Total No. of Questions :12]

SEAT No. :

P4029

[Total No. of Pages : 2

[5563]-101
F.Y. M.C.A. (Engg.)
C AND C++ PROGRAMMING
(2013 Pattern) (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) List different types of data type. Explain any two data types in details. **[4]**

b) What is an array? Explain the difference between one dimensional array and two dimensional with example. **[4]**

OR

Q2) a) What is Header file? Write a steps to create own header file with example. **[4]**

b) What is keyword? What difference between keywords and variable? **[4]**

Q3) What is a pointer? Explain pointer to array and array of pointer with example. **[8]**

OR

Q4) What is dynamic memory allocation? Explain the difference between malloc and calloc function with example. **[8]**

Q5) a) What is a structure? Explain how to access member of structure and how memory is allocated to structure variable? **[5]**

b) What is difference between call by value and call by reference? Give one example of each. **[4]**

OR

Q6) a) What is function? Explain how to pass array as argument to function with example. **[5]**

b) Write a C program to find minimum and maximum number from array. **[4]**

P.T.O.

Q7) a) What is constructor? What is default constructor and parameterized constructor? **[4]**

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

OR

Q8) a) What is the difference between C and C++? **[4]**

b) What is the inline function? What is the difference between inline function and normal function. **[4]**

Q9) a) List the different access specifier in C++. Explain any two access specifier in C++ with example. **[4]**

b) What is operator overloading? List the rules of operator overloading. **[4]**

OR

Q10)a) What is inheritance? Explain the multiple inheritance with example. **[4]**

b) What is polymorphism? Explain virtual function with example. **[4]**

Q11)a) What is file? List the stream classes for file handling. Explain any one stream class with example. **[5]**

b) Short notes on **[4]**

i) open()

ii) getline()

OR

Q12) a) List unformatted I/O function. Explain any two functions of each type. **[5]**

b) Short notes on **[4]**

i) put ()

ii) write()

Total No. of Questions :12]

SEAT No. :

P4030

[Total No. of Pages : 2

[5563]-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) ***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) Convert the following. **[6]**

i) (101010101110)2 = ?16

ii) (1001011000110)2 = ?8

iii) (24567)8 =?10

iv) $(ACD)_{16} = ?_{2}$

v) $(2345)_{8} = ?_{10}$

vi) $(1A2D)_{16} = ?_{10}$

b) State following Boolean algebra laws. **[3]**

i) Commutative Law

ii) Distributive Law

iii) Associative Law

OR

Q2) a) Compare assembler, complier and interpreter **[6]**

b) Explain 1's and 2's complement **[3]**

Q3) Explain Synchronous counter, Asynchronous counter, Binary counter, mod-10 counter **[8]**

OR

P.T.O.

Q4) What are shift registers? What are the types? Explain any 2 types in detail. **[8]**

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

OR

Q6) a) What is the difference between EPROM and EEPROM? **[4]**

b) Differentiate between DRAM and SRAM. **[4]**

SECTION - II

Q7) a) What is the role of system bus and describe its types. **[4]**

b) What is the need and role of CPU register? **[5]**

OR

Q8) Write a short note on. **[9]**

a) Hardwired program

b) Micro Program Control

c) Interrupt

Q9) Explain Pentium Processor Architecture. **[8]**

OR

Q10) Draw and Explain 16-bit (8086) architecture in detail. **[8]**

Q11) What is parallel processing with respect to multi-processor organization? **[8]**

OR

Q12) a) Explain SIMD, MIMD **[4]**

b) Explain the concept of cluster **[4]**

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Total No. of Questions : 12]

SEAT No. :

P4031

[Total No. of Pages : 2

[5563]-103

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

PRINCIPLES OF PROGRAMMING PRACTICES

(2013 Pattern) (Semester - I) (310903)

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 with suitable diagram the waterfall model of software development? **[4]**

b) Explain Assembly language and Machine language. **[4]**

OR

Q2) a) Compare features of C and C++ languages. **[4]**

b) Define and Explain Assembler, Compiler, linker, Loader. **[4]**

Q3) a) Write short note on interactivity Chart. **[4]**

b) Explain 6 steps of problem solving? **[5]**

OR

Q4) a) Explain 6 main characteristics of a good algorithm? Explain how to write algorithm? **[5]**

b) Explain different data types of with example. **[4]**

Q5) a) What is meant by coupling of model? Explain with example different levels of coupling. **[4]**

b) Explain top down and bottom up approach? **[4]**

OR

Q6) a) Discuss an approach to development of procedure-oriented programs with example. **[4]**

b) What is a function? Give example of user defined function and inbuilt function in C. **[4]**

P.T.O.

Q7) a) Write an algorithm to reverse digits of an integer number. **[4]**

b) Write an algorithm to generate prime factors of a given number. **[4]**

OR

Q8) a) Draw a flowchart to add 10 array elements and calculate its average. **[4]**

b) Write an algorithm to generate Factorial of a number. **[4]**

Q9) a) Explain Best, worst and average case analysis of an algorithm. Show the same for binary search. **[4]**

b) Which are the major parameters to check efficiency of an algorithm? **[4]**

OR

Q10)a) Write an algorithm to find maximum and minimum of array element. Find frequency count of each step. **[4]**

b) Define asymptotic notations. **[4]**

i) big O

ii) Theta

Q11)a) Write an algorithm for mean and median of N-numbers. **[5]**

b) Assume base address 1020. Find address of M[2] [1] of array M [4] [3] using both row major and column major representation. **[4]**

OR

Q12)a) Write and explain algorithm for merge sort. **[5]**

b) Explain difference between testing and debugging. **[4]**

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Total No. of Questions : 12]

SEAT No. :

P4032

[Total No. of Pages : 5

[5563]-104

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

DISCRETE MATHEMATICS

(2013 Course) (Semester-I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) a) Prove by mathematical induction. **[4]**

$0.2^{\circ}+1.2^{1}+2.2^{2}+3.2^{3}+.....+n2^{n} = (n-1)2^{n+1} +2$ for $n >= 0$

b) In a computer laboratory out of 6 computers : **[4]**

i) 2 have floating point arithmetic unit.

ii) 5 have magnetic disk memory.

iii) 3 have graphics display.

iv) 2 have both floating point arithmetic unit and magnetic disk memory.

v) 3 have both magnetic disk memory and graphics display.

vi) 1 have both floating point arithmetic unit and graphics display.

vii) 1 has floating point arithmetic, magnetic disk memory and graphics display.

How many have atlest one specification?

OR

Q2) a) An investigator interviewed 100 students to determine their preferences for the three drinks-Milk (M), Coffee(C) and Tea (T).He reported the following: 10 students had all the three drinks, 20 had 'M' and 'C',30 had 'C' and 'T' 25 had 'M' and 'T': 12 had 'M' only, 5 had 'C' only and 8 had 'T' only. **[4]**

i) How many did not take any of the three drinks.

ii) How many take milk but not coffee?

