

UNIVERSITY OF PUNE

[4362]-213

S. E. (Computer and I.T) Examination -

2013

Digital Electronics and

Logic Design

(2008 Pattern)

Total No. of Questions : 12

[Total No. of Printed Pages :3]

[Time : 3 Hours]

[Max. Marks : 100]

Instructions :

(1) Answer Q1 or Q2, Q3 OR Q4, Q5 OR Q6, From section I and Q7 OR Q8, Q9 OR Q10, Q11 OR Q12 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) Black figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

SECTION-I

Q1.

- a) With the help of Quine-McCluskey method, determine the prime implicants for the following equation:

$$F(A, B, C, D) = \sum m(0, 1, 2, 5, 6, 7) \quad [8]$$

- b) Convert the following decimal numbers into their equivalent hexadecimal numbers and octal numbers.

$$(1) 936 \quad (2) 1507 \quad (3) 23.56 \quad (4) 1.025 \quad (5) 100.5 \quad [10]$$

OR

Q2.

- a) Minimize the following functions and realize using minimum number of logic gates.

$$F_1 = \sum m(0, 3, 5, 6, 9, 10, 12, 15)$$

$$F_2 = \sum m(0, 1, 2, 3, 11, 12, 14) \quad [8]$$

- b) Convert the following hexadecimal numbers into their equivalent octal numbers and binary numbers.

$$(1) A72E \quad (2) BD6.7 \quad (3) 0.AF54 \quad (4) DF \quad (5) FF \quad [10]$$

Q3.

- a) Explain the standard TTL characteristics in detail [8]
- b) Draw and explain the working of 2-input CMOS NOR gate. [8]

OR

Q4.

- a) Why is it necessary to interface between TTL and CMOS? Draw and explain the circuit arrangement of interfacing CMOS gate to number of TTL gates. [8]
- b) Explain with the help of circuit diagram 2-input TTL NAND gate with Totem Pole output driver [8]

Q5.

- a) Design and implement BCD to Excess-3 code converter using dual 4:1 multiplexers and some logic gates. [8]
- b) Design 8-bit comparator using IC-7485 [8]

OR

Q6.

- a) Design and implement BCD to Excess-3 code converter using required logic gates. Show truth table K-maps and circuit diagram of your design [8]
- b) Draw and explain 4-bit BCD subtractor using IC 7483. Explain the operation on BCD numbers: 5-7. [8]

SECTION-II

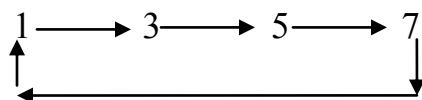
Q7.

- a) What is MOD counter? Draw the internal structure of IC 7490. Design MOD 56 counter using IC 7490 & necessary logic gates. [10]
- b) Draw and explain the working of master slave JK flip flop. Draw excitation table of JK flip flop. [8]

OR

Q8.

- a) Design sequence detector to detect a sequence of 101011. Use JK flip flop in design. Draw the necessary state diagram, state table and logic diagram of you design. [10]
- b) What is lock out condition? Design sequence generator using JK FFs. Avoid lockout condition. [8]



Q9.

- a) What is ASM chart? State and explain the basic components of ASM Chart. Mention application of ASM chart. [8]
- b) Write the VHDL code for full adder in structural and data flow modeling styles. [8]

OR

Q10.

- a) Draw an ASM chart for the 3-bit down counter having one enable line such that:
E=1 (counting enabled)
E=0 (counting disabled)
Also draw the state diagram. [8]
- b) Explain the following statements used in VHDL with suitable examples:
(1) Process (2) case (3) If then Else (4) Signal assignment [8]

Q11.

- a) Explain the functions of following in microprocessor:
(1) ALU (2) Program counter (3) stack pointer (4) instruction register [8]
- b) Implement the following functions using PLA: [8]
 $F_1(A, B, C) = \sum m(1, 2, 4, 6)$
 $F_2(A, B, C) = \sum m(0, 1, 6, 7)$

OR

Q12.

- a) Explain in brief the functions of address bus, Data bus and control bus for a basic microprocessor, [8]
- b) Draw and explain basic architecture of FPGA state difference between PLA and FPGA [8]

UNIVERSITY OF PUNE
[4362]-220
Electrical/Instrumentation/Computer/I.T.
S. E. Examination - 2013
Engineering Mathematics - III
(2008 Pattern)

Total No. of Questions : 12
[Time : 3 Hours]

[Total No. of Printed Pages :6]
[Max. Marks : 100]

Instructions :

- (1) Answer Q1 or Q2, Q3 OR Q4, Q5 OR Q6, From section I and Q7 OR Q8, Q9 OR Q10, Q11 OR Q12 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) Black figures to the right indicate full marks.
- (5) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- (6) Assume suitable data, if necessary.

