types. **[4]**

b) i) `#include<stdio.h>` **[4]**

```
void main ()  
{  
    char arr[11] = "India";  
    printf("%s",arr);  
}
```

ii) `main ()`

```
{  
    int i;  
    i = 10;  
    printf("%d %d %d %d %d", i++, ++i, --i, i--, ++i);  
}
```

Q3) What is the difference between structure and union? Create a union with three data elements and display it. **[8]**

OR

Q4) Explain `malloc ()` and `free ()` function with example. **[8]**

Q5) a) What is a recursion function? Write a recursion function to find factorial of given number. **[5]**

b) Explain the use of `#includes` and `#define` directives of C language. **[4]**

OR

Q6) a) What is function? Explain call by value and call by reference with example. **[5]**

b) Define macro. Write a macro to compute the area of circle. **[4]**

Q7) a) Explain destructor with example. **[4]**

b) Explain the concept of class and encapsulation with example. **[4]**

OR

- Q8)** a) What is constructor? What are the characteristics of constructor? [4]
b) What is inline function? How does the inline function differ from Preprocessor macro. [4]

- Q9)** a) What is the inheritance? Explain multilevel inheritance with example. [4]
b) Explain the difference between function overloading and function overriding. [4]

OR

- Q10)**a) What is function overloading? Write a C++ program to overload area () function to calculate area of rectangle and circle. [4]
b) Explain the various access modifiers in C++ with example. [4]

- Q11)**a) List Formatted I/O and unformatted I/O Functions in C++. Explain any two functions of each type. [5]

- b) Short notes on: [4]
i) open ()
ii) get ()

OR

- Q12)**a) Explain managing console formatted I/O with example. [5]

- b) Short notes on: [4]
i) Put ()
ii) Seekg ()

EEE

Total No. of Questions :12]

SEAT No. :

[Total No. of Pages :2

P1920

[4861]-102

F.Y. M.C.A. (Engg.)

COMPUTER ORGANIZATION

(2013 Course) (Semester - I) (310902)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data if necessary.*

Q1) a) Explain the types of software with example. **[6]**

b) Explain in short stored program concept. **[3]**

OR

Q2) Draw the algebraic expression, logic symbols and truth table for all basic gates. **[9]**

Q3) Explain the two types of Adders. **[8]**

OR

Q4) a) What is multiplexer and De-multiplexer? Explain in short. **[4]**

b) Write a short note on master slave flip-flop. **[4]**

Q5) Draw memory hierarchy and explain all types of memory. **[8]**

OR

Q6) a) Differentiate between DRAM and SRAM. **[4]**

b) Explain cache memory structure. **[4]**

P.T.O.

Q7) What is Interrupt? Explain various types of Interrupts in detail. [9]

OR

Q8) a) What do you mean by addressing mode? [4]

b) Explain the system buses and their characteristics. [5]

Q9) Draw and explain 16-bit(8086) architecture in detail. [8]

OR

Q10) Explain Pentium Processor Architecture. [8]

Q11)a) Explain the concept of Parallel Processing. [4]

b) Write a short note on Cluster Architecture. [4]

OR

Q12)a) Explain the concept of Clusters. [4]

b) Write a short note on CPU performance. [4]

EEE

Total No. of Questions :12]

SEAT No. :

P1921

[4861]-103

[Total No. of Pages :2

F.Y. M.C.A. (Engineering)

PRINCIPLES OF PROGRAMMING PRACTICES

(2013 Course) (Semester - I) (310903)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

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

- Q1)** a) Explain the relationship between Hardware & Software. [3]
b) Differentiate between Low level language and High Level language. [4]

OR

- Q2)** a) Explain the advantages of C++. [3]
b) Explain The software development steps in details. [4]
- Q3)** a) What are the problem solving aspects? [6]
b) Explain general Problem solving Concepts. [4]

OR

- Q4)** a) Define an algorithm? What are the advantages of writing an algorithm?[4]
b) Why documentation is required? State its benefits. [6]
- Q5)** a) Explain local and global variables with example. [4]
b) What is top-down and bottom-up approach? [4]

OR

- Q6)** a) Discuss selection and iterative structures in detail. [4]
b) Write a program which uses a recursive algorithm. Explain how subroutines are generated? [4]

P.T.O.

- Q7)** a) Write an algorithm for GCD of a number. [5]
b) What is flowchart? Explain with example. List all the symbols used to draw a flow chart. [5]

OR

- Q8)** a) Write an algorithm for the exchange of values of two variables without third variable. [5]
b) Write an algorithm to convert character to number. [5]
- Q9)** a) Define time complexity with example. [4]
b) Define asymptotic notations: [4]
i) Omega
ii) Theta

OR

- Q10)** a) Describe in brief time and space complexity. [4]
b) Write an algorithm to find a missing number. Find frequency count of each step. [4]
- Q11)** a) Explain binary search with example. [3]
b) Compare testing and debugging. [4]

OR

- Q12)** a) Explain multidimensional array with example. [3]
b) Explain merge sort algorithm with example. [4]

EEE

Total No. of Questions :12]

SEAT No. :

P1922

[4861]-104

[Total No. of Pages :4

**F.Y. M.C.A. (Under Engineering Faculty)
DISCRETE MATHEMATICS
(2013 Course) (Semester - I)**

Time : 2 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer books.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Use of probability table, electronic pocket calculator is allowed.*
- 5) *Assume suitable data, if necessary.*

SECTION - I

- Q1)** a) Show that $1.2 + 2.3 + 3.4 + \dots + n(n + 1) = n(n + 1)(n + 2)/3$ by using Mathematical induction. **[5]**
- b) In a group of 700 people, 350 can speak English only and 150 can speak Hindi only. **[4]**
- i) How many can speak both Hindi & English
 - ii) How many can speak English
 - iii) How many can speak Hindi?

OR

- Q2)** a) Prove the following by using Venn diagram **[5]**
- i) $(A - B) - C = A - (B \cup C)$
 - ii) $(A \cap B) - C = (A - C) \cap (B - C)$
- b) Prove by mathematical induction that $8^n - 3^n$ is a multiple of 5 for $n \geq 1$. **[4]**

P.T.O.

- Q3) a)** Determine whether the following is valid argument using truth table: [4]
 $p \Rightarrow \sim q, r \Rightarrow q, r \vdash \sim p$.
- b) Obtain the principal disjunctive normal form of $q \vee (p \vee \sim q)$. [4]

OR

- Q4) a)** Let $K(x)$: x is student, $M(x)$: x is clever, $N(x)$: x is successful. Express the followings using quantifiers. [4]

- i) There exists a student.
- ii) Some students are clever.
- iii) Some students are not successful.
- iv) All students are clever and successful.

- b) Negate the following in such a way that a symbol \sim does not appear outside the square brackets. [4]

- i) $\forall x \forall y [(x > y) \Rightarrow (x^2 > y^2)]$
- ii) $\forall y \exists x [x^2 = y]$

- Q5) a)** How many words can be formed from the letters of the word DAUGHTER so that, [4]

- i) the vowels always come together?
- ii) the vowels are never together?

- b) A box contains 6 white balls and 5 red balls. Find the number of ways, 4 balls can drawn from the box if, [4]

- i) Two must be red
- ii) All of them must have same color.

OR

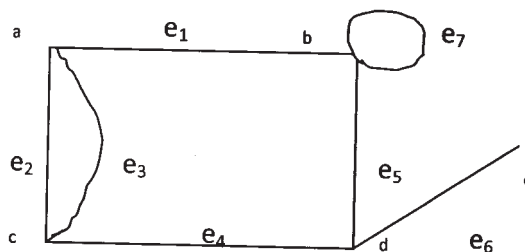
- Q6)** a) How many permutations can be made out of the letters of the word “BASIC”? How many of these [4]
- begin with B
 - end with C
 - B and C occupy the end places
- b) In how many ways can 7 persons form a ring? In how many ways can 7 gentleman and 7 ladies sit down at a round table, no two ladies being together? [4]

SECTION - II

- Q7)** a) Use Warshalls algorithm to find transitive closure of relation R where $R = \{(a,b) (b,a) (c,b) (c,d) (d,a)\}$ [5]
- b) Define surjective and bijective function with suitable example. [4]

OR

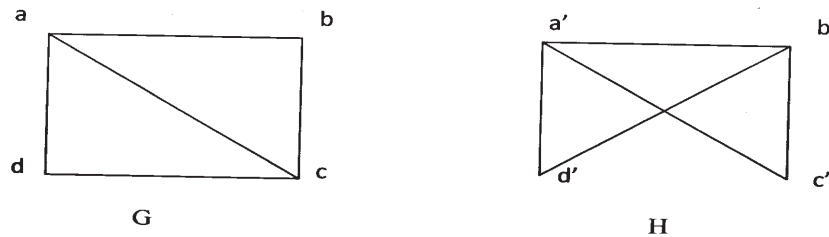
- Q8)** a) Let R be the relation on the set $A = \{5,6,8,10,28,36,48\}$. Let $R = \{(a,b)/ a \text{ is a the divisor theb}\}$. Draw the Hasse diagram. Determine whether R is reflexive, transitive and symmetric. [5]
- b) If $f : \mathbb{R} \rightarrow \mathbb{R}$ and $g : \mathbb{R} \rightarrow \mathbb{R}$ defined by $f(x) = x^2$ and $g(x) = \sin x$, for all $x \in \mathbb{R}$ Show that $g \circ f \neq f \circ g$. [4]
- Q9)** a) Determine the number of edges in a graph with 6 nodes, 2 of degree 4 and 4 of degree 2. Draw one such graphs. [4]
- b) Find the Adjacency matrix and Incidence matrix of following graph. [4]



