Total No. of Questions : 12]

SEAT No. :

P1036

[Total No. of Pages : 2

[4661] - 101
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) ***Answer any three questions from each sections.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Assume suitable data if necessary.***

SECTION - I

Q1) a) What is procedure oriented programming? Give the advantage & limitation of C-programming. **[4]**

b) What is a variable? Explain the primary data types in C. **[4]**

OR

Q2) a) What is identifier? What is the difference between C and C++? **[4]**

b) How to created your own header file in C? **[4]**

Q3) a) What is union? What is the difference between structure and union? **[4]**

b) Write a program to sort the element of array in ascending order. **[4]**

OR

Q4) a) What is dynamic memory allocation? Explain malloc ( ) and free ( ) with example. **[4]**

b) Write a 'C' program for creating a structure of student with Rno, name and Branch. Accept details of n students and display records of student. **[4]**

Q5) a) What is a macro? Write a macro to find out maximum number form two number. **[5]**

b) Explain call by value and call by reference with example. **[4]**

OR

P.T.O.

Q6) a) What is the use of function prototype? Explain recursion in C with example. **[5]**

b) Write a C program to find the largest number using recursion function. **[4]**

SECTION - II

Q7) a) What is constructor? Explain parameterized constructor with example. **[4]**

b) What is object oriented programming? Explain the concept of class and object with example. **[4]**

OR

Q8) a) What is difference between object oriented programming and procedure oriented programming? **[4]**

b) Compare C in and C out of C++ with printf and scanf of C language. **[4]**

Q9) a) What is the inheritance? Explain the various access modifiers in C++ with example. **[4]**

b) Write a program to overload area function to calculate area of circle and rectangle. **[4]**

OR

Q10)a) What is polymorphism? Explain run time polymorphism. **[4]**

b) Explain the problem of ambiguity with suitable example. **[4]**

Q11)a) What is the input stream and output stream? Explain various methods to open file. **[5]**

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

i) put ( )

ii) getline ( )

OR

Q12)a) Explain the various file stream classes needed for File Manipulation. **[5]**

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

i) write ( )

ii) read ( )

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Total No. of Questions : 12]

SEAT No. :

P1037

[Total No. of Pages : 2

[4661] - 102
F.Y.M.C.A. (Engineering Faculty)
COMPUTER ORGANIZATION
(2013 Course) (Semester - I) (310902)

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

Instructions to the candidates:

1) ***From Section - I, answer (Q1 or Q2), (Q3 or Q4), (Q5 or Q6).***
2) ***From Section - II, answer (Q7 or Q8), (Q9 or Q10), (Q11 or Q12).***
3) ***Answers to the two sections should be written in separate answer books.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Figures to the right side indicate full marks.***
6) ***Assume suitable data if necessary.***

SECTION - I

Q1) a) What is utility Program? List out some of the task commonly performed by utility program. **[5]**

b) Convert the following. **[4]**

i) $(7564)_8 = ?_2$

ii) $(1964)_{10} = ?_8$

iii) $(BAF)_{16} = ?_{10}$

iv) $(7761)_{16} = ?_2$

OR

Q2) a) What is a mnemonic? How is it helpful in case of computer languages? **[4]**

b) Explain De-Morgans' Theorem and duality theorem. **[5]**

Q3) Write a short notes on. **[8]**

a) Multliplexer and Demultiplexer

b) SR flip flop

OR

P.T.O.

Q4) Explain Half adder and full adder with neat diagram. **[8]**

Q5) a) What is the difference between DRAM and SDRAM in terms of Application. **[4]**

b) Explain Cache Memory Principal? **[4]**

OR

Q6) Write a note on **[8]**

a) ROM,

b) PROM

c) EPROM

d) EEPROM

SECTION-II

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

b) What is pipelining? Explain instruction pipelining in detail. **[4]**

OR

Q8) a) How pipelining approach differ from non pipelining approach. **[4]**

b) Explain the system buses and their characteristics. **[4]**

Q9) Write a note on **[9]**

a) Functions of Serial I/O chips

b) Super scalar concept in processor architecture

OR

Q10) Draw and explain 16-bit (8086) architecture in detail. **[9]**

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

b) Explain the concept of Clusters. **[4]**

OR

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

a) SISD

b) MIMD

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Total No. of Questions : 12]

SEAT No. :

P1038

[Total No. of Pages : 2

[4661] - 103

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

PRINCIPLES OF PROGRAMMING PRACTICES

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

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 are the different ways of acquiring software? List out their advantage and limitations. **[5]**

b) Write note on assembler. **[3]**

OR

Q2) a) Differentiate between procedure oriented and object oriented programming paradigms. **[4]**

b) Write note on Compiler. **[4]**

Q3) a) Which difficulties are faced in problem solving? **[4]**

b) Name the rules for naming constants and variables. **[4]**

OR

Q4) a) What is the difference between internal documentation and external documentation? **[4]**

b) How the computers stores data? **[4]**

Q5) a) Why are cohesion and coupling important to programmers? **[5]**

b) What is the difference between using a return value and a call-by-reference parameter? **[4]**

OR

P.T.O.