P.T.O.

b) Show by mathematical induction, **[4]**

$2+5+8+.....+(3n-1) = n(3n+1)/2$

Q3) a) Construct the truth tables to determine whether each of the following is a tautology, a contingency or a contradiction. **[4]**

i) $(p \wedge (\sim pVq)) \wedge \sim q$

ii) $(\sim p \rightarrow r) \wedge (p \leftrightarrow q)$

b) Obtain disjunctive normal form of the following wihtout using truth table. **[4]**

i) $(p \rightarrow q) \wedge (\sim p \wedge q)$

ii) $(p \wedge (p \rightarrow q)) \rightarrow q$

OR

Q4) a) Write the following statements in symbolic form: **[4]**

i) The sun is bright and humidity is not high

ii) It is already 9.00 a.m., I should start my job

iii) If the requirement of computer engineers is increased, then more seats will be offered by University and more computers will be purchased by the University DEpartment if the rates are competable.

b) i) Prove that (P->(q->r)) and ((p->q) -> (p->r)) are logically equivalent. **[4]**

ii) Prove that $\sim (p \vee q)$ and $\sim p \wedge \sim q$ are logically equivalent.

Q5) a) In a class of 100 students 40 are boys. **[5]**

i) In how many ways can a 10 person committee be formed?

ii) Repeat (i) if there must be an equal number of boys and girls in the committee.

iii) Repeat (i) if the committe must consist of either 6 boys and 4 girls or 4 boys and 6 girls.

b) In how many ways can one select a president, a General Secreatary and a Treasurer from the members of a committee consisting of 9 men and 11 women, if the Treasurer must be a woman and the General Secreatary a man. **[4]**

OR

Q6) a) Suppose repetitions are not possible. **[4]**

i) How many there digit numbers can be formed from six digits 2, 3, 4, 5, 7 and 9?

ii) How many of these numbers are less than 400?

iii) How many are even?

iv) How many are multiples of 5?

b) A fair coin is tossed 5 times. Find the number of sequences in which the head 'H' appears at the most 3 times. **[5]**

Q7) a) Find the transitive closure of R by Warshall's algorithm, where

A = {1, 2, 3, 4, 5, 6}and R= (x, y) | | x-y | = 2 } **[4]**

b) If A = { 1}, B = {a,b}, C= {2,3} find A X B X C, $A^2 B^2$ X A, C^3 **[4]**

Q8) a) Let A= { 1, 2, 3, 4} and let R= { (1,1), (1,2), (1,3), (2,1), (2,2), (3,1) (2,3), (3,2), (3,3), (4,4) }. Show that R is an equivalence relation. **[4]**

b) Explain Pigeonhole Principle. Using pigeonhole principle show that if 7 colors are used to paint 50 bicycles, at least 8 bicycles well have the same color. **[4]**

Q9) a) Define the following terms: **[4]**

i) Complete Graph

ii) Regular Graph

iii) Eulerian circuit

iv) Complete Bipartite Graph

b) How many nodes are necessary to construct a graph with exactly 6 edges in which each node is of degree 2? **[2]**

c) Is it possible to draw a simple graph with 4 vertices and 7 edges? Justify.**[2]**

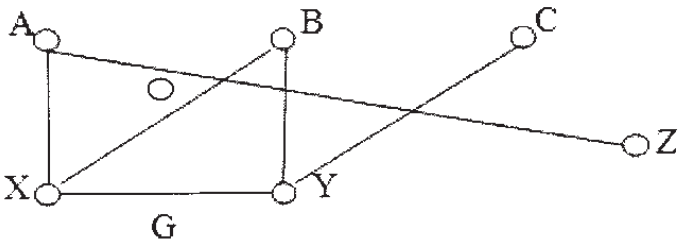
OR

Q10) a) For a given graph G, find **[4]**

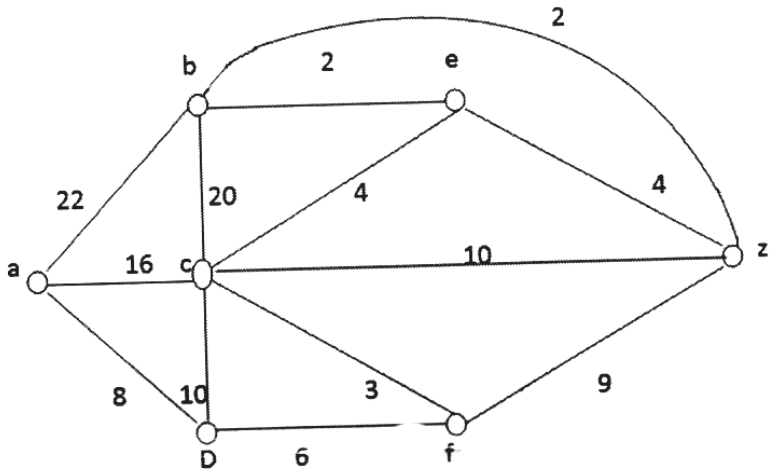
i) All simple paths from A to C

ii) All cycle

iii) Subgraph H of G generated by H = {B, C, X, Y}

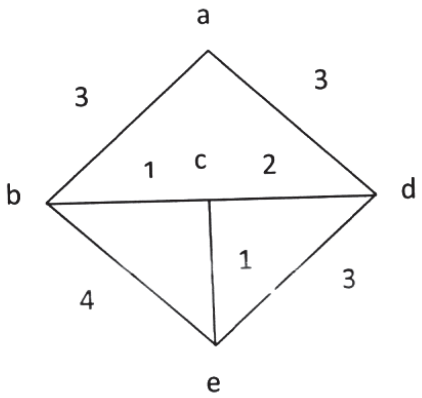


b) Find shortest path between a-z for the given graph using Dijkstra's algorithm. **[4]**



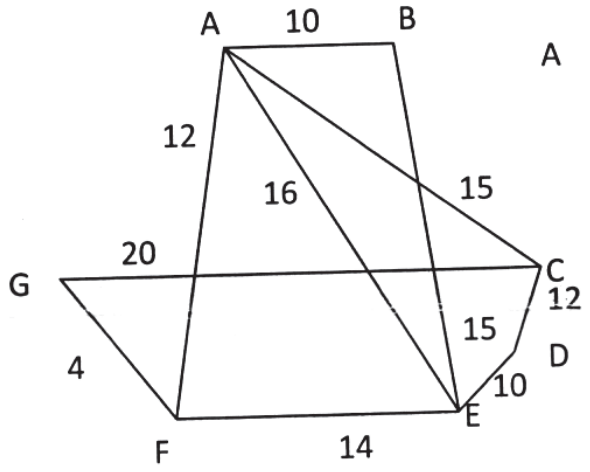
Q11) a) For the following set of weights, construct an optimal binary prefix code. For each weight in the set, give the corresponding code word 8, 9, 12, 14, 16, 19. **[4]**

b) Find minimal spanning tree for the following graph by using Prim's algorithm. **[5]**

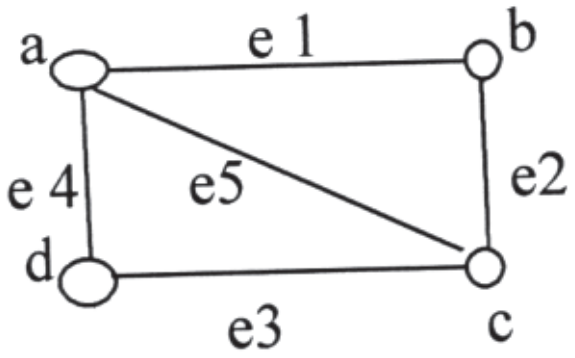


OR

Q12) a) Give the stepwise construction of minimum spanning tree for the following graph using Kruskal's algorithm. **[5]**



b) Find all the spanning trees for the following graph. **[4]**



Total No. of Questions : 12]

SEAT No. :

P4033

[Total No. of Pages : 4

[5563]-105
F.Y. M.C.A. (Engineering)
PROBABILITY AND STATISTICS
(2013 Course) (Semester-I) (310905)

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) Two cards are drawn from well shuffled pack of 52 cards. Find probability that they are both aces if first card is 1) replaced 2) not replaced. **[4]**

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

OR

Q2) a) A certain company encourages its employees to participate in cricket and hockey. A survey indicates that 40% play circket and 50% play hockey and 25% play cricket and hockey both. Find the probability of the event that. **[4]**

1) an employee plays only hockey

2) an employee plays only cricket

3) an employee plays at least one game

b) We have 4 boxes. Box one contain 2000 components of which 5% are defective. Box two contains 500 components of which 40% are defective. Box three and four contain 1000 component each with 10% defective. We select at random one of the boxes and we remove at random a single component. **[4]**

i) What is the probability that the selected component is defective?

ii) What is the probability that selected component is defective on the basis of evidence it come from box tow?