OR

Q10)a) Define regular graph and bipartite graph. Draw a complete bipartite graph which is not a regular graph. **[4]**

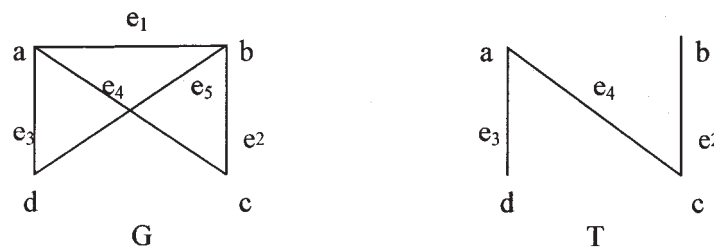
b) Show that G and H are Isomorphic. **[4]**



Q11)a) Define: **[4]**

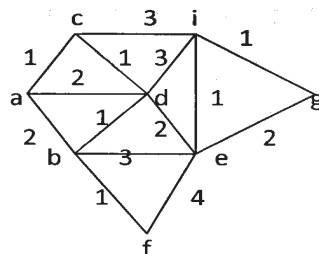
- i) Rooted tree
- ii) m-ary tree
- iii) full binary tree
- iv) height of tree

b) Find the fundamental system of cut-set for the following graph G with respect to the spanning tree T as shown below. **[4]**



OR

Q12)a) Use Prim's algorithm to construct a minimal spanning tree for the weighted graph in following figure starting from vertex a. Repeat the process starting from vertex b. Verify that both trees have the same weight. **[4]**



b) For the following set of weights construct an optimal binay prefix Code. Find the weight of the optimal tree 1,2,4,5,6,9,10,12. **[4]**

EEE

Total No. of Questions :12]

SEAT No. :

[Total No. of Pages :3

P1923

[4861]-105

F.Y. M.C.A. (Engg.)

PROBABILITY AND STATISTICS

(2013 Course) (Semester - I)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data, if necessary.*
- 4) *Use of probability table, electronic pocket calculator is allowed.*

Q1) a) If A and B are any two events then

$$P(A \cup B) = P(A) + P(B) - P(A \cap B) \quad [4]$$

b) A husband and wife appear in a interview for two vacancies of the same post. The probability of husband's selection is $1/7$ and that of wife's selection is $1/5$. What is the probability that: [4]

- i) at least one of them is selected
- ii) both of them are selected
- iii) only one of them is selected

OR

Q2) a) Three balls are drawn successively from the box containing 6 red balls, 4 white balls and 5 blue balls. Find the probability that they are drawn in the order red, white and blue if each ball is [4]

- i) Replaced
- ii) Not Replaced

b) State and prove Baye's theorem. [4]

P.T.O.

Q3) a) Let X and Y be independent random variables with $E[X] = 3$, $E[X^2] = 25$
 $E[Y] = 10$ and $E[Y^2] = 164$ find **[4]**

i) $E[2X-3Y+7]$

ii) $\text{var}[3X+Y-8]$

b) Verify whether a function $f(x)$ define by **[4]**

$$f(x) = \begin{cases} \frac{3}{4} * (1/4)^x & x = 0, 1, 2, \dots \\ 0 & \text{Otherwise} \end{cases}$$

is probability mass function of discrete random variable X.

OR

Q4) a) If X and Y are independent random variables, prove that

$$\text{Var}(X+Y) = \text{Var}(X) + \text{Var}(Y) \quad \text{[4]}$$

b) Describe hyper geometric distribution. **[4]**

Q5) a) Find Moment generating function, mean and variance of a Geometric
Random Variable. **[6]**

b) What is Uniform Distribution? **[3]**

OR

Q6) a) Find the mean and variance of Uniform Random Variable. **[4]**

b) What is reliability? Find the Reliability of K components connected in **[5]**

i) Series

ii) Parallel

Q7) a) What is maximum likelihood estimator? Explain the method to obtain
maximum likelihood estimate. **[4]**

b) Define sample mean and sample median. Following are the observations
on random variable X: 406, 395, 400, 450, 390, 410, 415, 401, 408. Find
sample mean and median. **[4]**

OR

Q8) a) What is point estimator? What properties of estimator will make it a good estimator? [4]

b) Describe Central Limit Theorem. [4]

Q9) a) What is Hypothesis testing? What is significance of alpha and beta? [4]

b) A random sample of size n is selected from a normal distribution with mean μ and variance σ^2 . Prove that the sample mean \bar{X} is normally distributed with mean μ and variance σ^2 / n . [4]

OR

Q10)a) Explain the following terms: [4]

i) Statistical Hypothesis and Null Hypothesis

ii) Level of significance

b) Write a short note on Student-t Distribution. [4]

Q11)a) Describe the chi-square test as a test of goodness of fit. Write the steps. [5]

b) Explain the term P-chart of statistical quality control. [4]

OR

Q12)a) What is acceptance sampling? [5]

b) Explain Statistical Quality control with its advantages and limitations. [4]

EEE

Total No. of Questions : 12]

SEAT No. :

P1924

[4861]-201

[Total No. of Pages :2

F.Y.M.C.A. (Engineering)

JAVA PROGRAMMING

(2013 Course) (Semester-II) (310909)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Answers to the two Sections should be written in separate answer books.*
- 2) *Answer any three questions from each section.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right side indicate full marks.*
- 5) *Use of Calculator is allowed.*
- 6) *Assume suitable data, if necessary.*

Q1) a) What is difference between JDK, JRE and JVM? **[6]**

b) Is Empty. Java file name a valid source file name? **[3]**

OR

Q2) a) Explain Java Buzz words in brief. **[4]**

b) Give the meaning of public static void main (String a []) **[3]**

c) What is JIT compiler? **[2]**

Q3) a) What is the need for static variables and static method? **[4]**

b) Define an interface. How it differs from abstract classes? **[4]**

OR

Q4) a) What is Constructor in Java? Why constructor does not have return type in java? Explain it with proper example. **[4]**

b) Explain with suitable example the uses of interface. **[2]**

c) What are inner class and anonymous class? **[2]**

Q5) a) What are Wrapper Classes ? Explain with example **[4]**

b) Differentiate method Overloading and Method Overriding with example. **[4]**

OR

P.T.O.

- Q6)** a) What does it mean that a method or class is abstract? Can we make an instance of an abstract class? Explain it with example. [5]
b) Explain the usage of Java packages. [3]

- Q7)** a) Explain the different ways to handle exceptions. [4]
b) Describe synchronization in respect to multithreading. [4]

OR

- Q8)** a) Explain the life cycle of a thread. [4]
b) What are the different identifier states of a Thread and setting priority of threads? [4]

- Q9)** a) Write a program to draw simple geometry shapes in applet. [6]
b) Write a steps to execute a simple applet program. [3]

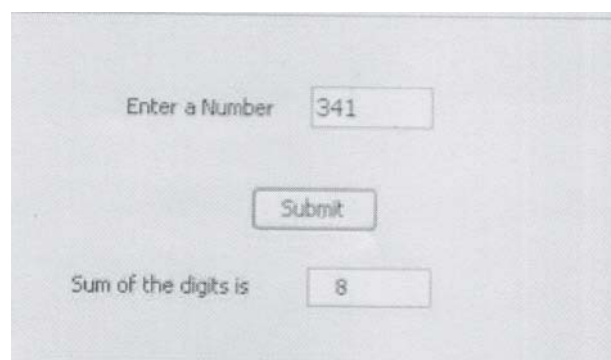
OR

- Q10)**a) Describe the AWT event hierarchy. [5]
b) Explain event handling with examples. [4]

- Q11)**a) What are the swing components? Explain in details. [5]
b) What is an applet? Explain how applets are used in net based applicaitons. [3]

OR

- Q12)** Create an application that receive a number through a jTextField1 and print the sum of the individual digits when the submit button is pressed. [8]



Total No. of Questions : 12]

SEAT No. :

P1925

[4861]-202

[Total No. of Pages :2

F.Y.M.C.A. (Engg.)

DATA STRUCTURES USING C

(2013 Course) (Semester-II) (310910)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data, if necessary.*

Q1) a) Write a function in 'C' / 'C++' to get a transpose of matrix of size $M \times N$, using Fast transpose method. Comment on the time analysis. **[6]**

b) Define Abstract Data Type. **[2]**

OR

Q2) Explain 2-D arrays in detail with row and column major implementations and address calculations in both cases. Use the following data for address calculation: Consider the integer array `int A[20][30]` declared in 'C' / 'C++'. Base address is 200, find the address of element `A[15][25]`. **[8]**

Q3) a) Write Pseudo C code for inserting node in the circular linked list. **[5]**

b) What is dynamic memory allocation? **[3]**

OR

Q4) Write a program to implement Doubly linked list. **[8]**

Q5) a) Convert the following infix expression to postfix using stacks. Show the contents of stack after every pass. $(a+b / c \wedge d) * (e+f)$. **[5]**

b) Explain Circular queue as an array. **[4]**

OR

P.T.O.

- Q6)** a) What is Stack. Implement Stack as a linked list. [6]
b) What is priority queue? Explain it with suitable example. [3]

- Q7)** a) Explain applications of Binary tree. [6]
b) Define following terms. [3]
i) Height of tree.
ii) Level of tree.
iii) Complete Binary tree.