Q6) a) Explain top down and bottom up design approach. **[5]**

b) Name the major types of modules and explain their functions. **[4]**

Q7) a) Write an algorithm to compute sum and average of n numbers. **[5]**

b) Explain flow chart with symbols. **[3]**

OR

Q8) a) Write an algorithm to find the square root of a number. **[4]**

b) Write an algorithm to reverse digit of an integer. **[4]**

Q9) a) Explain how time complexity of an algorithm is computed? **[4]**

b) What are the characteristics of good algorithm? **[4]**

OR

Q10)a) Write note on Big O notations. **[4]**

b) Explain frequency count analysis. **[4]**

Q11)a) Explain with example insertion sort algorithm. **[5]**

b) Explain methods used in data processing system for organizing data. **[4]**

OR

Q12)a) What is the pointer technique for finding data? Why is it used? **[5]**

b) Write an algorithm for selection sort. **[4]**

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Total No. of Questions : 12]

SEAT No. :

P1039

[Total No. of Pages : 4

[4661] - 104
F.Y.M.C.A. (Under Engineering Faculty)
DISCRETE MATHEMATICS
(2013 Course) (Semester - I) (310904)

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 indicate full marks.***
4) ***Use of probability table, electronic pocket calculator is allowed.***
5) ***Assume suitable data if necessary.***

SECTION - I

Q1) a) A survey among 1000 people, 595 are democrats, 595 wear glasses and 550 like ice-cream. 395 of them are democrats who wear glasses 350 of them are democrats who like icecream. 400 of them wear glasses and like ice-cream and 250 all the three. **[5]**

i) How many of them are not democrats, do not wear glasses and do not like ice-cream?

ii) How many of them are democrats, who do not wear glasses and do not like ice-cream?

b) Show by mathematical induction that for any integer n, $10^{2n-1}+1$ is divisible by 11. **[4]**

OR

Q2) a) Using Venn diagram prove or disprove the following: **[4]**

i) $(A \oplus B) \cap C = (A \cap C) \oplus (B \cap C)$

ii) $(A - B) - C = (A - C) - (B - C)$

b) For A $=\{a, b, \{b, c\}, \phi\}$ determine the following sets: **[5]**

i) $A - \{a\}$ ii) $A - \{b, c\}$

iii) $\{\{b, c\}\} - A$ iv) $A - \{c, \phi\}$

v) $\{a\} - \{A\}$

P.T.O.

Q3) a) Show that $p \leftrightarrow q$ and $(p \wedge q) \vee (\sim p \wedge \sim q)$ are logically equivalent. **[4]**

b) Obtain dnf of **[4]**

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

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

OR

Q4) a) Prove that the argument $p \rightarrow q$, $q \rightarrow r$, $r \rightarrow s$, $\sim s$, $p \vee t \ \mapsto t$ is valid without using truth tables. **[4]**

b) Let K(x):x is a two wheeler, L(x):x is a scooter, M(x):x is manufactured by Bajaj. Express the following using quantifiers. **[4]**

i) Every two wheeler is a scooter.

ii) There is a two wheeler that is not manufactured by Bajaj.

iii) There is a two wheeler manufactured by Bajaj that is not a scooter.

iv) Every two wheeler that is a scooter is manufactured by Bajaj.

Q5) a) Determine the number of ways in which 5 software engineers and 6 electronics engineers can be sitted at a round table so that no two software engineers can sit Together. **[4]**

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

i) two must be white

ii) all of them must have the same colour.

OR

Q6) a) How many words can be formed from the letters of the DAUGHTER so that, **[4]**

i) the vowels always come together?

ii) the vowels are never together?

b) How many solutions does the equation $x + y + z = 17$ have, where x, y, z are non negative integers. **[4]**

SECTION - II

Q7) a) Use Warshall's algorithm to find the transitive closures of the following relation on {1, 2, 3, 4} where R = {(1,2), (2,1), (2, 3), (3, 4), (4,1)}. **[5]**

b) Let R = {(1, 2), (3, 4), (2, 2)} and S = {(4,2), (2, 5), (3, 1), (1, 3)} Find RoS, SoR, Ro(SoR). **[3]**

OR

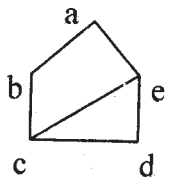
Q8) a) Let A = {1,2,3} and B = {*a*, *b*, *c*, *d*} Check whether the given function is injective or not? Justify. **[3]**

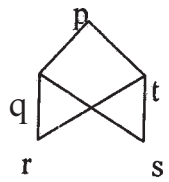
i) $f = \{(1, a), (2, d), (3, b)\}$

ii) $g = \{(1, a), (2, a), (3, d)\}$

b) Let A = {2, 3, 4, 6} and let a R b if a divides b. Show that R is partial order and Draw its Hasse diagram. **[5]**