P.T.O.

Q3) a) Find variance of binomial random variable. **[4]**

b) What is discrete random variable? If X is a discrete random variable having the following probability distribution. **[4]**

X	-1	0	1
P[X=x]	1/5	3/10	1/2

Find the probability mass function of.

i) 2X-1 ii) 2x-1/4

OR

Q4) a) A discrete random variable has probability function: $p(x)=1/2^x$ where x = 1, 2.....find **[4]**

i) The mode

ii) The median

iii) Compare them with the mean.

b) Let X be a discrete random variable with probability mass function. **[4]**

$P[X=x] = x^2/30$, x = 0, 1, 2, 3, 4

= 0 otherwise

Fine the median and mode of X

Q5) a) Write a short note on weibull distribution. **[3]**

b) $F_{xy}(x,y) = 1/240 \quad 8.5 < x < 10.5$ **[6]**

$120 < y < 240$

Fined i) E[X] ii) E[Y] iii) E[X,Y]

OR

Q6) a) Show that standard normal random variable has mean zero and variance1 **[6]**

b) Prove: COV [X,Y] = E[X,Y]-{E[X]*E[Y]} **[3]**

Q7) a) Derive computational formula for sample variance. **[4]**

$$S^2 = n\sum_{i=1}^{n}(Xi - \overline{X})^2 / n-1$$

b) What is statistical probability? What are the characteristics of statistical probability? **[4]**

OR

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

b) X is poisson random variable with parameter K. A random sample of size 4 is obtained from the distribution of x. x1 = 12, x2 = 15, x3 = 16, x4 = 17. Determine the value of K that gives the highest probability of observing this sample. **[4]**

Q9) a) What is significance testing? How does it differ from hypothesis testing? **[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 $\overline{X}$ is normally distributes with mean μ and variance σ^2/n **[4]**

OR

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

i) Interval estimate

ii) Unbiased estimate

iii) Efficient estimate

iv) Confidence limit

b) What is P value of test? How do we compute P value for two tailed test? **[4]**

Q11) a) What is acceptance sampling? What is its purpose and what are the conditions for its use? **[4]**

b) A quality control inspector at the Crunchy Potato Chips company has taken 3 samples with 4 observations each of the volume of bag filled. The data and the computed means are shown in following table. **[5]**

Sample of potato chips bag volume in ounces				
Sample No.	Observations			
	1	2	3	4
1	12.5	12.3	12.6	12.7
2	12.8	12.4	12.4	12.8
3	12.1	12.6	12.5	12.4
4	12.2	12.6	12.5	12.3
5	12.4	12.5	12.5	12.5
6	12.3	12.4	12.6	12.6
7	12.6	12.7	12.5	12.8
8	12.4	12.3	12.6	12.5
9	12.6	12.5	12.3	12.6
10	12.1	12.7	12.5	12.8
Mean	12.4	12.5	12.5	12.6

If the standard deviation of the bagging operation is 0.2 ounces, use the information in the table to develop control limits of 3 standard deviations for the bottling operation.

OR

Q12) a) Use Chi-square test to determine goodness of fit of data given below. **[5]**

(χ^2 *table* (0.95) = 9.49)

No of Heads (x)	p (x heads)	Expected Frequency	Observed frequency
0	0.0332	33.2 or 33	38
1	0.1619	161.9 or 162	144
2	0.3162	316.2 or 316	342
3	0.3087	308.7 or 309	287
4	0.1507	150.7 or 151	164
5	0.0294	29.4 or 29	25

b) Explain r*c test for independence. **[4]**

Total No. of Questions : 12]

SEAT No. :

P4034

[Total No. of Pages : 2

[5563]-201
First Year M.C.A. (Engineering)
JAVA PROGRAMMING
(2013 Pattern) (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.***

SECTION - I

Q1) Why java is called machine independent language? Explain functionality of JVM. What are the roles of Java Compiler and Java Interpreter? **[8]**

OR

Q2) What is the difference between c and Java? Discuss in detail different features of java. **[8]**

Q3) What is constructor? Explain copy constructor and parameterized constructor with example. **[8]**

OR

Q4) What is interface? Give an example where interface can be used to support multiple inheritances. **[8]**

Q5) What is an inheritance? List the type of Inheritance. What are the uses of super and this with respect to inheritance? **[9]**

OR

Q6) What is abstract class? What is the difference between abstract class and final class? Give one example of each. **[9]**

P.T.O.

SECTION - II

Q7) Discuss thread in java? Explain life cycle of thread along with example. **[8]**

OR

Q8) What is the need of exception handling? What is finally block? When & how is it used? Give a suitable example. **[8]**

Q9) Write a program using applet to draw oval and rectangle within triangle. **[8]**

OR

Q10) What is layout manager? List and Explain any two layout manager. **[8]**

Q11) Why do you need swing in java? Write a program to create a check box in swing. **[9]**

OR

Q12) What is the difference between swing and AWT? Why is Model-View-Controller Architecture used in Swing? **[9]**

Total No. of Questions : 12]

SEAT No. :

P4035

[Total No. of Pages : 2

[5563]-202
F.Y.M.C.A. (Engg.)
DATA STRUCTURES USING C & C++
(2013 Course) (Semester - II) (310910) (Theory)

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 Abstract Data Type? Explain with example. **[8]**

OR

Q2) Explain the row major and column major storage representation with example. **[8]**

Q3) Explain the structure of Circular Linked List. Describe any two operation on Circular linked list. **[8]**

OR

Q4) Write pseudo C code for the addition of two polynomials. **[8]**

Q5) Write functions in C/C++ to implement insert and delete operations on Queue using Linked List. **[9]**

OR

Q6) a) Convert following infix expression into postfix expression. **[4]**

i) ((A+B) – C*(D/E))+F

ii) (A+B ^ C)/(D–E*F)+G

b) What is recursion? Explain with an example. **[5]**

P.T.O.

Q7) What is binary tree? Explain binary tree traversals in detail. **[8]**

OR

Q8) List and explain various graph representation. Differentiate between BFS and DFS. **[8]**

Q9) Write a pseudo C code for Merge Sort. **[8]**

OR

Q10) Write pseudo C code for binary search and state advantages of binary search over linear search. **[8]**

Q11) a) Explain index file in short. **[4]**

b) Define hashing function and state its characteristics. **[5]**

OR

Q12) Explain chaining with and without replacement. **[9]**

Total No. of Questions : 12]

SEAT No. :

P4037

[Total No. of Pages : 2

[5563] - 204
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) ***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) Explain waterfall model in detail with suitable diagram. **[8]**

OR

Q2) a) What is Software Engineering. **[3]**

b) Explain incremental approach. **[5]**

Q3) Explain Software Development Life Cycle in detail with suitable diagram. **[9]**

OR

Q4) What is feasibility study? Explain all types of feasibility study. **[9]**

Q5) a) Explain Data Dictionary. **[4]**

b) Explain Decision Tree with example. **[4]**

OR

Q6) Draw Data Flow Diagram for railway reservation system. (level 0 & 1). **[8]**

P.T.O.