OR

- Q8)** a) Write a non recursive C/C++ function to insert a node in Binary Search Tree. [4]
b) Write Prim's algorithm to find minimum spanning tree of graph. [5]

- Q9)** a) Show the stepwise execution of the Merge sort algorithm for the following list. Give the time complexity of algorithm. [4]
23, 8, 44, 1, 61, 13, 58, 20, 48, 19
b) Write a C/C++ non recursive function for binary search. [4]

OR

- Q10)** a) Assume 10 numbers in an array. Consider first number is pivot element and show how Quick sort works for these numbers. [6]
b) Describe the following with respect to sorting. [2]
i) Sort Order
ii) Sort Efficiency

- Q11)** a) Explain collision resolution techniques in Hashing. [6]
b) Write short note on Linear Probing. [2]

OR

- Q12)** a) Write C pseudo code showing all the primitive operations on simple index file. [6]
b) What is Rehashing? [2]



Total No. of Questions :12]

SEAT No. :

P1926

[4861]-203

[Total No. of Pages :3

**F.Y. M.C.A. (Under Engineering Faculty)
WEB TECHNOLOGIES
(2013 Course) (Semester - II) (310911)**

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Uses of probability table, electronic pocket calculator is allowed.*
- 4) *Assume suitable data, if necessary.*

- Q1) a)** Explain the concept of 3-tier architecture. **[6]**
b) What is www? **[3]**

OR

- Q2) a)** Write note on FTP. **[6]**
b) Difference between static & dynamic websites. **[3]**
- Q3) a)** What is style sheet? Explain various types of style sheets. **[6]**
b) Explain <Div> and tag with example. **[3]**

OR

- Q4) a)** Write a code in HTML that displays the HTML form as shown in below figure. Send e-mail to someone@example.com: **[6]**

Name:

E-mail:

Comment:

- b) Explain <frameset> and <table> tags with example. **[3]**

P.T.O.

- Q5) a)** Explain looping in VBScript with example. [4]
b) Explain any three string functions in VBScript with example. [3]

OR

- Q6) a)** Create form with username, password as text boxes and submit, reset buttons. Write VBScript Code for validation of username and password. [4]
b) Explain procedures in VBScript with example. [3]
- Q7) a)** Explain event handling in JavaScript with suitable example. [6]
b) Following Terms: Illustrate with code examples [3]
i) FOR Loop
ii) BREAK Loop

OR

- Q8) a)** Explain Math object in JavaScript. [6]
b) Write a JavaScript function that accepts a string as a parameter and converts the first letter of each word of the string in upper case. [3]
- Q9) a)** Consider following example [6]

```
<ProductInfo>
  <Product>
    <Name>Washing Machine</Name>
    <Description>Front load fully automatic
machine</Description>
    <Quantity>01</Quantity>
    <Price>20000</Price>
  </Product>
</ProductInfo>
```

Write XML schema for above XML document. Assume suitable data if necessary.

- b) Explain XML namespace. [3]

OR

- Q10)**a) Explain in detail DTD with its example. [6]
b) Explain features of XML. [3]

- Q11)**a) Explain arrays in PHP with example. [4]
b) Compare include and require statement in PHP. [3]

OR

- Q12)** Write PHP Code to retrieve student information from student table. [7]
(Assume suitable table structure.)

EEE

Total No. of Questions : 12]

SEAT No. :

P1927

[4861]-204

[Total No. of Pages : 4

F.Y. M.C.A. (Engineering)
SYSTEM ANALYSIS AND DESIGN
(2013 Course) (Semester-II) (310912)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data if necessary.*

SECTION-I

- Q1)** a) Explain waterfall model with its advantages and disadvantages. [4]
b) Differentiate between system approach and engineering approach. [5]

OR

- Q2)** a) What is software engineering? Explain software as product and a process. [4]
b) Explain 'incremental model' of software engineering. [5]

- Q3)** a) Explain the steps and activities in the design phase, of SDLC. [4]
b) Write a short note on requirement validation. [4]

OR

- Q4)** a) What is meant by feasibility study? Explain various types of feasibility study. [4]
b) What are the characteristics of requirement? [4]

- Q5)** a) Construct a data flow diagram (level 0 and 1) for library management system. Also draw respective ERS's for it. [4]
b) What is data dictionary? Explain why data dictionary is used by system analyst? [4]

OR

P.T.O.

- Q6) a)** Draw an ERD (Entity Relationship Diagram) for university admission system. Explain its cardinality. Also, draw DFDS for the same system upto level-I. **[4]**
- b) Write a short note on process specification. **[4]**

SECTION-II

- Q7) a)** Draw the Context Level and Level 0 Data Flow diagram for the “Queenston Prisoner Locator System”. **[6]**

Problem Description:

Queenston Prison System: A major penal centre has been built outside the town of Queenston for keeping prisoners convicted of only one offense or of white collar crimes. The prison facility has a constant flow of prisoners into and out of the prison they are also moving prisoners within the prison based on their good behaviour. On a day to day basis, approximately 136 prisoner changes take place. The changes are processed in the prison control centre office by Miss Keepkey. Each day, the new prisoner processing division receives the new prisoners, conducts a physical examination, assigns the prisoners to living quarters and sends the information file on the new prisoners to Miss Keepkey’s office. Miss Keepkey adds information on the new prisoner to a prisoner information database kept on her PC. She also updates her prisoner locator log which keeps records of where each prisoner resides. Finally, she files the actual folder away in an enormous storehouse of file cabinets which contains information on all prisoners who have ever stayed at Queenston. If a new prisoner is found to have been a previous occupant of Queenston, she consolidates both files. As prisoners stay at Queenston, the officials review their behaviour record. Good behaviour or closeness to release time warrant an upgrade in accommodations, usually to minimum security housing. Movement of prisoners to new quarters is done on a weekly basis. Orders are issued to move the prisoners and the move information is sent to Miss Keepkey. She makes these changes in her prisoner locator log and her prisoner information database. She also pulls the prisoners long term file and notes good behavior commendations. A release review and parole board reviews prisoner records on a daily basis and generates a set of prisoners to be released either into the custody of a parole officer or without any restrictions. They notify the prisoner and send an update of the release to Miss Keepkey’s office. She removes the prisoner from her prisoner information database and prisoner locator log and updates the long-term file of the prisoner to reflect the release.

- b) Evaluate different coding techniques. **[3]**

OR
2

- Q8) a)** Draw an entity-relationship diagram for the following information system. [6]

The Airport Transport Services Company runs a limousine service that carries passengers to and from the Toronto airport to their homes or places of business. They maintain a database of customers on a PC in order to schedule pickups and also to keep their customers from having to repeat address information each time they call the limousine service. The database for the customers is accessed by customer telephone number. If a customer is picked up sometimes at their home and sometimes at their office, both home and office telephone numbers and addresses are stored in the database. The customer may also schedule a pickup from the airport when his or her flight arrives or may call from the airport and reserve a limousine which will come in approximately five minutes. When a request for a pickup comes in, the dispatcher checks for available drivers, calls one and assigns them to a customer. Typically cars are assigned to the driver each workday and often a driver will take a car home for an early morning pickup if needed. The relevant customer and driver attributes kept in the database for managing the customer pickup and delivery is as follows:

- | | |
|-----------------------------------|-----------------------------------|
| 1) Customer Name | 13) Air Carrier |
| 2) Customer Home Telephone Number | 14) Arrival Time |
| 3) Customer Home Address | 15) Customer Drop-off City Region |
| 4) Customer Home Region | 16) Driver ID |
| 5) Customer Work Telephone Number | 17) Driver Name |
| 6) Customer Work Address | 18) Driver Address |
| 7) Customer Work City Region | 19) Driver City Region |
| 8) Date of Pickup | 20) Driver Phone Number |
| 9) Time of Pickup | 21) Car ID |
| 10) Driver assigned to Pickup | 22) Car Make |
| 11) Special Pickup Information | 23) Car License Number |
| 12) Flight Number | |

- b) Explain the objectives of output design with suitable example. [3]

Q9) a) What is the difference between re-engineering and reverse engineering? [4]

- b) Software bugs, errors and defects: What's the difference? [4]

OR
3

- Q10)a)** What is your advice when a customer wants high performance, high usability and high security? Justify. [4]
- b) What is the difference between a test suite, a test case and a test plan? How would you organize testing? [4]

- Q11)a)** What is component based software engineering? How does software component based software engineering resemble the use of components in traditional manufacturing? [6]
- b) What is the difference between “*deployment*” and “*release*”? [2]

OR

- Q12)a)** Explain in details “Service Oriented Architecture”. [4]
- b) What types of problems have you encountered most often in your products after deployment? [4]



Total No. of Questions : 12]

SEAT No. :

P1928

[4861]-205

[Total No. of Pages :2

**F.Y.M.C.A. (Faculty of Engineering)
MANAGEMENT THEORY & PRACTICES
(Semester-II) (2013 Course) (310913)**

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer books.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume suitable data if necessary.*

SECTION-I

- Q1) a)** Give in brief historical developments in the management philosophy. [4]
b) Write down skills of manager. [5]

OR

- Q2) a)** What are the main functions of management? Discuss them in the order of their importance to an Organization. [4]
b) What is the contribution of Henry Fayol to the management science? [5]

- Q3) a)** What are the different factors that affect forms of business organization? [4]
b) Draw block diagram & explain line & staff organization. [4]

OR

- Q4) a)** Explain the difference between formal & informal organization. [4]
b) Write difference between MOA & AOA. [4]

- Q5) a)** Explain Black and Mouton's Theory. [4]
b) Define leadership and explain importance of leadership to the organization. [4]

OR

P.T.O.