Q9) a) Show that the following graphs are not isomorphic. **[4]**





b) Draw the graph represented by the given adjacency matrix. **[3]**

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

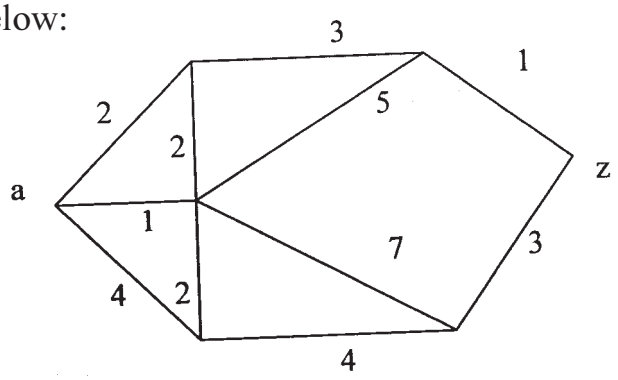
c) Define Eulerian and Hamiltonian Graph. **[2]**

OR

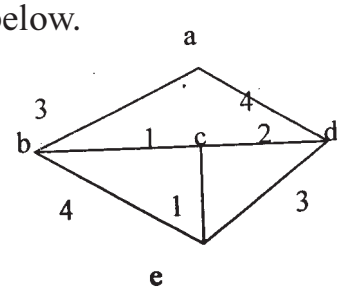
Q10)a) How many edges must a planar graph have if it has 7 regions and 5 nodes. **[3]**

b) Apply Dijkstra's algorithm to determine a shortest path between *a* and *z* in the graphs. **[6]**

Shown below:



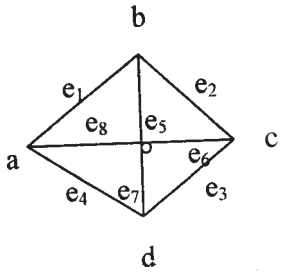
Q11)a) Use Kruskal's algorithm to determine a minimum spanning tree for the graph shown below. **[5]**



b) Draw a full binary tree with 5 terminal vertices and 4 internal vertices.**[3]**

OR

Q12)a) Find the fundamental system of cut-set for the following graph with respect to the Spanning tree T as shown below. **[4]**



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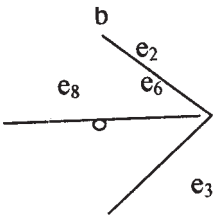

T

b) For the following sets of weight, construct optimal binary prefix code.**[4]**

8, 9, 12, 14, 16, 19.

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Total No. of Questions : 12]

SEAT No. :

P1040

[Total No. of Pages :3

[4661] - 105
F.Y. M.C.A. (Under Engineering Faculty)
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) ***Use of probability table, electronic pocket calculator is allowed.***
4) ***Assume Suitable data if necessary.***

Q1) a) Explain the terms:

i) Marginal Probability.

ii) Two dimensional distribution **[4]**

b) A certain firm has plants A, B and C producing 25%, 45% and 30% respectively of the total output. The probabilities of non-defective product from these plants are 0.80, 0.85 and 0.90 respectively. An item is selected from the total output of these plants and found to be defective. What is the probability that it is produced by plant A? **[5]**

OR

Q2) a) State and prove Baye's theorem. **[5]**

b) A box contains 5 red and 10 blue balls. 2 balls are drawn at random from the box. Find the probability that among the balls drawn, there is at least 1 ball of each color. **[4]**

Q3) a) Define with example: **[4]**

i) Probability Mass Function.

ii) Conditional Probability

b) Write note on Poisson Distribution. **[4]**

OR

P.T.O.

Q4) a) Explain the terms: **[4]**

i) Independent events

ii) Axioms of Probability

b) A random variable has the following probability mass function. **[4]**

X	–2	–1	0	1
$p(x)$	0.4	K	0.2	0.3

Find i) K ii) E(X)

Q5) a) Obtain mean of Binomial Distribution. **[4]**

b) Let (X, Y) be a discrete bivariate random variable with the following p.m.f.

Y	X		
	1	2	3
0	1/12	1/6	0
1	0	1/9	1/5
2	1/18	1/4	2/5

Find marginal probability mass distribution for X and Y. **[4]**

OR

Q6) a) A joint p.d.f. of random variable X is given by: **[4]**

$$f(x) = \begin{matrix} k(1+x) & \text{for } 2 < x < 5 \\ 0 & \text{otherwise} \end{matrix}$$

Find i) k ii) $f(2 < x < 4)$

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

i) Geometric Distribution

ii) Uniform Distribution

Q7) a) What is point estimator and point estimate? Discuss its properties. **[5]**

b) A population consists of 5 numbers {2, 3, 6, 8, 11}. Consider all possible samples of size 2 that can be drawn with replacement from the population. Find the mean of sampling distribution of mean. **[4]**

OR

Q8) a) Explain the following terms: **[4]**

i) Confidence Interval

ii) Central limit theorem

b) What is hypothesis testing? Explain the procedure for Testing of Hypothesis. **[5]**

Q9) a) What do you mean by sampling distribution? What is standard error? **[4]**

b) What is χ^2 distribution? Explain properties and applications of χ^2 distribution. **[4]**

OR

Q10)a) Explain student's t-distribution and its applications. **[4]**

b) Explain the following terms: **[4]**

i) Type I and type II errors.

ii) Level of Significance.