SECTION-I

Q1. (a) Solve (any three)

[12]

1) $(D^2 - 1)y = \cos x \cosh x$

2) $(D^2 + 2D + D)y = e^{-x} \log x$

3) $\frac{d^2 y}{dx^2} + \frac{1}{x} \frac{dy}{dx} = 2 + \log x$

4) $\frac{dx}{xy^3 - 2x^4} = \frac{dy}{2y^4 - x^3 y} = \frac{dz}{9z(x^3 - y^3)}$

Q.1 (b) An inductor of 0.25 henries is connected in series with a capacitor of 0.04 farads and a generator having alternative voltage given by $12\sin 10t$. Find the charge and current at any time t. [5]

OR

Q2. (a) Solve: (any three) [12]

(1) $(D^2 + 1)y = x \cos 2x$

(2) $(D^2 - 2D + 2)y = x^2 + e^{-x}$

(3) $(D^2 - 2D)y = e^x \sin x$ (variation of parameters)

(4) $((2x + 5)^2 \frac{d^2 y}{dx^2} + 8y - 4(2x + 5) \frac{dy}{dx} = 5 \log(2x + 5))$

Q2. (b) Solve: [5]

$$\frac{dx}{dt} + \frac{dy}{dt} - 3x - y = e^t; \frac{dx}{dt} + 2x + y = 0$$

Q3. (a) If $f(z)$ is analytic, prove that $(\frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2}) |f(z)|^2 = 4 |f'(z)|^2$ [5]

(b) Show that the transformation $w = z + \frac{1}{z} - 2i$ maps the circle $|z|=2$ an ellipse. [5]

(c) Evaluate: $\oint_c \frac{z+4}{z^2+2z+5} dz$ where $c: |z+2i| = \frac{3}{2}$ [6]

OR

Q4. (a) If $f(z) = u+iv$ is analytic function, find $f(z)$ if $u+v=3(x+y) + \frac{x-y}{x^2+y^2}$ [5]

(b) Find the bilinear transformation which maps the points 0,1,2 of z -plane to the points $1, \frac{1}{2}, \frac{1}{3}$ of w plane respectively.

(c) Evaluate:

$$\int_0^{2\pi} \frac{d\theta}{5-3\cos\theta} \quad [6]$$

Q5. (a) Find fourier transform of

$$f(x) = \begin{cases} \cos x + \sin x & |x| \leq \pi \\ 0 & |x| > \pi \end{cases} \quad [5]$$

(b) using fourier integral representation, show that :

$$\frac{2}{\pi} \int_0^{\infty} \frac{(\lambda^2+2)\cos\lambda x}{\lambda^4+4} d\lambda = e^{-x} \cos x, x > 0 \quad [6]$$

(c) find z-transform of (any two) [6]

$$1) f(k) = \frac{\sin ak}{k}, k \geq 0$$

$$2) f(k) = k^2, k \geq 0$$

$$3) f(k) = \begin{cases} 7^k & k < 0 \\ 5^k & k \geq 0 \end{cases}$$

OR

Q6. (a) Find inverse Z-transform of: (Any two) [8]

$$1) \frac{2z^2-10z+13}{(z-3)^2(z-2)} \quad 2 < |z| < 3$$

$$2) \frac{z(z+1)}{z^2-2z+1} \quad |z| > 1$$

$$3) \frac{z^2}{z^2+4} \quad \text{inversion integral method}$$

b) Solve:

$$f(k) - 4f(k-2) = \left(\frac{1}{2}\right)^k, k \geq 0 \quad [4]$$

c) Solve integral equation:

$$\int_0^{\infty} f(x) \sin \lambda x dx = \frac{e^{-a\lambda}}{\lambda}, \lambda > 0 \quad [5]$$

SECTION II

Q.7 (a) Following are the marks of ten students in math's- III and strength of material (SOM) calculate the coefficient of correlation. [8]

M-III	23	28	42	17	26	35	29	37	16	46
SOM	25	22	38	21	27	39	24	32	18	44

(b) Calculate the first four central moments and β_1, β_2 for the following distribution. [9]

x	0	1	2	3	4	5	6	7	8
F	1	8	28	56	70	56	28	8	1

OR

Q8. (a) The mean and variance of Binomial distribution are 6 and 2 respectively

Find: 1) $p(r \leq 1)$ 2) $p(r \geq 2)$ [6]