- Q6)** a) Explain Hersey and Blanchard's Theory. [4]
b) Which are the traits, behavioral and situational approaches for leadership style? [4]

SECTION-II

- Q7)** a) Explain conflict management in detail with their strategies. [5]
b) Explain total Quality Control in brief. [4]

OR

- Q8)** a) Explain Motivation Theory X, Y and Z. [4]
b) What are the steps in Business Process Re-engineering? Explain. [5]

- Q9)** a) Write role of MIS in academic structure. [4]
b) Explain the challenge and trends in Customer Relationship Management. [4]

OR

- Q10)** a) Explain transaction processing system in detail. [4]
b) Write a short note on- Supply Chain Management (SCM). [4]

- Q11)** a) Explain Principle of Rationality and Bounded Rationality. [4]
b) Explain Decision Making tools-Autocratic, Participative. [4]

OR

- Q12)** a) Write short note on-Herbert Simpson's Model. [4]
b) Explain the importance of Data Mining in Decision Support System. [4]



Total No. of Questions : 12]

SEAT No. :

[Total No. of Pages :2

P1929

[4861]-301

S.Y.M.C.A. (Engg.)

ADVANCED JAVA

(Semester-III) (2013 Course) (410901)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data if necessary.*

Q1) What is J2EE? Explain the J2EE Components. **[8]**

OR

Q2) What is JDBC? Explain types of JDBC Drivers. **[8]**

Q3) What is servlet? Write short notes on any 2 of following: **[8]**

- a) HttpServlet
- b) GenericServlet
- c) ServletConfig

OR

Q4) What is servlet life cycle? Explain any 2 of the following in context to servlet:**[8]**

- a) Request
- b) Response
- c) Session Management

Q5) Write a JSP program to accept studentId via POST and display the record of the student in HTML table. Assume suitable RDBMS, table name and fields.**[9]**

OR

P.T.O.

Q6) Write short notes on any 3 of following. [9]

- a) JSP Implicit Objects
- b) Tag Libraries
- c) JSP expression
- d) JSP Exception Handling

Q7) What is Enterprise Java Beans? Write down the advantages of EJB. [8]

OR

Q8) What is session beans? Write short notes on any 2 of following: [8]

- a) Message Driven Beans
- b) Entity Beans
- c) Stateful Bean Lifecycle

Q9) What is Spring ? Explain the core spring module. [8]

OR

Q10) Write short notes on any 3 of following in context on spring. [8]

- a) JMX
- b) Remote Services
- c) Spring MVC

Q11) What is Hibernate? Explain Hibernate architecture and features. [9]

OR

Q12) What is HQL? What do you mean by externalizing queries? [9]



Total No. of Questions : 12]

SEAT No. :

P1930

[4861]-302

[Total No. of Pages : 3

S.Y.M.C.A. (Engineering)
DATABASE MANAGEMENT SYSTEM
(2013 Course) (Semester - III) (410902)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate answer books.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) Figures to the right side indicate full marks.*
- 4) Assume Suitable data if necessary.*

SECTION - I

- Q1) a)** Explain file-server architecture of multi-user DBMS in detail. **[4]**
- b)** What is data model? List and explain any two data model. **[4]**

OR

- Q2) a)** How Following Problems of file management system are handled by DBMS. **[4]**
- i)** Data Isolation.
 - ii)** Data Redundancy and Inconsistency.
 - iii)** Data Integrity.
- b)** What is the difference between physical and logical data independence. **[4]**
- Q3) a)** Employees of a large company, where an employee reports to a manager. The manager is also an employee who reports to another manager. This chain of command continues to the very top where the CEO is the only employee who is not reporting to a manager. Draw the ER diagram for this example. **[4]**
- b)** Explain specialization, generalization and aggregation with example. **[4]**

P.T.O.

OR

- Q4)** a) Explain difference between ER diagram and EER diagram. [4]
b) Explain types of attribute in ER Model with example. [4]

- Q5)** a) What is data integrity constraint? Explain referential integrity constraints with suitable example. [4]
b) What is a view? Explain updatable view and non updatable view. [4]

OR

- Q6)** a) What are the different types of keys in relational model. Explain with example. [4]
b) Explain following concepts: [4]
i) DDL
ii) DML

SECTION - II

- Q7)** a) What is Trigger? Explain types of triggers with example. [4]
b) Write a short note on Nested Queries. [4]

OR

- Q8)** a) Explain with example PL/SQL procedure. [4]
b) What is the difference between procedure and function. [4]

- Q9)** a) What is normalization? Explain normal forms up to 3NF with example. [5]
b) Explain functional Dependencies with appropriate example. [5]

OR

- Q10)**a) Consider relation. [5]
R(orderno, orderdate, itemno, itemname, quantity, unitprice)
Normalize the relation to 2NF and 3NF.
b) What is the functional dependency? Explain different type of functional dependency. [5]

Q11)a) Explain the concept of Big Data with example. [4]

b) Explain - NoSQL and List building blocks of HBASE. [4]

OR

Q12)a) Discuss HBASE architecture in detail. [4]

b) What is difference between Relational and Non-Relational database. [4]



Total No. of Questions : 12]

SEAT No. :

P1931

[4861]-303

[Total No. of Pages : 2

S.Y.M.C.A. (Engineering)

OPERATING SYSTEMS

(2013 Course) (Semester - III) (410903)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Use of Calculator is allowed.*
- 4) *Assume Suitable data if necessary.*

Q1) a) Define Operating System. Also state its characteristics? **[4]**

b) What is difference between Linker and Loader? **[4]**

OR

Q2) a) Write a note on Compiler? **[4]**

b) Compare Application Software and System Software? **[4]**

Q3) a) Explain various Operating System services? **[4]**

b) Explain Schedulers and its type? **[4]**

OR

Q4) a) Explain context switch? **[4]**

b) Consider the following set of processes with the length of CPU burst time and arrival time given in milliseconds. **[4]**

Process	Burst Time	Arrival Time
P1	5	1.5
P2	1	0
P3	2	2
P4	4	3

Illustrate the execution of these processes using FCFS CPU scheduling algorithms. Also Calculate Wait Time, Turn Around Time for each process. Also calculate Average Waiting Time and Average Turn Around Time for the above situation. Draw also Gantt Chart.

P.T.O.

- Q5)** a) Explain deadlock avoidance and prevention policies. [5]
b) Explain how to recover from Deadlock. [4]

OR

- Q6)** a) Explain IPC. [4]
b) Explain requirements of Mutual exclusion. [5]

- Q7)** a) Explain swapping with respect to memory management. [4]
b) Write a note on segmentation. [4]

OR

- Q8)** a) Write a note on Virtual memory management. [4]
b) Explain any Page replacement algorithm. [4]

- Q9)** a) Explain Disk structure. [4]
b) Write a note on File system structure. [4]

OR

- Q10)**a) Explain the methods for free space management in file. [4]
b) Write a note on File protection. [4]

- Q11)**a) List different components of Linux system. [4]
b) Explain any five different commands for file. [5]

OR

- Q12)**a) Explain the following commands: [6]
i) kill
ii) ps
iii) whois
b) Explain Process management system call. [3]



Total No. of Questions : 12]

SEAT No. :

P1932

[4861]-304

[Total No. of Pages :3

S.Y.M.C.A. (Engg.)

OBJECT ORIENTED ANALYSIS AND DESIGN

(2013 Course) (Semester-III) (410904)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate answer books.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) Figures to the right side indicate full marks.*
- 4) Assume suitable data, if necessary.*

SECTION-I

- Q1)** a) Explain two views of Software Development process. **[4]**
b) Illustrate 4+1 View architecture diagram. **[4]**

OR

- Q2)** a) Explain Rational Unified Process with all its phases. **[4]**
b) In brief explain Benefits of OO Methodology. **[4]**

- Q3)** a) Show how Extensibility mechanism can be used to extend UML through appropriate examples. **[4]**
b) Write a short note on: **[4]**
i) OCL
ii) UML metamodel

OR

- Q4)** a) What do you mean that some UML diagrams show behavior of system? **[4]**
b) Draw the use case diagram for a car rental application. The car rental agency has multiple offices/branches. The customer visits the agency for enquiry and takes a test ride then selects the car by signing terms and conditions form. The customer can also book the car through telephone, email and SMS. The agency checks the availability of cars and gives the status to the customer. The customer can also avail the driver facility if required by paying additional charges. The billing is done based on the type of vehicle and distance travelled. **[4]**

P.T.O.