Q11)a) Write note on Statistical Quality Control (SQC). **[4]**

b) Explain the procedure to draw the mean chart. **[4]**

OR

Q12)a) Explain in brief χ^2 test as a test of goodness of fit. **[4]**

b) Write note on range chart. **[4]**

Total No. of Questions : 12]

SEAT No. :

P1011

[Total No. of Pages : 3

[4661]-13

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

FOUNDATION OF INFORMATION TECHNOLOGY

(Semester - I) (2008 Pattern) (510903)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Define the term 'byte'. What is the difference between a bit and a byte? **[4]**

b) Convert: **[4]**

i) $1AC_{16} = ?_{10}$ ii) $428_{10} = ?_{16}$

iii) $4052_{7} = ?_{10}$ iv) $4706_{8} = ?_{10}$

c) What are the five basic functions performed by a computer system? **[4]**

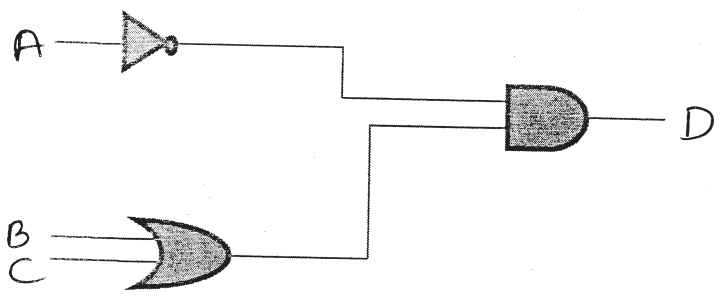
OR

Q2) a) Write 4-bit BCD code for following numbers. **[4]**

i) 42_{10} ii) 15_{10}

iii) 128_{10} iv) 64_{10}

b) Find the Boolean expression for the output of the logic circuit given below. **[4]**



c) What is an IC? How it helps in reducing the size of computers? **[4]**

P.T.O.

Q3) a) What are different registers in processor? Name some of commonly used registers & describe the function of each. **[6]**

b) What is secondary storage? How does it differ from primary storage? Give classification of secondary storage devices. **[6]**

OR

Q4) a) Differentiate between: **[4]**

i) PROM and EPROM.

ii) CISC and RISC Processors.

b) Explain the printing mechanism of inkjet printers. **[4]**

c) What are the two main components of CPU of a computer system? Write the main functions of each of these components. **[4]**

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

i) System software

ii) System program

iii) System programmer

iv) Application software

v) Application program

vi) Application programmer

b) What is firmware and what is its importance to the computer system architect. **[5]**

OR

Q6) a) What are the advantages and limitations of HLL. **[6]**

b) What are the characteristic of good programming language? **[5]**

SECTION - II

Q7) a) What is virtual memory? Explain the basic concepts used for realization of virtual memory. **[8]**

b) Define personal assistance package. List the features of it. **[4]**

OR

Q8) a) Write short note on the following with reference to a spreadsheet package. **[8]**

i) Cell content

ii) Range of Cells

b) Define the following terms: **[4]**

i) Multitasking

ii) Time sharing

iii) Multiprogramming

iv) Multiprocessing

Q9) a) What is a program bug? What is debugging? **[4]**

b) What is a file management system? **[4]**

c) Give some examples of multimedia applications in education. **[4]**

OR

Q10)a) What is a debugger? How does it help a programmer? **[4]**

b) What is a database model? Name the four commonly used database models and describe any two? **[4]**

c) What is transducer? Name two devices that can be categorized as a transducer. **[4]**

Q11)a) What is meant by internetworking? Explain the difference among the following terms: **[6]**

i) Bridge

ii) Router

iii) Gateway

b) What is packet switching? Why is this method used for digital data communication. **[5]**

OR

Q12)a) What is a WWW browser? What types of navigation Facilities are typically supported by modern browsers to help users save time while internet surfing? **[6]**

b) Write short notes on: **[5]**

i) Network Interface Card

ii) ISDN

Total No. of Questions : 12]

SEAT No. :

P1012

[Total No. of Pages : 4

[4661]-14

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

PROBABILITY & STATISTICS

(2008 Pattern) (Semester - I) (510904)

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

Instructions to the candidates:

1) ***Answer any three questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Figures to the right indicate full marks.***
4) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) a) A box contains 10 articles out of which 3 are defective. If a random sample of 5 articles is drawn without replacement, calculate the probabilities that the sample contains **[6]**

i) only one defective.

ii) at least one defective.

b) State and prove Baye's theorem. **[6]**

OR

Q2) a) Explain the terms with example: **[6]**

i) Sample space

ii) Mutually Exclusive Events

iii) Conditional probability

b) A certain firm has plants A, B, C producing 25%, 25% and 50% respectively of the total output. The probabilities of non defective product from these plants are 0.70, 0.80 and 0.85 respectively. An item is selected from the total output of these plants and found to be defective. What is the probability that it is produced by plant C? **[6]**

P.T.O.