Q7) Explain Cohesion and Coupling along with its types. **[8]**

OR

Q8) Draw ER Diagram for hospital management system. **[8]**

Q9) a) What is Software Testing? Explain its types. **[6]**

b) What is the importance of Software Testing? **[3]**

OR

Q10) What is the Audit of Information System? Explain in detail. **[9]**

Q11) a) What is Service Oriented architecture? **[4]**

b) Explain Component based Software Engineering. **[4]**

OR

Q12) a) What is Distributed Software Engineering? **[4]**

b) Write a short note on Deployment of Software. **[4]**

* * *

Total No. of Questions : 12]

SEAT No. :

P4038

[Total No. of Pages : 2

[5563]-205
F.Y.M.C.A. (Faculty of Engineering)
MANAGEMENT THEORY & PRACTICES
(2013 Pattern) (Semester - II) (310913) (Theory)

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) Define management. Explain different functions of management. **[5]**

b) What is contribution of Henry Feyol to the management Science? **[4]**

OR

Q2) a) Do you feel that the Taylor's theory of Management is still valid? Justify. **[5]**

b) What are the different types of organizational structure? **[4]**

Q3) What are the different factors that affect forms of business organization? **[8]**

OR

Q4) a) What are the different types of co-operative sectors? **[4]**

b) Differentiate MOA and AOA in detail. **[4]**

Q5) a) Explain Path and Goal Theory. **[4]**

b) Define Leadership and explain the importance of leadership to the organization. **[4]**

OR

Q6) a) Write a difference between group and team. **[4]**

b) Explain Hersey and Blanchard' Theory. **[4]**

P.T.O.

SECTION - II

Q7) a) What are the constructive conflicts? **[4]**

b) What is Quality in turn of an organization? What is Total Quality management? Which are the techniques for TQM? **[5]**

OR

Q8) Write short note on: **[9]**

a) Bench marking

b) Six sigma

c) Theory of X,Y,Z

Q9) a) Explain the role of Management Information Systems (MIS) in the academic. **[4]**

b) Explain in detail Transaction Processing Systems as an application of Management Information Systems. **[4]**

OR

Q10) a) Write short note on Supply Chain Management (SCM). **[4]**

b) List the application of MIS. **[4]**

Q11) a) Write a difference between Open System and Closed System. **[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 Systems. **[4]**

Total No. of Questions : 12]

SEAT No. :

P4039

[Total No. of Pages : 2

[5563]-301
S.Y.M.C.A. (Under Faculty of Engineering)
ADVANCED JAVA
(2013 Course) (410901)

Time : 3 Hour] *[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 J2EE? Explain J2EE Architecture with the help of suitable diagram. **[4]**

b) State any four SQL Exception Methods. **[4]**

OR

Q2) a) Write a GUI based JDBC application to calculate the total marks, percentage and grades on the basis of percentage. Take Student Name, Class, Roll No. and three subject's marks as input. **[9]**

Q3) a) State any two Interfaces and Classes of javax. Servlet PACKAGE. **[4]**

b) What are Request and Response interface in Servlet? **[4]**

OR

Q4) a) Write a program to create a data entry screen, which accepts name, standard (as a list box) with add button. Create html page using servlet. **[8]**

Q5) a) Explain MVC Architecure with suitable diagram. **[4]**

b) Explain JSP exception handling with the help of example. **[4]**

OR

Q6) a) Write a JSP program to display the grade of a student by accepting the marks of five subjects. **[8]**

P.T.O.

Q7) a) What is an Enterprise Beam? What are the Types of EJB. **[4]**

b) What is an Entity Beam? Write the steps to create an entity bean. **[4]**

OR

Q8) a) Write short note on Container-managed Transactions and Bean managed Transactions. **[8]**

Q9) a) Explain Spring Framework-Architecture with suitable diagram. **[4]**

b) State any four Auto - Wiring Modes. **[4]**

OR

Q10)a) Write a simple web-based Hello World application using Spring MVC framework. **[8]**

Q11) a) Explain Hibernate architecture and features. **[5]**

b) Explain lifecycle of Hibernate objects with suitable diagram. **[4]**

OR

Q12)a) Write program based n HQL for executing fundamental queries (CRUD). **[9]**

Total No. of Questions : 12]

SEAT No. :

P4040

[Total No. of Pages : 2

[5563]-302
S.Y. M.C.A. (Engineering)
Data Base Management System
(2013 Course) (410902) (Semester - III)

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) Explain the importance of Database systems over File processing systems. **[9]**

OR

Q2) Write a short note on following :

a) System Catalogs. **[5]**

b) Data Abstraction. **[4]**

Q3) a) Define the following keys with suitable example. **[4]**

i) Primary Key.

ii) Composite Key.

iii) Candidate Key.

iv) Super Key.

b) Draw an ER diagram for Banking system. **[4]**

OR

Q4) a) Explain Generalization and Specialization? Explain with suitable example. **[4]**

b) Explain the different types of attributes. **[4]**

Q5) State and explain Codd's rules (any 8). **[8]**

OR

Q6) a) Elaborate aggregate functions. **[4]**

b) Explain : Views and materialized views. **[4]**

P.T.O.

Q7) Explain : Embedded SQL and Dynamic SQL. **[8]**

OR

Q8) a) Write a note on PL/SQL stored function. **[4]**

b) Write a PL/SQL Function to find the age of Employee. **[4]**

Q9) What is normalization? Explain the following normal forms with suitable example. **[8]**

OR

Q10)a) What is Lossy and Lossless decomposition? Explain with example. **[4]**

b) What is functional dependency? Explain the different types of functional dependencies with suitable example. **[4]**

Q11)Write a short notes on :

a) Big Data. **[5]**

b) NoSql. **[4]**

OR

Q12)a) Give the syntax and example of following hbase commands **[5]**

Create, put, scan, get

b) Write a short notes on hbase architecture. **[4]**

Total No. of Questions : 7]

SEAT No. :

P4042

[Total No. of Pages : 2

[5563]-304

M.C.A.(Management Faculty)

IT - 3S : OBJECT ORIENTED ANALYSIS AND DESIGN (OOAD)

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

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) "ABC Online Book" purchase system is to be designed having following details :

Customer can login, select the desired book(s) by searching the author or by entering the subject of the book. After seeing the list of books, the customer select the books and puts in the cart. He can remove the books from the cart before final bills generated. Once the bill is generated he has to pay using debit or credit card.

The new book arrivals are uploaded by website administration.

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

Q2) Explain Object Oriented Analysis Methodology with suitable example. **[10]**

Q3) a) Draw Activity diagram for opening e-mail account. **[5]**

b) Draw sequence diagram for online order of Pizza. **[5]**

Q4) What is RUP? Explain its phases with diagram. **[10]**

Q5) Draw the state transition diagram for Online Auction Process. **[10]**

P.T.O.