Q5) a) A customer visits the online shopping portal. A customer may buy item or just visit the page and logout. The customer can select a segment, then a category, and brand to get the different products in the desired brand. The customer can select the product for purchasing. The process can be repeated for more items. Once the customer finishes selecting the product/s the cart can be viewed, if the customer wants to edit the final cart it can be done here. For final payment the customer has to login the portal, if the customer is visiting for the first time he must register with the site, else the customer must use the login page to proceed. Draw the class diagram. **[6]**

b) Explain relationship use in a class diagram. **[3]**

OR

Q6) a) Compare with concepts/examples. **[4]**

i) Aggregation and composition in class diagrams.

ii) Passive objects and active objects.

b) Courseware management system. The organization offers a variety of courses in variety of area such as learning management techniques and understanding different software languages and technologies. Each course is made up of a set of topics. Tutors in the organization are assigned courses to teach according to the areas that they specialized in and their availability. The organization publishes and maintain a calender of the different courses and assigned tutors every years. There is a group of course administrator in the organization who manage the courses including course contents, assign courses to tutors and defined the course schedule. The training organization aims to used the courseware management system to get a better control and visibility to the management of courses as also to streamline the processes of generating and managing the schedule of different courses. **[5]**

Q7) a) Describe use of combines fragments and lifeline in UML sequence diagram. **[5]**

b) Write a short note on interaction diagram. **[4]**

OR

Q8) a) Draw sequence diagram for buying a product from vending machine. Make suitable assumptions. **[5]**

b) Write a short note on Communication diagrams. **[4]**

- Q9)** a) Explain fork and join with an example. [4]
b) Explain concepts and notation through simple examples for following terms in UML: [4]
i) Activity
ii) Action
iii) Concurrent states
iv) Object flow

OR

- Q10)**a) Draw timing diagram by considering different scenario for washing machine. [4]
b) What is activity diagram? Explain with example. [4]
- Q11)**a) When do you model component diagrams? [4]
b) Describe commercial application of UML. [4]

OR

- Q12)**a) Write note on 'Applications of UML in embedded systems'. [4]
b) What is the need of package diagram? Explain with example. [4]



Total No. of Questions :12]

SEAT No. :

P1933

[4861]-305

[Total No. of Pages :6

S.Y. M.C.A. (Engg.)

OPERATIONS RESEARCH

(2013 Course) (Semester - III) (410905)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10, Q11 or Q12.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *All questions are compulsory.*
- 4) *Figures to the right side indicate full marks.*
- 5) *Use of electronic pocket calculator is allowed.*
- 6) *Assume suitable data, if necessary.*

Q1) a) Solve the following LPP by the Simplex method. [6]

$$\text{Max } z = 11x_1 + 4x_2$$

Subject to constraint

$$7x_1 + 6x_2 \leq 84$$

$$4x_1 + 2x_2 \leq 32$$

$$x_1, x_2 \geq 0$$

b) Discuss the properties of LP model. [3]

OR

Q2) a) Explain [3]

- i) Slack Variable
- ii) Feasible solution
- iii) Optimum Solution

b) Solve the following LPP by the Graphical method. [6]

$$\text{Max } z = 9x + 13y$$

Subject to constraint

$$2X + 3Y \leq 18$$

$$2X + Y \leq 10$$

$$x_1, x_2 \geq 0$$

P.T.O.

Q3) Find basic feasible solution by using

[8]

- a) North West corner method
- b) VAM

	1	2	3	4	Supply
	10	2	20	11	15
	12	7	9	20	25
	4	14	16	18	10
Demand	5	15	15	15	

OR

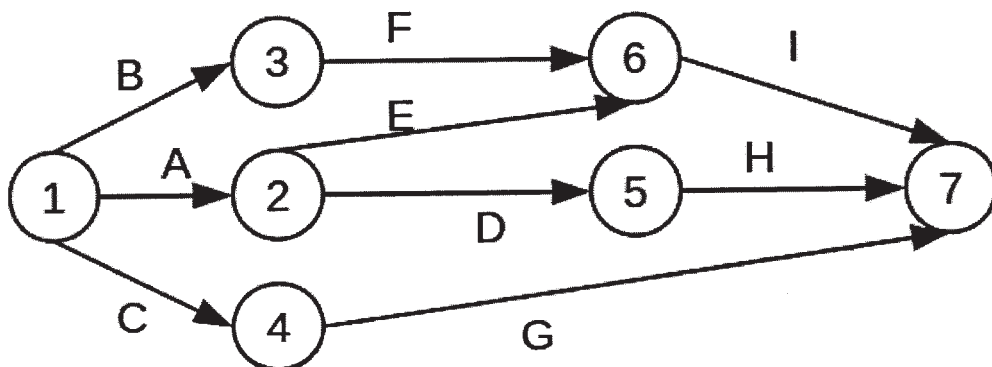
Q4) Solve the given problem of Assignment using Hungarian method.

[8]

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

Q5) A project is represented by the network.

[8]

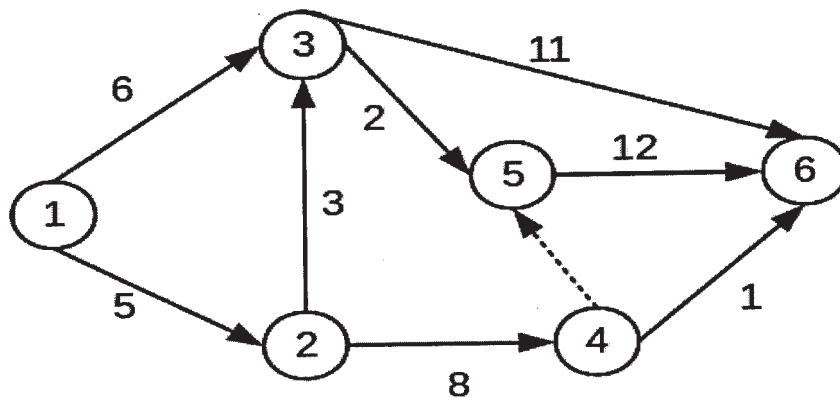


Task	a	m	b
A	5	8	10
B	18	20	22
C	26	33	40
D	16	18	20
E	15	20	25
F	6	9	12
G	7	10	12
H	7	8	9
I	3	4	5

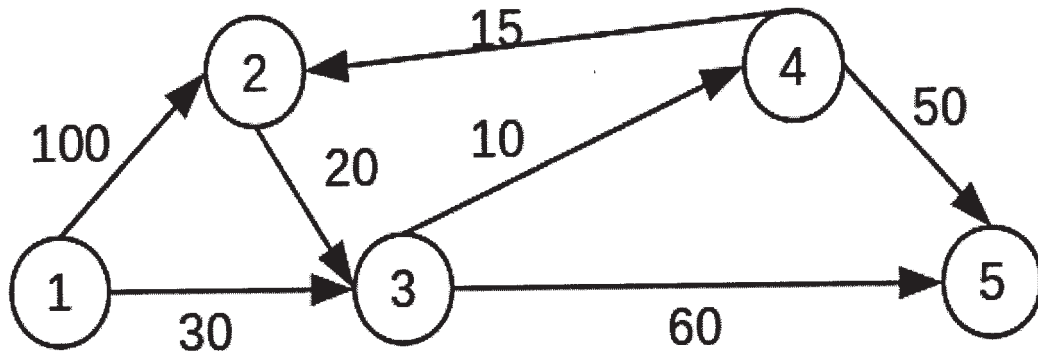
- Determine Expected time & Variance
- The critical path
- The possibility of node occurring at the proposed completion date if the original contract time of the completing project is 41.5 weeks.

OR

Q6) Determine critical path for the project network using forward & backward pass. [8]

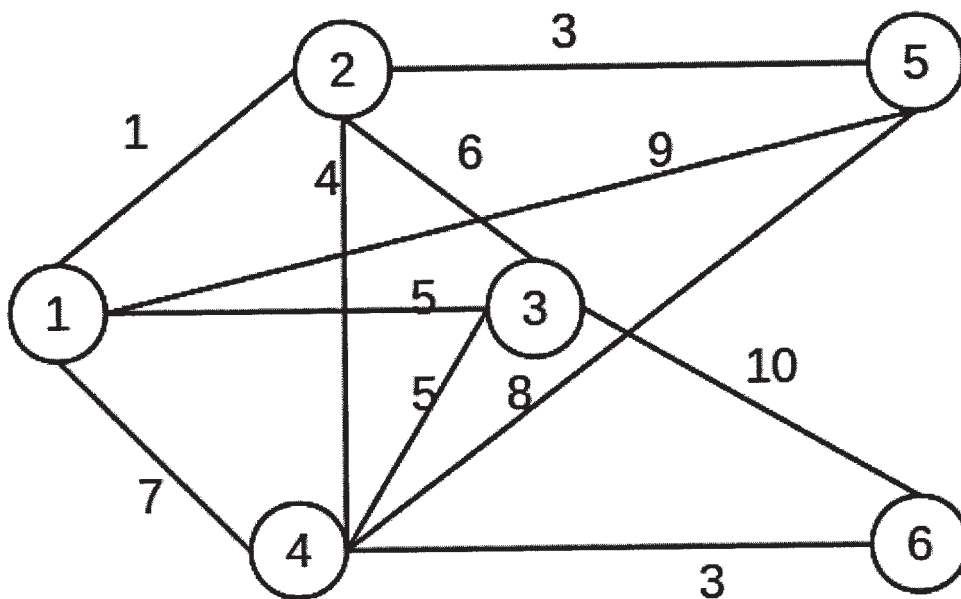


Q7) The network in following figure gives the permissible routes & their lengths in miles between city (node 1) and four other cities (nodes 2 to 5). Determine the shortest routes between city 1 and each of the remaining four cities. Find the shortest route using Dijkstra's algorithm. [9]



OR

Q8) Midwest TV cable company is in the process of providing cable service to 5 new housing development areas. The following figure depicts possible TV linkages among the 5 areas. The cable miles shown on each arc. Determine the most economical cable network. Draw minimum spanning tree & calculate shortest path. [9]



Q9) a) What are the characteristics of decision making? [4]

b) [4]

	S1	S2	S3	S4
a1	5	10	18	25
a2	8	87	12	23
a3	21	18	12	21
a4	30	22	19	15

Find decision using

- i) Laplace
- ii) Hurwicz
- iii) Regret
- iv) Maximin

OR

Q10)a) What is decision under risk? [4]

b) Suppose that following weights are specified for the simulation of Rahul & Rekha. [4]

$p=0.5, p1=0.17, p2=0.83, p11=0.129, p12=0.277, p13=0.594, p21=0.545, p22=0.273, p23=0.182$

$q=0.5, q1=0.3, q2=0.7, q11=0.2, q12=0.3, q13=0.5, q21=0.5, q22=0.2, q23=0.3$

Based on this information find the ranking.