Q3) a) Write p.m.f., mean, variance and real life situation where this distribution is used for the following Distribution. **[6]**

i) Poisson distribution

ii) Geometric distribution

b) A continuous random variable has probability density function **[6]**

$F(x) = k(2x - x^2), \quad 0 < x < 2$

$= 0 \quad$ otherwise

find k and $p(x > 1)$.

OR

Q4) a) In a certain factory turning out razor blades, there is a small chance of 0.002 for any blade to be defective. The blades are supplied in packet of 100. Using a poisson distribution calculate the approximate number of packet containing no defective, one defective and two defective blades respectively in consignment of 10000 packets.

(given $e^{-0.2} = 0.8187$). **[6]**

b) A continuous random variable has probability density function **[6]**

$F(y) = k(y + 1), \quad 2 < y < 4$

$= 0 \quad$ otherwise

find

i) k

ii) $p(y < 3.2)$

iii) $p(2.9 < y < 3.2)$

Q5) a) Given the joint density function: **[6]**

$F(x, y) = x(1 + 3y^2)/4 \quad 0 < x < 2, 0 < y < 1$

$= 0 \quad$ otherwise

Find

i) Marginal Densities $g(x), h(y)$

ii) $F(x \mid y)$

iii) $P(\frac{1}{4} < x < \frac{1}{2} \mid y = 1/3)$

b) Write a short note on uniform distribution. **[5]**

OR

Q6) a) Define the following terms: **[5]**

i) Continuous Random Variable

ii) Cumulative Distribution function

iii) Variance of a continuous random variable

iv) Gamma Distribution

v) Normal Distribution

b) A continuous random variable has probability density function **[6]**

$F(y) = k(y + 1), \quad 2 < y < 4$

$= 0 \quad$ otherwise

find

i) k

ii) $p(y < 3.2)$

iii) $p(2.9 < y < 3.2)$

SECTION - II

Q7) a) What is random sampling? Explain sampling with replacement and sampling without replacement. **[5]**

b) Prove that X is an unbiased estimator for μ. **[6]**

OR

Q8) a) 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. **[6]**

b) Describe maximum limit theorem. **[5]**

Q9) a) Write a short note on student's *t*-distribution. **[6]**

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 X is normally distributes with mean μ and variance σ^2/n. **[6]**

OR

Q10)a) What is maximum likelihood estimator? Explain the method to obtain maximum likelihood estimate. **[6]**

b) Explain the following terms: **[6]**

i) Critical region for the test

ii) Type I and type II errors

iii) Null hypothesis and research hypothesis

Q11)a) Describe chi-square steps for hypothesis or significance. **[6]**

b) Write a short note on P-Chart. **[6]**

OR

Q12)a) What is the purpose of SQC (Statistical Quality Control)? What is its meaning and what are the various types of measures? **[8]**

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

Total No. of Questions : 12]

SEAT No. :

P1041

[Total No. of Pages :2

[4661] - 201
F.Y. M.C.A. (Engineering)
JAVA PROGRAMMING
(2013 Course) (Semester - II) (310909)

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

Instructions to the candidates:

1) ***Solve 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) ***Figures to the right indicate full marks.***
4) ***Assume Suitable data if necessary.***

Q1) a) What is variable? What is the difference between variable and constant? **[4]**

b) Explain why java is called platform independent language? **[4]**

OR

Q2) a) What is JVM? Describe the process of building and running Java programs. **[4]**

b) What is Java? What is the difference between C and Java? **[4]**

Q3) What is interface? What is the difference between class and interface? Give an example where interface can be used to support multiple inheritances. **[8]**

OR

Q4) What is abstract class? What is the difference between abstract class and final class? Give one example of each. **[8]**

Q5) a) What is an inheritance? Explain multilevel inheritance with example. **[5]**

b) Explain use of a super keyword in inheritance with example. **[4]**

OR

P.T.O.