Q6) a) Explain various approaches for identifying classes. **[5]**

b) Explain Testing strategies. **[5]**

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

a) Mapping object to Relational Datastructure

b) Design Refinement

c) Guidelines for preparing test plan

d) Design pattern

♦ ♦ ♦

Total No. of Questions : 12]

SEAT No. :

P4043

[Total No. of Pages : 4

[5563]-305

S.Y.M.C.A. Engineering

OPERATIONS RESEARCH

(2013 Pattern) (Semester-III) (Theory)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8 Q.9 or Q.10, Q.11 or Q.12.***
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. **[7]**

Max. z = 3x1 + 2x2

Subject to constraint

x1 +x2 < =4

x1 – x2 < =2

x1, x2 > = 0

b) Discuss the properties of LP model. **[2]**

OR

Q2) a) Explain: **[3]**

i) Slack variable ii) Feasible Solution iii) Optimum Solution

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

Minimize z = 20x1 + 10x2

Subject to constraint

x1 + x2 < = 40

3x1 + x2 > = 30

4x1 + 3x2 > = 60

x1, x2 > =0

P.T.O.

Q3) A cement factory Manager is considering the optimal way to transport cement from his three manufacturing centers P, Q, R to depots A, B, C, D and E. The weekly production and demands along with transportation costs per ton are given below. **[8]**

	A	B	C	D	E	Supply
F1	40	10	30	40	40	60
F2	20	30	20	20	30	35
F3	30	50	20	40	40	40
Demand	22	45	20	18	30	

Find the transportation Schedule for the above problem.

OR

Q4) Solve the given problem to minimize the total processing time using Hungarian method. Also find out for which machine no job is assigned. What is the total processing time to complete all the jobs? **[8]**

	Machines				
Jobs	M1	M2	M3	M4	M5
J1	4	3	6	2	7
J2	10	12	11	14	16
J3	4	3	2	1	5
J4	8	7	6	9	6

Q5) A small project is composed of seven activities, whose time estimates are listed in the table as follows: **[8]**

Activity	Estimated duration (weeks)		
	Optimistic (a)	Most likely (m)	Pessimistic (b)
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

a) Draw the project network.

b) Determine Expected time & Variance.

c) Determine critical path and expected project duration.

d) Calculate the variance and standard variation of project length.

OR

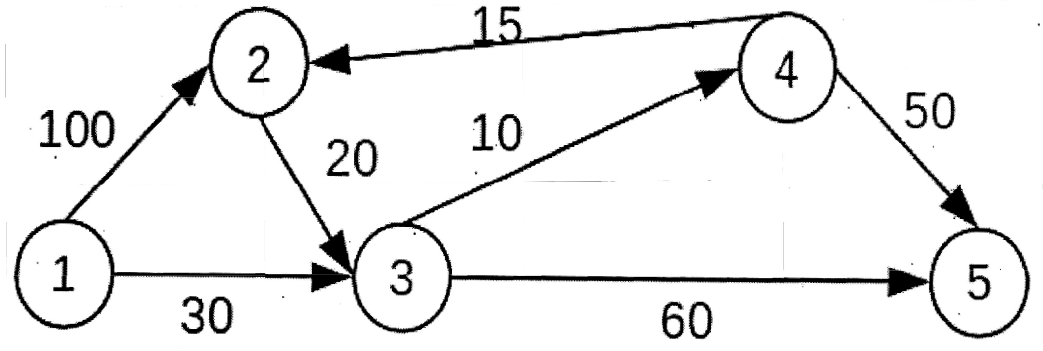
Q6) Draw a network diagram from the following information and calculate: **[8]**

a) EST (Earliest Start Time), EFT (Earliest Finish Time), LST (Latest Start Time), LFT (Latest Finish Time).

b) Total float, Independent float, Free float

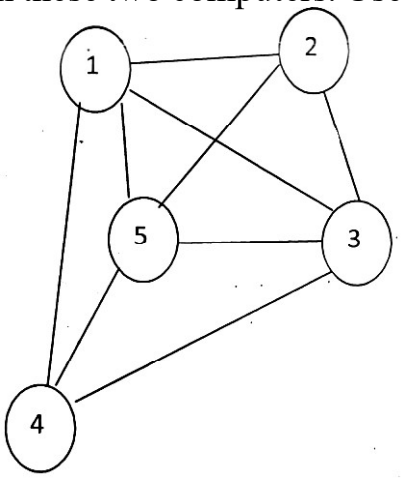
Name	A	B	C	D	E	F	G	H	I	J	K
Activity	1-2	1-3	1-4	3-5	4-5	2-6	5-6	5-7	6-8	7-8	8-9
Duration (in Hrs.)	8	5	13	12	6	6	7	9	8	2	6

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) The state university campus has five supercomputers. The distance between each pair of computers is given in figure. The computers must be interconnected by underground cable. What is the minimum length of cable required? Note that if no arc is drawn connecting a pair of nodes, this means that no cable can be laid between these two computers. Use Minimum Spanning Tree. **[9]**



Q9) a) What are the types of decision making environment? Explain any one in detail. **[4]**

b) Find decision using: (i) Laplace (ii) Hurwicz ($\alpha = 0.5$) **[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

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 using b = 17, c = 111, m = 103, seed = 7.**[4]**

OR

Q12)In the first year M.Com. Class of a certain commerce college, the first lecture starts at 9 a.m. Following is the probability distribution regarding number of students who are late comers for the first lecture each day. **[8]**

No. of students coming late	05	10	15	20	25
Probability	0.35	0.30	0.20	0.10	0.05

Using the following sequence of random numbers, simulate the pattern for next 12 days and find average number of students coming late per day.

Random	95	23	12	65	95	61	86	02	92	45	44	48

Total No. of Questions :12]

SEAT No. :

P4044

[Total No. of Pages :2

[5563]-401

Second Year M.C.A. (Faculty of Engineerigng)

ADVANCED WEB TECHNOLOGY

(2013 Pattern) (410909) (Semester-IV)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

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

Q1) a) Explain the concept of Common Language Runtime with well labeled diagram. **[6]**

b) Explain Managed and Unmanaged code. **[3]**

OR

Q2) a) What is Namespace? How these namespaces are import in the program with an example. **[6]**

b) Explain the characteristics of visual C#. **[3]**

Q3) a) What is Exception handling in C#? Explain with an example. **[5]**

b) What is Delegates in C#? **[3]**

OR

Q4) a) What is Method Overloading and how it is implemented in C#, Explain with example. **[5]**

b) What is Boxing and Unboxing using in C#? **[3]**

Q5) What is WPF? Explain the architecture with different feature. **[8]**

OR

P.T.O.

Q6) Explain the different controls of WPF? **[8]**

Q7) Explain the feature of Silver Light. **[8]**

OR

Q8) Explain the different Web controls of Asp.Net with the help of example. **[8]**

Q9) Explain in details about Windows communication foundation. **[9]**

OR

Q10) What is Web Services? Explain the steps of creating web service. **[9]**

Q11) Explain the architecture of ADO.NET. **[8]**

OR

Q12) What is XML? Explain the different feature of XML with example. **[8]**

Total No. of Questions : 12]

SEAT No. :

P4045

[Total No. of Pages : 2

[5563]-402

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

BANKINGAND FINANCIAL ACCOUNTINGAND MANAGEMENT

(2013 Pattern) (Semester - IV) (410910)

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) ***All questions are compulsory.***
3) ***Figures to the right side indicate full marks.***
4) ***Use of electronic pocket calculator is allowed.***
5) ***Assume Suitable data f necessary.***

Q1) Prepare Balance Sheet from the following information **[9]**

XYZ Traders Trial Balance as at 31 st Mar 2016

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	1,80,000	
Bills Receivable	21,000	
Bills Payable		2,000
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

OR

P.T.O.