Q11)a) Write steps in Monte Carlo simulation. [4]

b) Generate 4 random numbers [4]

$b = 17, c=111, m = 103, seed =7$

OR

- Q12)a)** A bakery keeps a stock of popular brand of coke. Previous experience shows that the daily demand pattern for the item with associated probabilities is given below. **[6]**

Daily Demand	0	10	20	30	40	50
Probability	0.01	0.20	0.15	0.50	0.12	0.02

Simulate the demand for next 10 days. Also find the average demand/day.

Random numbers- 25, 39, 65, 76, 12, 5, 73, 89, 19, 49

- b) What is simulation? What are the factors affecting simulation? **[2]**

EEE

Total No. of Questions : 12]

SEAT No. :

P1934

[4861]-401

[Total No. of Pages :2

S.Y.M.C.A. (Engg.)

**ADVANCED WEB TECHNOLOGY
(2013 Course) (Semester-IV) (410909)**

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data, if necessary.*

Q1) a) Explain Common Language Runtime along with its component Diagram. **[4]**

b) Explain Namespaces in Visual C# and how these namespaces are import in the program with an example. **[4]**

OR

Q2) a) List and Explain Characteristics of Visual C#. **[4]**

b) Define Managed code and explain advantages of managed code. **[4]**

Q3) a) Explain Exception Handling along with an example. **[5]**

b) What is Method Overriding and how it is implemented in C#, Give an Example. **[5]**

OR

Q4) a) Explain concept of Delegate that is used in C#. **[5]**

b) Give the Syntax of following loops/ Control Statement of C#2008. **[5]**

- i) for
- ii) while
- iii) do
- iv) foreach
- v) if else

P.T.O.

- Q5)** a) What is Web Based application and how to create Custom control. [4]
b) Draw and Explain Architecture of Windows Presentation Foundation (WPF) [4]

OR

- Q6)** a) Explain Windows Presentation Foundation(WPF) along with its main features. [4]
b) Explain WPF 3.5 Controls (any four). [4]

Q7) Explain main features of Silver light . [8]

OR

- Q8)** Explain the following ASP.NET controls with example: [8]
i) Validation Control (Any one)
ii) Web Server control (Any one)

Q9) Draw and Explain Architecture of Windows Communication Foundation (WCF). [8]

OR

Q10)How you can display Web Application or Website on target server. [8]

- Q11)**a) Explain ADO.NET Architecture. [4]
b) Write a short note on LINQ. [4]

OR

- Q12)**Explain following concepts C# 2008. [8]
a) Inheritance
b) Polymorphism.



Total No. of Questions :12]

SEAT No. :

P1935

[4861]-402

[Total No. of Pages :3

S.Y. M.C.A. (Engineering Faculty)

BANKING AND FINANCIAL ACCOUNTING AND MANAGEMENT

(2013 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

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

- Q1)** a) Explain the various accounting principles and conventions? **[4]**
- b) Draw the various layout of trial balance. Explain the importance of trial balance. **[4]**

OR

Q2) Journalize the following transactions: **[8]**

1. Apr. 2015 Ganesh commenced a business with Rs. 4000/-
2. Apr. 2015 Purchased goods worth Rs. 2000/- from Raj and sons.
3. Apr. 2015 Paid into bank Rs. 8000/-
4. Apr. 2015 Goods worth Rs. 5000/- sold to Mahesh
5. Apr. 2015 Goods return by Mahesh Rs. 1000/-
6. Apr. 2015 Paid rent Rs. 2500/-

- Q3)** a) What are different overhead costs? Explain in brief? **[4]**
- b) Explain the importance of ratio analysis in brief? **[4]**

OR

P.T.O.

Q4) Prepare Balance Sheet from the following information.

[8]

XYZ Traders Trial Balance as at 31 st Mar. 2015

A/c Head	Dr. (Rs.)	Cr. (Rs.)
Capital		2,50,000
Cash in Hand	40,000	
Cash at Bank	30,000	
Closing Stock	20,000	
Fixed Assets less depreciation Rs(20,000)	1,80,000	
Bills Receivable	21,000	
Bills Payable		2000
Sundry Debtor	52,000	
Sundry Creditor		25,000
Liabilities for expenses		10,000
Drawings	12,000	
Investments	15,000	
P &L A/c		70,000
Bank Overdraft		13,000
Total	3,70,000	3,70,000

Q5) a) Explain the working capital cycle.

[5]

b) Explain in brief the various types of ratio analysis and its significance.**[4]**

OR

- Q6) a)** Define the following terms: [4]
- i) Fixed Cost
 - ii) Variable Cost
 - iii) Contribution
- b) From the following information relating to XYZ Ltd. You are required to find out [5]
- i) P/V Ratio
 - ii) Break Even Point
 - iii) Profit
- Total Fixed Cost Rs. 9000/-
Total Variable Cost Rs. 15,000/-
Total Sales Rs. 30,000/-

Q7) Explain the role of Reserve Bank of India in regulation of banking industry. [8]

OR

Q8) Explain the types of accounts that one can open in a bank branch. [8]

Q9) What do you mean by Core Banking System? Explain in brief the day begin and day end module characteristics and functions. [8]

OR

Q10) Differentiate between Net Banking and Mobile Banking. [8]

Q11)a) Differentiate between NEFT and RTGS. [5]

b) Explain in brief role played by the DICGC? [4]

OR

Q12) Write short notes on: [9]

- a) Local Pay Order or Bankers Cheque.
- b) Concept of IBC & OBC.
- c) Difference between Demand Draft and Cheque.

EEE

Total No. of Questions : 12]

SEAT No. :

P1936

[4861]-403

[Total No. of Pages : 2

S.Y. M.C.A. (Engineering)
CN & INFORMATION SECURITY
(2013 Course) (Semester-IV) (410911)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data if necessary.*

Q1) a) List and explain the different categories of Multiplexing. **[5]**

b) What do you mean guided media? Explain in brief. **[4]**

OR

Q2) a) State 4 topologies with neat diagram. **[6]**

b) List out six network hardware components. **[3]**

Q3) Explain OSI layer in detail with neat diagram. **[8]**

OR

Q4) a) Explain Stop-and-Wait protocol with suitable diagram. **[5]**

b) Define gigabit and fast Ethernet. **[3]**

Q5) a) Write difference between connection oriented and connection less services. **[4]**

b) Explain the IPv6 protocol header format. **[4]**

OR

Q6) a) What are different routing algorithms, explain any one in detail. **[4]**

b) Draw and explain TCP header. **[4]**

P.T.O.

Q7) a) Write about Domain name system with suitable example of Domain name server. [4]

b) Write a difference between FTP and TFTP. [4]

OR

Q8) Write short note on: [8]

a) HTTP Protocol.

b) MIME.

c) Static and Dynamic Webpages.

d) SMTP.

Q9) a) Explain different types of attack. [4]

b) Write difference between RSA & DES. [4]

OR

Q10) Explain DES algorithm in detail. [8]

Q11) a) Explain Secure socket layer. [5]

b) Write a short note on: [4]

i) SNMP.

ii) ARP Hazards.

OR

Q12) a) Explain PEM with example. [5]

b) What do you mean one time passwords? Explain in brief. [4]



Total No. of Questions : 12]

SEAT No. :

P1937

[4861]-404

[Total No. of Pages :2

S.Y.M.C.A. (Engineering)(Under Faculty)

ADVANCED DBMS

(Semester-IV) (2013 Course) (410913)

Time : 2 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data if necessary.*

Q1) a) With suitable diagram explain the steps in query processing. **[4]**

b) Explain and compare nested loop join and block nested loop join algorithm. **[5]**

OR

Q2) a) Consider the following query,

“Select balance from account where balance<2500.”

Write relational algebra expression for the above query and explain query evaluation plan. **[4]**

b) With a suitable example, explain the materialization approach. **[5]**

Q3) a) Differentiate between centralized and client-server systems. **[4]**

b) Explain parallel database architectures. **[4]**

OR

Q4) a) Explain speed up and scaleup in parallel databases with suitable diagram. **[4]**

a) Explain the structure of Transaction Server process with diagram. **[4]**

P.T.O.

- Q5)** a) Explain Distributed DBMS Architectures. [4]
b) Explain advantages and disadvantages of Distributed Databases. [4]

OR

- Q6)** a) Explain database integration process with neat diagram [4]
b) Explain Data and Access Control. [4]

- Q7)** a) Explain structured types and inheritance with example in SQL. [4]
b) Explain object identity and reference types with examples. [4]

OR

- Q8)** a) What is persistent programming language and how it is different from embedded language? [4]
b) Explain need of complex data type? [4]

- Q9)** a) What is XML databases? Explain XML Database types. [4]
b) What is a Native XML Database? Write features of Native XML database. [4]

OR

Q10) Write short note on:

- i) Oracle Database and XML
ii) Generating XML pages using Basic SQL [8]

- Q11)** a) What is NoSQL? Compare relational (RDBMS) and noSQL database. [3]
b) What is Graph Databases? What are the pros and cons of Graph database? [3]
c) What is schema-less Databases? What are the pros and cons of schema-less Databases? [3]

OR

Q12) Write short note on: [9]

- a) Single server
b) Sharding
c) Master-slave replication



Total No. of Questions : 12]

SEAT No. :

P1938

[4861]-405

[Total No. of Pages :2

**S.Y.M.C.A. (Faculty of Engineering)
INFORMATION SYSTEMS AUDIT
(Elective-I) (Semester-IV) (2013 Course) (410912)**

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Answers to the two sections should be written in single answer books.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume suitable data if necessary.*

SECTION-I

- Q1) a)** What is information system auditing? State the four major objectives of IS auditing? **[4]**
- b) What do you mean auditing around and through the computer? Explain. **[5]**

OR

- Q2)** Why is there a need for control & audit of computer systems? Explain the types of controls with examples. **[9]**

- Q3) a)** Briefly explain the nature & purpose of use of digital signature. **[4]**
- b) Explain DBMS vulnerabilities and controls. **[4]**

OR

- Q4)** Write short note on any 2 of the following. **[8]**
- a) System software controls
 - b) Email controls
 - c) Client server controls

P.T.O.