Q6) a) Explain package in java with example. **[5]**

b) What is an interface? Explain method of creating an interface. **[4]**

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

OR

Q8) What is the need of exception handling? With example explain how exception can be caught in a program. **[8]**

Q9) What is java applet? Write a program using applet to draw circle within rectangle which is filled with blue color. **[8]**

OR

Q10) What is java layout manager? Explain any two layout managers for Java AWT with example. **[8]**

Q11) a) What is event Listener class? List and explain different events Listener interface. **[5]**

b) Short notes on :

i) JButton

ii) Jframe **[4]**

OR

Q12) a) Write a program using applet to draw oval and triangle within rectangle. **[5]**

b) Short notes on :

i) JCheckBox

ii) JTree **[4]**

Total No. of Questions : 12]

SEAT No. :

P1042

[Total No. of Pages : 3

[4661] - 202
F.Y. M.C.A. (Engineering)
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 × N, using Simple transpose method. Comment on the time analysis. **[6]**

b) What is data structure. **[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 550, find the address of element A[15][25] **[8]**

Q3) a) Write Pseudo C code for deleting first node, last node and the node from a specified position in the circular linked list. **[6]**

b) What is dynamic memory allocation? **[2]**

OR

Q4) Write an algorithm for insertion & deletion of an element from doubly linked list with graphical presentation. **[8]**

Q5) a) Convert the following infix expression to postfix using stacks. Show the contents of stack after every pass.

(a + b * c ^ d) * (e + f / d) **[6]**

P.T.O.

b) What is queue? Give array implementation of queue. **[3]**

OR

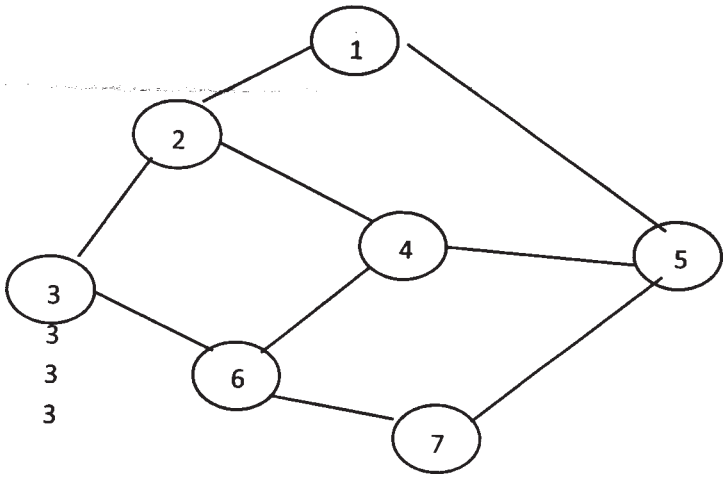
Q6) a) Evaluate the following postfix expression with given values by showing contents of stack.

AB ^ C*D-EF/GH+/+

A = 4, B= 2, C= 3, D = 3, E = 8, F = 4, G = 1, H = 1. **[6]**

b) What is priority queue? Explain it with suitable example. **[3]**

Q7) a) For the following graph, give the result of DFS and BFS traversals. Starting vertex is 1. **[6]**



b) Explain the process of converting general tree to binary tree with suitable example. **[3]**

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.

26, 5, 37, 1, 61, 11, 59, 15, 48, 19 **[4]**

b) Write a C/C++ non recursive function for binary search. **[4]**

OR

Q10)a) Sort the following numbers using Quick Sort. Show the steps in each pass.

56, 10, 84, 28, 0, –13, 47, 94, 12, –2 **[6]**

b) Describe the following with respect to sorting

i) Sort Order ii) Sort Efficiency **[2]**

Q11)a) Explain collision resolution techniques in Hashing. **[6]**

b) Compare Sequential and Index Sequential file. **[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. :

P1043

[Total No. of Pages : 2

[4661] - 203
F.Y. M.C.A. (Engineering)
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 indicate full marks.***
3) ***Use of probability table, electronic pocket calculator is allowed.***
3) ***Assume Suitable data if necessary.***

Q1) a) Explain in brief application of web technologies in E-commerce. **[6]**

b) What is Domain & Web Hosting? **[3]**

OR

Q2) a) Explain 3 tier architecture with e.g. **[6]**

b) Differentiate between static & dynamic websites. **[3]**

Q3) a) Explain how & when to use the following HTML elements / tags in a web page for design. Illustrate with suitable example.

i) Frame ii) Heading iii) Table **[6]**

b) Explain casading Style Sheets and their use. **[3]**

OR

Q4) a) Write a short note on HTML text formatting tags with example. **[5]**

b) Explain types of CSS? Which type of CSS is good for developer & Why? **[4]**

Q5) a) Explain client side & server side scripting. **[4]**

b) Explain with example primitive data type of VBScript. **[3]**

OR

P.T.O.