Q2) a) Differentiate between Book Keeping and Accounting. **[5]**

b) Explain in detail Journal and ledger format. **[4]**

Q3) a) Explain the importance of ratio Analysis in brief. **[4]**

b) What are different overhead costs? Explain in brief. **[4]**

OR

Q4) From the Following information relating to XYZ Ltd. you are required to find out. **[8]**

a) Contribution per unit.

b) P/V Ratio.

c) BEP(units and in rupees).

d) What will be the selling price per unit if BEP down to 25,000 units?

Fixed expenses Rs.l,50,000, selling price per unit Rs.15,variable cost per unit Rs. 10.

Q5) a) Explain Operating (Working Capital) Cycle. **[4]**

b) Explain the importance of Working Capital. **[4]**

OR

Q6) Explain the various factors affecting the Working Capital requirement. **[8]**

Q7) Discuss regulatory authorities for banking in India. **[8]**

OR

Q8) Classify and explain different types of accounts in bank. **[8]**

Q9) Write Short notes on : **[9]**

a) RTGS

b) NEFT

c) SWIFT

OR

Q10)Explain the various types of negotiable instruments with their features. **[9]**

Q11)Differentiate between Net Banking and Mobile Banking. **[8]**

OR

Q12)Write short notes on: **[8]**

a) POS banking.

b) Mobile Banking.

c) ATM system and its working.

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Total No. of Questions : 12]

SEAT No. :

P4046

[Total No. of Pages : 2

[5563]-403

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

COMPUTER NETWORK & INFORMATION SECURITY

(2013 Pattern) (410911) (Semester - IV)

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 concept of Packet switching. **[4]**

b) Is Fiber optic cable is batter then Coaxial cable? Justify your answer with neat diagram. **[4]**

OR

Q2) Explain ALOHA and Limited-Contention Protocol. **[8]**

Q3) What do you mean computer network model? Differentiate between TCP/IP and OSI model in detail with neat diagram. **[8]**

OR

Q4) a) Explain Bit Stuffing with suitable example. **[4]**

b) Explain any 2 services provided by data link layer. **[4]**

Q5) a) Explain any one elements of transport protocol. **[4]**

b) What do you mean by Broadcasting how it is different with multicasting? **[5]**

OR

Q6) a) Explain IPV6 protocol header format. **[4]**

b) Explain any one simple transport protocol with example. **[5]**

Q7) a) Write difference between POP3 and IMAP protocol. **[4]**

b) Define DNS and explain the use of DNS servers in networking. **[5]**

OR

P.T.O.

Q8) a) Write difference between Static and Dynamic pages. **[5]**

b) Write short note on SMTP. **[4]**

Q9) a) Write short note on Active and Passive attack. **[4]**

b) What is Spoofing? Explain it with the help of example. **[4]**

OR

Q10) Explain Diffie Hellman based key agreement protocol. **[8]**

Q11) a) Write short note on Secure Socket Layer. **[4]**

b) For user authentication how biometric devices are useful explain it with an example? **[4]**

OR

Q12) Write short note on : **[8]**

a) One time password.

b) ARP Hazards.

Total No. of Questions :12]

SEAT No. : ____

P4047

[Total No. of Pages :2

[5563]-404

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

INFORMATION SYSTEMS AUDIT (Elective-I)

(2013 Course) (Semester -IV) (410912-A)

Time : 3Hours] ***[Max. Marks : 50***

Instructions to the candidates:

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

Q1) Describe the Standards used for IS Audit. Explain the standards related with evidence. **[8]**

OR

Q2) Describe various steps involved in IS audit. Draw required flowchart. **[8]**

Q3) a) Briefly explains the nature and purpose of use of digital signature. **[4]**

b) Explain DBMS vulnerabilities and controls. **[4]**

OR

Q4) Write short note on the following:

a) Email controls. **[4]**

b) Client Server controls **[4]**

Q5) What are the ways in which the IS auditor can get involved in the system development process in detail. **[9]**

OR

Q6) Write short note on:

a) Risk & controls of OOM. **[4]**

c) QA and QC. **[5]**

P.T.O.

Q7) a) What is evidence? What are various evidence evaluation techniques? **[4]**

b) Explain the various validation controls at field, file and batch level with example. **[4]**

OR

Q8) a) What is business Continuity plan? Explain need of it. **[4]**

b) What is control? What are the three types of controls one can have in software? Explain why preventive controls are not preferred over detective or corrective controls. **[4]**

Q9) a) Explain segregation of duties. **[4]**

b) Discuss privacy issues. **[4]**

OR

Q10)a) What is short term plans and long term plans. **[4]**

b) Discuss about steering and other committees. **[4]**

Q11)State and explain COBIT key principles for governance and management of enterprise IT in brief. **[9]**

OR

Q12)Explain how a bank has implement Core banking system can implement COBIT 5 frameworks. prepare a sample RACI chart for key internal staff members.**[9]**

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Total No. of Questions :12]

SEAT No. : ____

P4048

[Total No. of Pages :2

[5563]-405
S.Y.M.C.A.(Enggineering)
CYBER LAWS
(2013Course) (410912-B) (Elective-I)

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) Define Internet & discuss its Evolution in brief. **[8]**

OR

Q2) a) Explain Data Encryption. **[4]**

b) Write short notes on digital signature. **[4]**

Q3) a) What is National Sovereignty? How is it related with personal freedom? **[4]**

b) Write short notes on Open Source movement. **[4]**

OR

Q4) Explain the Background of IT act Part-I & part-II in brief. **[8]**

Q5) Write any two conventional cyber crimes with appropriate case study. **[8]**

OR

Q6) Critically analyze the issues of Jurisdiction in cyber space. **[8]**

Q7) a) Explain Laws relating to advertising & Taxation under e-commerce? **[4]**

b) Describe Forms & features of online contract. **[4]**

OR

Q8) a) Explain the issues emerging from online contracts. **[4]**

b) Explain the payment Mechanism in cyberspace. **[4]**

P.T.O.

Q9) Explain Management of IPRs in detail?. **[8]**

OR

Q10)a) Explain liabilities of Internet service providers? **[4]**

b) Explain lining & Framing? **[4]**

Q11 a) Explain Rights to privacy & its legal framework? **[5]**

b) Discuss kid's privacy protection online? **[5]**

OR

Q12)a) Describe privacy related wrongs & Remedies? **[5]**

b) Discuss Evolving Trends in Data protection & Information security? **[5]**

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Total No. of Questions :12]

SEAT No. :

P4049

[Total No. of Pages :2

[5563]-406

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

IT GOVERNANCE

(2013Course) (410912-C)

Time : 3Hours] ***[Max. Marks : 50***

Instructions to the candidates:

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

Q1) What are the prerequisites for Creating a Successful IT Governance Program, explain in detail **[9]**

OR

Q2) a) Explain Assessment Maturity Model in brief. **[5]**

b) Explain Integrated IT Governance framework and road map. **[4]**

Q3) a) Explain the results of Ineffective IT governance. **[4]**

b) What are keys IT resources & functions is used? **[4]**

OR

Q4) a) Explain in brief Three critical pillars of IT Governance **[5]**

b) What are the steps in making IT Governance Real? **[3]**

Q5) a) Explain benefit of Integrated IT Governance Framework **[4]**

b) Explain standards of IT Governance. **[4]**

OR

Q6) Explain the IT governance best practice reference models & Frameworks. **[8]**

Q7) a) What is the board ‘s role in driving business / IT Alignment? **[6]**

b) What are the five stages of IT? Explain in brief. **[3]**

OR

P.T.O.