- Q5) a)** Explain how auditing of SDLC done? [4]
b) Explain when prototyping is appropriate methodology in software development? [4]

OR

- Q6) a)** What is IS Auditors Role in software Acquisition? [4]
b) What do you understand by implementation reviews? Why such reviews are required? [4]

SECTION-II

- Q7)** Why it is not desirable to implement an information system with all preventive controls following principle of “Prevention is better than cure.”? Justify. [8]

OR

- Q8) a)** What is evidence? What are various evidence evaluation techniques?[4]
b) What is a business continuity plan? Explain the need of business continuity plan. [4]

- Q9) a)** Differentiate between short term & long term IT plans. [4]
b) Differentiate between security & privacy with example. Under which cyber acts these 2 are dealt in India? [4]

OR

- Q10)a)** Implementing core Banking System in a bank is part of its short term or long term IT plan? Justify your answer. [4]
b) Explain the various committees that are formed in a corporate organization when it wants to implement new information systems. [4]

- Q11)a)** Explain domains & processes in COBIT 5 framework. [4]
b) Discuss RACI charts with an example. [5]

OR

- Q12)**What is the benefit of implementing of COBIT 5 against other standards (ISO 27000, ISO 20000 etc) against which a certification can be obtained? How it is beneficial for IT Governance [9]



Total No. of Questions : 12]

SEAT No. :

[Total No. of Pages :2

P1939

[4861]-406

S.Y.M.C.A. (Engg.)

2) CYBER LAWS

(Elective-I) (Semester-IV) (2013 Course) (410912)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data if necessary.*

Q1) a) Explain Cyberspace and its Architecture. **[4]**

b) Explain internet ownership and management. **[4]**

OR

Q2) a) Write a note on Digital signature. Also state its benefits. **[4]**

b) Explain UNCITRAL model law on electronic commerce. **[4]**

Q3) a) Write a note on e-governance. **[4]**

b) Explain National sovereignty and role of government in cyberspace. **[4]**

OR

Q4) a) Explain conventions and protocols concerning cyberspace. **[4]**

b) Write a note on IT ACT. **[4]**

Q5) a) Define: **[6]**

- i) Cyber stalking
- ii) Cyber terrorism

b) Explain applicable law in Cyberspace. **[3]**

OR

P.T.O.

- Q6)** a) Give various crimes and torts committed on a Computer Network. [4]
b) Explain crime related to IPRs. [5]

- Q7)** a) What is ecommerce? Explain evolution of ecommerce. [4]
b) Explain features of online contracts. [4]

OR

- Q8)** a) Write note on consumer protection in cyberspace. [4]
b) Explain payment mechanism in cyberspace. [4]

- Q9)** a) Explain search engines and their abuse. [3]
b) What are the liabilities of Inter-net services providers. [3]
c) Define webtesting. [2]

OR

- Q10)** a) Write note on Intellectual property in cyberspace. [4]
b) Explain Digital Rights Management. [4]

- Q11)** a) Explain National legal framework for protecting privacy. [3]
b) Explain concept of security in cyberspace. [3]
c) Write note on data protection position in India. [3]

OR

- Q12)** a) Write a note on Security Audit (VA/PT). [3]
b) Explain BPOs and Legal Regime in India. [3]
c) Enlist various legal response to technological vulnerabilities. [3]



Total No. of Questions : 12]

SEAT No. :

P1940

[4861]-407

[Total No. of Pages : 2

S.Y. M.C.A. (Under Engineering Faculty)

3-IT GOVERNANCE

(2013 Course) (Semester-IV) (410912) (Elective-I)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Use of probability table, electronic pocket calculator is allowed.*
- 4) *Assume suitable data if necessary.*

- Q1)** a) Define IT Governance & explain Governance Assessment Maturity Model in brief. [6]
b) Explain future state of IT Governance. [3]

OR

- Q2)** a) Explain Integrated IT Governance Framework. [6]
b) Explain Prerequisites for Creating a successful IT Governance Program. [3]

- Q3)** a) Explain in brief important components of IT Governance. [6]
b) Explain results of poor IT Governance. [3]

OR

- Q4)** a) What is the importance of IT/Business Governance policy in any organizations. [6]
b) What are the steps to practical implemented to IT Governance. [3]

- Q5)** a) Explain benefits of Integrated IT Governance Framework. [4]
b) Explain IT Governance best practice example. [3]

OR

- Q6)** a) Discuss Emerging Business/IT Strategy in brief. [4]
b) Explain standards of IT Governance. [3]

P.T.O.

- Q7)** a) Explain the good planning of IT/Business integration implementation in organization. [6]
b) Explain IT Relationship Model. [3]

OR

- Q8)** a) Explain the Investment Management Maturity. [6]
b) Explain roles of driving Business/IT Alignment. [3]

- Q9)** a) Explain Project Management Maturity Model. [6]
b) Explain the roles of Program Management Office (PMO). [3]

OR

- Q10)**a) Explain the Project Management Life Cycle Phases. [6]
b) Explain the principles of accomplishing excellence in project management. [3]

- Q11)** a) Explain the differences between domestic & Off Shore deals. [4]
b) Explain the outsourcing Issues & Challenges. [3]

OR

- Q12)**a) Explain the steps between Vendor/Outsourcing Selection. [4]
b) Explain Key Governance Roles in outsourcing. [3]



Total No. of Questions : 12]

SEAT No. :

P1941

[4861]-408

[Total No. of Pages :2

S.Y.M.C.A. (Engineering)

IT SERVICE MANAGEMENT

(Semester-IV) (2013 Course) (410912) (Elective-I)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Use of calculator is allowed*
- 4) *Assume suitable data if necessary.*

Q1) What is service management? Differentiate between best practices & good practices. **[8]**

OR

- Q2)** a) What is internal marketing? **[2]**
b) Explain flow charting & Benchmarking of service management. **[6]**

- Q3)** a) Explain IT service provider types. **[4]**
b) Explain service life cycle & service strategy. **[4]**

OR

Q4) What is service design? Explain any three major aspects of service design. **[8]**

- Q5)** a) What are the process objectives & value challenges of service transition? **[4]**
b) Explain the key activities & function of service operation. **[5]**

OR

P.T.O.

Q6) What is continual service improvement? Explain its purpose, objectives & key principles. [9]

Q7) Explain scope, purpose and objectives of IT service continuity management. [8]

OR

Q8) Explain the service management processes relationship, Metrics & roles of service continuity management. [8]

Q9) a) Explain the objectives of information security policies. [4]

b) Explain the information security management system. [4]

OR

Q10) What is access management & facilities management process? [8]

Q11) Explain key activities, purpose & objectives of IT operation management. [9]

OR

Q12) Explain Technical management in brief with scope, purpose & objectives. [9]



Total No. of Questions : 12]

SEAT No. :

P1942

[4861]-501

[Total No. of Pages :2

T.Y.M.C.A. (Engg.)
RECENT TECHNOLOGIES IN IT
(Semester-V) (2013 Pattern)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data if necessary.*

Q1) What is LAMP? Explain each components of LAMP. **[8]**

OR

Q2) Explain various configuration files of LAMP stack. **[8]**

Q3) Write a program to perform CRUD(Create, Retrieve, Update, Delete) operation on STUDENT table using PHP. Assume that table is already exists with following fields rollNo int(2), name varchar (35), mobileNo char(10), email varchar(50). **[8]**

OR

Q4) Write a program to write short notes on **[8]**

- a) GET
- b) POST
- c) RDBMS
- d) MySQL

Q5) Explain any 5 string manipulation function with syntax & proper example. **[10]**

OR

Q6) Explain any 5 array manipulation function with syntax & Proper example. **[10]**

P.T.O.

Q7) What do you mean by Object Oriented PHP? Explain with example with at least 3 data members & 3 member functions. [8]

OR

Q8) Write short notes on any 4 of following. [8]

- a) Class constants
- b) Static method
- c) Abstract classes
- d) Final keyword
- e) Implementing interface

Q9) Explain any 4 file/folder handling function with syntax & proper example. [8]

OR

Q10) Write a program to accept the details of students (rollNo, Name, Mobile, email) form user using form and write them into a file. Also write the program to read the content of same file and display their contents. [8]

Q11) Explain any 4 super global variables of PHP, with their applicability and example [8]

OR

Q12) Write short notes on any 2 of following: [8]

- a) SESSION
- b) COOKIE
- c) Encoding & Decoding session variables.



Total No. of Questions : 12]

SEAT No. :

P1944

[4861]-503

[Total No. of Pages : 2

T.Y.M.C.A.(Engg.)