Q6) a) Explain DHTML with their advantages. **[4]**

b) Explain java script execution enviroment. **[3]**

Q7) a) What do you understand by following terms with example

i) Use of JavaScript for FORM Validations.

ii) JavaScript variables. **[6]**

b) Explain following Terms and illustrate with code examples

i) FOR Loop ii) BREAK Loop **[3]**

OR

Q8) a) Describe the Click, Focus, Load & submit events with their attributes & tags in JavaScript. **[6]**

b) Explain event handling in Javascript. **[3]**

Q9) a) What is XML? Explain its features. **[6]**

b) Explain DOM parser. **[3]**

OR

Q10)a) Explain in detail DTD with its example. **[6]**

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

Q11)Write PHP Code to accept & display voter details from voter. After successful insertion display voter details in proper format (Assume suitable structure).**[7]**

OR

Q12)Write PHP Code to display list of senior citizens from citizen table. (Assume suitable table structure). **[7]**

Total No. of Questions : 12]

SEAT No. :

P1017

[Total No. of Pages : 3

[4661]-24

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

MICROPROCESSOR APPLICATIONS

(Semester - II) (510912) (2008 Course)

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

Instructions to the candidates:

1) ***From Section - I, answer (Q1 or Q2), (Q3 or Q4), (Q5 or Q6).***
2) ***From Section - II, answer (Q7 or Q8), (Q9 or Q10), (Q11 or Q12).***
3) ***Answers to the two sections should be written on separate answer books.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Figures to the right indicate full marks.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain various flag registers in 8085. **[4]**

b) Explain the functioning of the following pins of 8085 microprocessor. Indicate their activation status. **[8]**

i) restart interrupt

ii) Address latch enable

iii) Input output/Memory

iv) READY

OR

Q2) a) Explain the concept of tri-state logic. Explain unidirectional and bidirectional buffer with neat diagram and truth table. **[8]**

b) Explain Arithmetic and logical group of 8085 microprocessor. **[4]**

Q3) a) Draw and explain Timing Diagram of MOV M, R instruction. **[6]**

b) What is a Stack? Explain push and pop operation of stack using suitable example. **[5]**

OR

P.T.O.

Q4) a) Explain any 3 machine cycles of 8085 microprocessor. **[3]**

b) Write 8085 Assembly language program to add 16 bit data. **[8]**

Q5) a) Discuss interfacing with a matrix keyboard. **[8]**

b) Explain the functions of the RD(bar) & WR(bar) signals of the 8085 Microprocessor. **[4]**

OR

Q6) a) What are 8255 initialization Operating Modes. **[6]**

b) Explain the I/O interfacing Techniques of 8085 MPU. **[6]**

SECTION - II

Q7) a) Give details of hardware interrupt and software interrupt of 8085. **[8]**

b) What is a purpose of RIM and SIM instruction? Explain SIM instruction. **[4]**

OR

Q8) a) Draw and explain the pin diagram of 8253. **[8]**

b) Explain control word register format of 8253 Interval timer. **[4]**

Q9) a) Draw and explain the programmer's model of 8086. **[8]**

b) Explain Minimum mode operation of 8086. **[4]**

OR

Q10)a) For the following instruction compute the address of memory operand for 8086 microprocessor. **[4]**

i) MOV AX, [BX]

ii) MOV AL, [BP+SI]

Assume

CS = 1000H DS = 0200H SS = 04000H ES = 0030H

BP = 0010H DX = 0020H SI = 0030H SP = 0030H

Clearly show computation.

b) Explain segmentation with neat diagram. What are the advantages of it? **[6]**

c) What is pipelining? **[2]**

Q11)a) Explain various addressing modes of 8086. **[7]**

b) Explain what is meant by BIOS calls. List and use of any 4 BIOS call. **[4]**

OR

Q12)a) Write 8086 Assembly language program to subtract two hexadecimal numbers. **[8]**

b) List and Explain the Dos Calls for displaying the character(s). **[3]**

Total No. of Questions : 12]

SEAT No. :

P1030

[Total No. of Pages : 2

[4661] - 51
T.Y.M.C.A. (Engg.)
PRINCIPLES AND PRACTICES FOR IT PROJECT MANAGEMENT
(2008 Pattern) (710901) (Semester - V)

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

Instructions to the candidates:

1) ***Answer any three questions from section I and three questions from section II.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) Discuss the importance of management & elaborate the functions of management. **[12]**

OR

Q2) a) What is project management? Describe project management life cycle. **[6]**

b) Explain principles of management. **[6]**

Q3) How information technology can be applied in marketing management? Justify your answer by giving suitable example. **[12]**

OR

Q4) How inforamtion technology can be applied in agriculture & service sector? Justify your answer by giving suitable example. **[12]**

Q5) a) What is Gantt Chart? Draw a Gantt chart for website development phases. **[6]**

b) What is formal technical review of project? **[5]**

OR

P.T.O.