Q8) Explain Investment (portfolio) Management Maturity &IT Engagement (Relationship) Model. **[9]**

Q9) a) Explain the principle for Achieving Excellence in project Management. **[5]**

b) Explain the roles of program Management Office (PMO) **[3]**

OR

Q10)a) What do you mean by PM Governance & Escalation Framework. **[5]**

b) Explain the principals of accomplishing excellence in project management. **[3]**

Q11 a) What do you mean by Contract Negotiations & Management? **[4]**

b) Explain the outsourcing decision making score -card. **[4]**

OR

Q12)a) Write the difference between Domestic & off Shore Deals. **[4]**

b) Explain the IT balancing Dilemma in brief . **[4]**

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Total No. of Questions :12]

SEAT No. :

P4050

[Total No. of Pages :2

[5563]-407

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

IT SERVICE MANAGEMENT

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

Time : 3Hours] ***[Max. Marks : 50***

Instructions to the candidates:

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

Q1) Explain in details service Flowcharting & Service Benchmarking in details. **[8]**

OR

Q2) Explain the current status & Future prospects of IT service Management with suitable Example. **[8]**

Q3) What is IT service provider & IT service Life Cycle in details? **[8]**

OR

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

Q5) What is Continual Service improvement? Explain their purpose, Objective & key principle **[9]**

OR

Q6) What is Service Transition? Explain their purpose, Objective & Role. **[9]**

Q7) Explain the service management processes Relationship, Metrics & Role of service Continuity Management. **[8]**

OR

P.T.O.

Q8) Write in brief about Service continuity. Management, with real time application on it. **[8]**

Q9) What is Access Management? Explain its Relationship with other service Management. **[8]**

OR

Q10) Explain the Facilities Management? Explain the control of physical Access in Facilities Management. **[8]**

Q11) Explain Technical Management? With Scope, purpose & objectives. **[9]**

OR

Q12) Explain IT Operations Management in brief with Scope, purpose & Objective. **[9]**

● ● ●

Total No. of Questions : 12]

SEAT No. :

P4051

[Total No. of Pages : 1

[5563]-408

S.Y. MCA (Under Engineering Faculty)

ADVANCED DATABASES

(2013 Course) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10 and Q11 or Q12.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Assume suitable data, if necessary.***

Q1) Write a short note on : Query Processing. **[8]**

OR

Q2) Explain cost calculation for Join operations. **[8]**

Q3) What is Transaction Server Process Structure. **[8]**

OR

Q4) Explain Parallel systems with speed up and scale up. **[8]**

Q5) How are distributed transactions executed? **[8]**

OR

Q6) Differentiate between homogeneous and heterogeneous distributed databases. **[8]**

Q7) Explain Structured types and inheritance in OODBMS. **[8]**

OR

Q8) Write a short note on Persistent Programming Language. **[8]**

Q9) Give XML Schema for railway reservation (Consider customer details, ticket details and train details). **[10]**

OR

Q10)a) What is XQuery? Explain FLWOR expression with suitable example. **[5]**

b) Explain DTD with an example. **[5]**

Q11)What is NOSQL? Explain its features and applications in brief. **[8]**

OR

Q12)Which are the distribution models in NoSQL. **[8]**

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Total No. of Questions :12]

SEAT No. :

P4052

[Total No. of Pages : 2

[5563]-501
T.Y. M.C.A. (Engg.)
RECENT TECHNOLOGIES IN- IT
(2013 Pattern) (Semester-V) (510901)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q9 or Q.10, Q.11 or Q.12.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data if necessary.***

Q1) a) What is LAMP? Explain its advantages over WAMP. **[5]**

b) List and explain the configuration files required for LAMP stack installation. **[4]**

OR

Q2) a) Explain the process of installation and configuration of LAMP stack. **[5]**

b) Why WAMP is not preferred for developing PHP applications? **[4]**

Q3) a) Create an array Jeans. Insert 3 records in it. Display it. Sort them in ascending order and print it. Also sort them in reverse order and print it. **[4]**

b) Explain why MYSQL is preferred in LAMP stack compared to other RDBMS? **[4]**

OR

Q4) a) Explain how MYSQL database can be managed using phpmyadmin?**[4]**

b) Create a new database namely Books with a table namely Novels that has 3 records namely Historical, Social, thriller with number 1, 2, 3. Retrieve this record of Novelstable & display it on HTML web browser.**[4]**

P.T.O.

Q5) a) Write PHP code to accept credit card registration information from the Customer, store it into the database and display the customer information. **[6]**

b) Explain Array_unique & Array_walk functions in PHP. **[2]**

OR

Q6) a) Explain the concept of splitting and merging of Array with a suitable ex. **[6]**

b) Explain any 2 Date and time functions in PHP. **[2]**

Q7) a) Explain the life cycle of a function in PHP. **[4]**

b) Write a short note on class constants and static methods. **[4]**

OR

Q8) a) Explain object properties and methods with a suitable example. **[4]**

b) Explain the concept of abstract classes with a suitable example. **[4]**

Q9) a) Write a PHP script to find out the size, last modified data, path and permissions associated with a particular directory. **[4]**

b) Explain the operations of a file opening, writing with suitable example. **[4]**

OR

Q10)a) Explain the file connections HTTP fopen () and FTP fopen (). **[4]**

b) Write a program to check whether a file exists or not, if it exists then display its directory name. **[4]**

Q11)a) How a session is created and Handled? How does a session works? **[5]**

b) Explain in detail setcookie() function with a suitable example. **[4]**

OR

Q12)a) Explain how files are uploaded in PHP with a suitable example. **[5]**

b) Write a short note on cookie handling. **[4]**

Total No. of Questions :12]

SEAT No. :

P4053

[Total No. of Pages : 2

[5563]-502
T.Y.M.C.A. (Engineering)
SOFTWARE TESTING AND QUALITY ASSURANCE
(2013 Course) (Semester-V) (510902)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any six questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Assume suitable data is necessary.***

Q1) a) Explain building blocks of SQA. **[5]**

b) Write a note on : **[4]**

i) CMMI

ii) Six Sigma

OR

Q2) a) What is quality assurance (QA) and software quality assurance (SQA). List out the various activities of SQA. **[5]**

b) Describe software quality factors in details. **[4]**

Q3) a) List any two challenges from the testing perspective for each of the following models: **[4]**

i) Spiral Model

ii) V Model

b) Describe testing life cycle in details. **[4]**

OR

Q4) a) Enlist tabular difference between verification and validation concept. **[4]**

b) Write test cases for an Ecommerce website's "payment Gateway" **[4]**

Q5) a) Explain Test case design strategies in details. **[4]**

b) What are the differences between Positive Testing and Negative Testing? **[4]**

OR

P.T.O.