SOFTWARE ENGINEERING

(2013 Course)(Semester-V) (510903)

Time : 3Hours]

[Max. Marks : 50

Instructions to the candidates:

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

- Q1)** a) Explain in detail all the levels of CMMI with key process area. [6]
b) Write a short note on : Critical Software. [3]

OR

- Q2)** a) What are the various models in system organization? [6]
b) Differentiate between Personal Process Model and Team Process Model. [3]

- Q3)** a) What is Mean by Work Breakdown Structure (WBS)? [5]
b) Explain any 3 tools for managing project. [3]

OR

- Q4)** a) Write a note on: Requirement Analysis. [5]
b) What is Risk Mitigation? [3]

- Q5)** a) What is Verification & Validation? Explain with example. [4]
b) Write a note on: Configuration Management. [4]

OR

- Q6)** a) What are the various project constraints in project management? [6]
b) Explain the Process Improvement Cycle? [2]

P.T.O.

- Q7)** a) What are the principle properties of Dependability? [4]
b) Explain the specifications of Safety. [4]

OR

- Q8)** a) Write basic terminologies of Reliability ? Explain with example. [4]
b) Draw a diagram and explain the process of security risk assessment.[4]

- Q9)** a) What are the different issues arising from Distributed Systems? [5]
b) Explain the term : Client Server Computing. [3]

OR

- Q10)**a) What do you mean by SAAS model? What are the benefits of SAAS Model? [4]
b) Write the concept of SOA. [4]

- Q11)**a) What are the attributes of effective software metric? Explain measure, measurement and metrics. [6]
b) What do you mean by Software Metric? Describe its advantages. [3]

OR

- Q12)**a) Draw a diagram and Explain McCall's quality factors that affect the software quality. [6]
b) What is the purpose of Software Maintenance? Explain the maintenance metric. [3]



Total No. of Questions :12]

SEAT No. :

P1945

[4861]-504

[Total No. of Pages :2

T.Y. M.C.A. (Under Engineering Faculty)

DATAWAREHOUSING DATA MINING & BUSINESS INTELLIGENCE

(2013 Pattern) (Semester - V)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Assume suitable data if necessary.*

- Q1)** a) Why data need to be preprocessed? Illustrate with an example. [4]
b) Explain fact constellation schema with suitable diagram. [4]

OR

- Q2)** a) What is data warehouse? Explain data warehouse architecture. [4]
b) What are the different OLAP operations? Explain any two OLAP operations with suitable diagram and example. [4]

- Q3)** a) Explain descriptive & predictive data mining. [4]
b) What are major issues with data mining? Illustrate. [4]

OR

- Q4)** a) What is data mining? Explain any two applications of data mining. [4]
b) Explain KDD process with suitable diagram. [4]
- Q5)** a) A database has five transactions. Let $\text{min_sup}=2$ and $\text{min_conf}=70\%$. Find all frequently occurred items using Apriori algorithm. Find best rules from support and confidence values. [6]

TID	ITEM
1	Shampoo, diaper, baby powder, bread, umbrella
2	Diaper, baby powder
3	Shampoo, diaper, milk
4	Diaper, shampoo, soap
5	Shampoo, milk, coke

- b) Write a note on outlier analysis. [3]

OR

P.T.O.

- Q6)** a) Explain simple k-means algorithm. [6]
b) Write note on Decision tree. [3]
- Q7)** a) What is business intelligence? Explain with its suitable applications. [4]
b) Explain ETL process in detail with suitable diagram. [5]

OR

- Q8)** a) Describe various data warehouse components in brief. [4]
b) What are challenges faced while successfully implementing Business Intelligence? Illustrate. [5]
- Q9)** a) What factors need to be considered before designing data architecture? Explain in brief. [4]
b) How to model the data architecture? Illustrate in brief. [4]

OR

- Q10)** a) Explain ROLAP, MOLAP and HOLAP in brief. [4]
b) What is data mart? How is it different than data warehouse? Illustrate. [4]
- Q11)** a) List out different Business Intelligence Reporting Tools. Explain any two in brief. [4]
b) “Business Intelligence Reporting Tools play key role in Decision Support System”. Comment on the statement. [4]

OR

- Q12)** a) What is need of Business Intelligence Reporting Tools? Illustrate with example. [4]
b) How do you evaluate Business Intelligence Reporting Tools? Give your views. [4]

EEE

Total No. of Questions :12]

SEAT No. :

P1946

[4861]-505

[Total No. of Pages :2

T.Y. M.C.A. (Engg.)

1-ANIMATION & GAMING

(2013 Course) (Semester - V) (Elective - II) (510905)

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Assume suitable data if necessary.*

- Q1)** a) Write short note on pixel and frame buffer. [4]
b) Explain cathode ray tube (CRT) in detail. [4]

OR

- Q2)** a) Explain Shadow mask technique in color CRT monitors. [6]
b) Explain applications of Computer Graphics. [2]
- Q3)** a) What is meant by keyframing and tweening? [4]
b) Discuss the role of shockwave format in web based animation. [4]

OR

- Q4)** a) Distinguish between client-pull and server push animation. [4]
b) What is hierarchical animation and why it is necessary? [4]
- Q5)** a) List and explain different animation drawing tools. [5]
b) What is meant by anatomy and body language? [4]

OR

- Q6)** a) Explain sequential movement drawing? [4]
b) Explain various steps in developing animation character? [5]

P.T.O.

- Q7)** a) What is game? [3]
b) What is software architecture? Explain 2D game software architecture. [4]
c) List different languages used for game programming. [2]

OR

- Q8)** a) What is game theory? [2]
b) Explain 3D game software architecture. [4]
c) Explain role of AI in game programming. [3]
- Q9)** a) What are Advantages of Writing Games in Java? [4]
b) Explain different types of computer games. [4]

OR

- Q10)** a) Explain basic JDK tools in java. [4]
b) State and explain different object oriented concepts in java. [4]
- Q11)** a) Explain structure of simple game in java. [4]
b) Explain actor class and its methods. [4]

OR

- Q12)** a) Explain concept of collision detection. [4]
b) Which are different state controls in java? [4]

EEE

Total No. of Questions : 12]

SEAT No. :

P3563

[4861] -506

[Total No. of Pages : 2

T.Y.M.C.A- (Faculty of Engineering)

b: MOBILE COMPUTING

(2013 Course) (Elective - II) (Semester - V) (510905)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Solve either of Question 1 or 2,3 or 4,5 or 6,7 or 8,9 or 10,11 or 12 in same answer sheet.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume suitable data, if necessary.*

Q1) Explain the concept and architecture cellular network. **[9]**

OR

Q2) Explain the architecture of GSM. **[9]**

Q3) Explain the concept of wireless multiple access protocol. **[8]**

OR

Q4) What are the different MAC issues? **[8]**

Q5) a) Explain mobility in wireless LAN. **[4]**

b) Explain how the channel access scheme and acknowledgement for Datagram are used in mobile wireless network. **[4]**

OR

Q6) a) Explain Quality of Service (QoS) in mobile wireless networks. **[4]**

b) What are the different types of wireless access technologies that may connect mobile users to the wired network? **[4]**

P.T.O.

Q7) Explain the following in brief - [8]

- a) Flavors of windows CE, b) Types of storage offered by windows CE.

OR

Q8) a) What is the Record Management system? How the records are handled in J2ME? [4]

- b) Explain in brief about *Hellosymbian* in Symbian operating system. [4]

Q9) Write a program for performing Reading and Writing Operation in Android on external storage i.e. memory card. [8]

OR

Q10) Explain with suitable example- [8]

- a) Intents
- b) Adapters

Q11) Write a program for sending SMS on Android. [9]

OR

Q12) Explain how Android Instant Messaging works. [9]



Total No. of Questions :12]

SEAT No. :

P1947

[4861]-507

[Total No. of Pages :2

T.Y. M.C.A. (Engg.)

**HIGH PERFORMANCE COMPUTER NETWORKS
(2013 Course) (Elective - II) (Semester - V) (510905)**

Time : 3 Hours]

[Max. Marks :50

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate answers books.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) Figures to the right indicate full marks.*
- 4) Assume suitable data if necessary.*

SECTION -I

Q1) a) Explain SONET in detail. **[4]**

b) What are routing algorithms? **[4]**

OR

Q2) a) Write a short note on DWDM. **[4]**

b) Explain types of multiplexing. **[4]**

Q3) Explain the streaming stored multimedia. **[8]**

OR

Q4) a) What is policing mechanism? Explain. **[4]**

b) Write a note on RTP. **[4]**

Q5) a) Differentiate between remote access VPN & site-to-site VPN. **[4]**

b) Explain the securities in VPN. **[5]**

OR

Q6) a) What are overlay networks? Explain. **[4]**

b) Explain tunneling & use of FEC. **[5]**

P.T.O.

SECTION - II

- Q7)** a) What is traffic management? Explain the elements of traffic management? [4]
b) Explain the Little's theorem with the help of example? [4]

OR

- Q8)** a) Write short note on: Traffic burstiness? [4]
b) Discuss basic model for network delay or loss system. [4]

- Q9)** Explain the techniques, which are used by Attackers to break the security of a packet filter? [8]

OR

- Q10)**a) Write a note on message authentication code. [4]
b) Write short note: [4]
i) Passive Attack
ii) Active Attacks

- Q11)**a) What is ASN.1? Which are the keywords includes in ASN.1? [4]
b) What is the MIB? Explain the objects in MIB? [5]

OR

- Q12)** Explain the SNMP architecture with neat diagram. [9]

EEE