Q6) a) Write a short note on Risk Management. **[6]**

b) Explain the process of budgeting. **[5]**

SECTION - II

Q7) a) Explain the process of revision of project plan. **[6]**

b) Explain how project team is created and team issues are managed? **[6]**

OR

Q8) a) How project progress is tracked? Explain with example. **[6]**

b) Explain tracking of financial obligations in project management. **[6]**

Q9) a) What is importance of group? Explain types of groups. **[6]**

b) How Conflict Management is done in IT projects. **[6]**

OR

Q10)a) List the strategies for resolving destructive conflicts. **[6]**

b) Write a short note on stress management. **[6]**

Q11)a) How supply chain management incorporates IT. **[5]**

b) Write note on **[6]**

i) CMM

ii) Six Sigma

OR

Q12)a) Explain the concepts of knowledge management. **[5]**

b) Write a note on PSP and TSP. **[6]**

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Total No. of Questions : 12]

SEAT No. :

P1032

[Total No. of Pages : 3

[4661] - 53

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

ADVANCED DATABASES

(2008 Pattern) (Semester - V) (710903)

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

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 indicate full marks.***
4) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) What are the factors in estimating the performance of a query? **[4]**

b) Discuss the Linear Search Algorithm in case of selection operation. **[8]**

OR

Q2) Answer the following in short. Each answer carries 2 marks. **[12]**

a) What is the work done by parsing phase in processing a query?

b) How is the time required to transfer b blocks and perform s seeks, calculated?

c) Why is the block read not equal to block write in terms of time?

d) What is the expression to calculate the cost of merge join?

e) What are the steps in duplicate record elimination?

f) What is the concept behind hash join?

Q3) a) Discuss distributed database. **[6]**

b) Explain transaction server process structure. **[6]**

OR

P.T.O.

Q4) a) Discuss Parallel Database Architecture. **[6]**

b) What are data servers? Discuss issues in data server systems. **[6]**

Q5) a) A college maintains a database for students and teachers. A database schema is as given below. **[6]**

name: f_name, m_init, 1_name

address:street _no, city, state, zipcode

person:name, address, date _ of _ birth

teacher: person, department, designation, date _ of_ joining, salary

student: person, course, date _ of_admission, fees

Construct an SQL: 1999 schema definition for this database.Use inheritance where appropriate.

b) Explain array and multiset types in SQL. **[5]**

OR

Q6) a) Explain the need of complex data type with example. **[6]**

b) Write short note on persistent programming language. **[5]**

SECTION - II

Q7) a) Discuss the characteristics of data warehouse. **[6]**

b) Explain the various operations on CUBE. **[6]**

OR

Q8) a) With a neat and labeled diagram, explain the data-warehouse architecture. **[6]**

b) Explain the schema for multidimensional databases. **[6]**

Q9) a) Discuss outlier analysis in detail. **[5]**

b) What is clustering? Explain k means algorithm. **[6]**

OR

Q10)a) Discuss classification. **[6]**

b) Discuss the various text mining approaches. **[5]**

Q11) Answer the following in short. Each answer carries 3 marks. **[12]**

a) What are synonyms and homonyms?

b) What is similarity based retrieval?

c) What are web search engines?

d) What is information retrieval?

OR

Q12) Answer the following in short. Each answer carries 3 marks. **[12]**

a) What is a page rank?

b) What are synonyms and ontologies?

c) What is document indexing?

d) What are the two approaches for relevance ranking using terms?

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Total No. of Questions : 12]

SEAT No. :

P1033

[Total No. of Pages : 2

[4661] - 54

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

ENTERPRISE RESOURCE PLANNING

(2008 Pattern) (Semester - V) (710904)

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

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) Why is ERP important to company? **[6]**

b) What do you understand by the term competitive advantage? How should an organization go about achieving it? **[6]**

OR

Q2) a) Explain the importance of an Integrated System? **[6]**

b) Enlist tangible and non-tangible benefits the ERP can provide? **[6]**

Q3) a) What is change management? How are major challenges related with change management handled while developing ERP system? **[6]**

b) Explain the organizational structure of Implementation team with role? **[6]**

OR

Q4) a) Explain Process Integration with ERP system by Example? **[6]**

b) Explain requirement elicitation process? **[6]**

Q5) a) Explain ERP implementation Strategies used by Indian Companies? **[6]**

b) Explain the ERP Architecture with suitable diagram? **[5]**

OR

P.T.O.

Q6) a) Compare any two available ERP products in details? **[6]**

b) Explain following ERP transition strategies: **[5]**

i) Big Bang Strategy.

ii) Phased Strategy.

Q7) a) Explain the selection criteria for ERP Package? **[6]**

b) Discuss why it is not a good idea to develop an ERP package in-house. **[6]**

OR

Q8) a) Explain the ERP design and customization issues. **[6]**

b) What is BPR? Explain role of IT in implementation in it. **[6]**

Q9) a) What is the difference between CRM and SCM systems? **[6]**

b) Explain Service Oriented Architecture of ERP solutions? **[6]**

OR

Q10)a) How does BPR help in the implantation of ERP systems? **[6]**

b) Explain the differences between domestic and global ERP implementation. **[6]**

Q11)a) Explain the relationship among Production, Scheduling, Manufacturing and Sales and Marketing modules of ERP. **[6]**

b) Explain the Finance and Costing module of ERP. **[5]**

OR

Q12)a) Explain the HRM and Production modules of an ERP. **[6]**

b) Explain the functions of material management module of ERP. **[5]**

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