Q6) a) Write a C program to read a number from user and check it's "Prime number". Draw the control flow graph for the same program and calculate cyclomatic complexity of the program. **[6]**

b) Discuss the negative effect of the following constructs from a white box testing perspective: **[2]**

i) GOTO Statements

ii) Global Variables

Q7) a) What is Integration Testing? Explain different types of approaches used in Integration Testing. **[4]**

b) Write any four entry/exit criteria for non-functional tests. **[4]**

OR

Q8) a) What is performance Testing? Write any 3 sample configuration performance test on "ATM Transaction System". **[4]**

b) Write a note on: **[4]**

i) Scenario Testing

ii) Regression Testing

Q9) a) Explain the bug taxonomy based on phases of development cycle. **[4]**

b) Justify the role of tester for Defect Repository. **[4]**

OR

Q10) a) Define a defect life cycle in software testing and what are the various states of a defect life cycle. **[4]**

b) What are the typical origins of defects? From your own personal experiences what are the major sources of defects in the software artifacts that you have developed? **[4]**

Q11) a) What is Automation testing? List out any four automation testing tools. **[6]**

b) List out the technical challenges with selenium? **[3]**

OR

Q12) a) What is Selenium? How will you find an element using Selenium? **[4]**

b) What Selenium components do you know? **[5]**

Total No. of Questions : 12]

SEAT No. :

P4054

[Total No. of Pages : 2

[5563]-503
T.Y. M.C.A. (Engineering)
SOFTWARE ENGINEERING
(2013 Pattern) (Semester - V) (510903)

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 Spiral model with advantages. **[4]**

b) What are major tasks conducted in Clean room software engineering. **[4]**

OR

Q2) a) What is Agile process model? Why it is needed? **[4]**

b) Explain software engineering as a "Layered technology". **[4]**

Q3) a) What are goals of requirement engineering? What are the task performed in requirement engineering? **[4]**

b) What do you mean by risk identification? How will you assess overall project risk? **[4]**

OR

Q4) a) Waht is meant by requirement specification? What are the characteristic that requirement must meet? **[4]**

b) What is the necessity of risk monitoring? What is its impact on overall development? **[4]**

Q5) a) What is the need to project estimation? What are the steps to estimate software? **[5]**

b) Write short note on - SCM. **[4]**

OR

Q6) a) Explain why consistency, respect, inclusion and honesty are factors that contribute to effective people management. **[5]**

b) Explain software management activities. **[4]**

P.T.O.

Q7) a) What is the fundamental difference between the hardware and software failures. **[4]**

b) Explain principal properties of dependability. **[4]**

OR

Q8) a) Safety and reliability of system are related - Comment. **[4]**

b) In computer security terms, explain the difference between an attack and a threat. **[4]**

Q9) a) What is the fundamental difference between a fat client and thin client in client server architecture? **[4]**

b) Explain client server computing with eg. **[4]**

OR

Q10)a) What are different issues arising from distributed system. **[4]**

b) Write short note on - SOA. **[4]**

Q11)a) Explain McCalls quality factor that affect the software quality. **[6]**

b) Define - measure, measurement, metric. **[3]**

OR

Q12)a) What do you mean by software metric. Describe its advantages. **[6]**

b) Explain the purpose of software maintenance. **[3]**

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Total No. of Questions : 12]

SEAT No. :

P4055

[Total No. of Pages : 2

[5563] - 504

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

DATA WAREHOUSING DATA MINING & BUSINESS INTELLIGENCE

(2013 Course) (Semester - V)

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) What is 3 tier architecture of a Data Warehouse? Explain in Detail with fig. **[5]**

b) What is data pre-processing? Explain major tasks in data pre-processing. **[4]**

OR

Q2) a) Explain different Warehouse components with the help of diagram. **[5]**

b) Explain the terms MOLAP,ROLAP, HOLAP, and DOLAP. **[4]**

Q3) a) Explain various issues in data mining. **[4]**

b) Explain data visualization in detail. **[4]**

OR

Q4) a) Explain the major issues related with data mining. **[4]**

b) What kinds of data and patterns can be mined in data mining? **[4]**

Q5) a) Explain in detail classification and prediction. **[4]**

b) What are the different phases in knowledge discovery? **[4]**

OR

P.T.O.

Q6) What is association in data mining? Explain Apriori algorithm. With a suitable example. **[8]**

Q7) a) Explain importance of ETL for business intelligence. **[4]**

b) How can statistical analysis of data improve business perspectives? **[4]**

OR

Q8) a) What is ODS? Explain its features in detail. **[4]**

b) Explain Business intelligence wrt e- commerce website. **[4]**

Q9) a) Explain various BI architectures. **[4]**

b) Compare between Data warehouse and Data Mart. **[4]**

OR

Q10) a) What is operation data store? Explain. **[4]**

b) Explain Atomic layer alternatives. **[4]**

Q11) List out Business Intelligence reporting tools. Explain any two. **[9]**

OR

Q12) Consider the scenario: A company 'ABC' in Automobile sector wishes to launch a new car 'XYZ', in a new country. Which aspects need to be studied and how will BI tool help? **[9]**

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Total No. of Questions : 12]

SEAT No. :

P4056

[Total No. of Pages : 2

[5563]-505
T. Y. M. C. A. (Engg.)
ANIMATION & GAMING (Elective - II)
(2013 Course) (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

P.T.O.

Q6) a) Explain sequential movement drawing? **[4]**

b) Explain various steps in developing animation character? **[5]**

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]**

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Total No. of Questions : 12]

SEAT No. :

P4057

[Total No. of Pages : 2

[5563]-506
T.Y. M.C.A. (Engineering)
MOBILE COMPUTING
(2013 Course) (Semester-V) (510905 B)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer 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) ***Figures to the right side indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) Explain the concept of HLR and VLR with suitable diagram. **[9]**

OR

Q2) Explain the value added services of GSM. **[9]**

Q3) Explain the Bluetooth architecture with suitable diagram. **[8]**

OR

Q4) Explain the WAP architecture with suitable diagram. **[8]**

Q5) a) Explain the CODA file system. **[4]**

b) Write short notes on disconnected operations. **[4]**

OR

Q6) a) Explain the different data management issues. **[4]**

b) Write short notes on data replication. **[4]**

Q7) What is Android OS? Explain the architecture of android. **[8]**

OR

P.T.O.

Q8) Explain the different features of Android. **[8]**

Q9) a) Explain in details about location based services? **[4]**

b) Describe the concept of Intent with example. **[4]**

OR

Q10) What is Adapter? Explain with Example. **[8]**

Q11) Write a program for sending and receiving data message on Android. **[9]**

OR

Q12) Explain how binding and making connections with database in Android. **[9]**

Total No. of Questions : 12]

SEAT No. :

P4058

[Total No. of Pages : 2

[5563]-507

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

HIGH PERFORMANCE NETWORKS (Elective-II)

(2013 Course) (Semester-V) (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) Explain types of multiplexing. **[4]**

b) Write a short note on OSI model. **[4]**

OR

Q2) a) Explain concept of ATM. **[4]**

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

Q3) a) Explain RSVP in detail. **[4]**

b) Explain protocols for real time interactive applications **[4]**

OR

Q4) Explain scheduling and policing mechanisms in detail. **[8]**

Q5) a) Write a short note on traffic engineering. **[4]**

b) What is VPN? Explain its types. **[5]**

OR

Q6) a) Explain security in VPN. **[4]**

b) Explain tunneling to PPP. **[5]**

Q7) a) Explain Little's theorem. **[4]**

b) Explain need for modeling. **[4]**

OR

P.T.O.

Q8) a) Explain Poisson Modeling in detail. **[4]**

b) Describe network performance evaluation. **[4]**

Q9) a) Explain principles of cryptography. **[4]**

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

OR

Q10) a) What is firewall? How it works? **[4]**

b) Explain symmetric key cryptography. **[4]**

Q11) Explain infrastructure for network management in detail. **[9]**

OR

Q12) Explain **[9]**

a) SMI

b) MIB

c) SNMP