(b) If the probability that an individual suffers a bad reaction from a certain injection is 0.001, then determine the probability that out of 2000 individuals

1) Exactly 3 will suffer a bad reaction

2) More than 2 will suffer a bad reaction [6]

(c) A manufacturer of envelopes knows that the weight of envelope is normally distributed with mean 1.9 gm and variance 0.01gm. find how many envelopes weighing

1) 2 grams or more

2) 2.1 grams or more

Can be expected in a given packet of 1000 envelopes (Given Area for $z=1$ is 0.3413 and Area for $z=2$ is 0.4772) [5]

Q.9 (a) If $\vec{r}(t) = t^2\vec{i} + t\vec{j} - 2t^3\vec{k}$ then [5]

Evaluate $\int_1^2 \vec{r} \times \frac{d^2\vec{r}}{dt^2} dt$

(b) Prove the following (any two) [6]

$$1) \vec{b} \times \nabla[\vec{a} \cdot \nabla \log r] = \frac{\vec{b} \times \vec{a}}{r^2} - 2 \frac{(\vec{a} \cdot \vec{r})(\vec{b} \cdot \vec{r})}{r^4}$$

$$2) \nabla^2 \left(\frac{\vec{a} \cdot \vec{b}}{r} \right) = 0$$

$$3) \nabla \times \left(\frac{\vec{a} \times \vec{r}}{r} \right) = \frac{\vec{a}}{r} + \frac{(\vec{a} \cdot \vec{r})\vec{r}}{r^3}$$

Q9. (c) Find the directional derivative of $\phi = 4xz^3 - 3x^2y^2z$ at (2,-1,2) in direction towards the point (2,-2,4) [5]

OR

Q10. (a) Verify whether $\vec{F} = (y \sin z - \sin x)\vec{i} + (x \sin z + 2yz)\vec{j} + (xy \cos z + y^2)\vec{k}$ is irrotational and if so find the scalar ϕ such that $\vec{F} = \nabla \phi$ [5]

(b) If \vec{u} and \vec{v} are irrotational vectors then prove that $\vec{u} \times \vec{v}$ is solenoidal vector. [5]

(c) If directional derivative of $\phi = ax^2y + by^2z + cz^2x$ at (1,1,1) has maximum magnitude 15 in the direction parallel to $\frac{x-1}{2} = \frac{y-3}{-2} = \frac{z}{1}$

Then find values of a,b,c. [6]

Q11. (a) Find the work done in moving the particle long the curve $x = a \cos \theta$, $y = a \sin \theta$, $z = b\theta$ from $\theta = \frac{\pi}{4}$ to $\theta = \frac{\pi}{2}$ under the field of force given by

$$\vec{F} = -3a \sin^2 \theta \cos \theta \vec{i} + a(2 \sin \theta - 3 \sin^3 \theta) \vec{j} + b \sin 2\theta \vec{k} \quad [5]$$

(b) Evaluate $\int \int_S (\nabla \times \vec{F}) \cdot \hat{n} ds$ where [6]

$\vec{F} = (x^3 - y^3)\vec{i} - xyz\vec{j} + y^3\vec{k}$ And S is the surface $x^2 + 4y^2 + z^2 - 2x = 4$ above the plane $x=0$.

(c) Evaluate $\int \int_S (x^3\vec{i} + y^3\vec{j} + z^3\vec{k}) \cdot d\vec{s}$ where S is the surface of the sphere $x^2 + y^2 + z^2 = 16$ [6]

Q.12 (a) Evaluate $\int \int_s \frac{\bar{r}}{r^3} \cdot \hat{n} \, ds$ by using Gauss Divergence theorem [5]

(b) Use Stoke's theorem to evaluate [6]

$\int_c (4y\bar{i} + 2z\bar{j} + 6y\bar{k}) \cdot d\bar{r}$ where 'c' is the curve of intersection of $x^2 + y^2 + z^2 = 2z$ and $x = z - 1$

(c) Two of the maxwell's equation are $\nabla \cdot \bar{B} = 0$, $\nabla \times \bar{E} = -\frac{\partial \bar{B}}{\partial t}$. given $\bar{B} = \text{curl } \bar{A}$ then deduce that $\bar{E} + \frac{\partial \bar{A}}{\partial t} = -\text{grad}(v)$ where V is a scalar point function.

UNIVERSITY OF PUNE
[4362]-221
S. E. (Information Technology)
(Semester - I) Examination - 2009
COMPUTER ORGANIZATION
(2008 Pattern)

Total No. of Questions : 12
[Time : 3 Hours]

[Total No. of Printed Pages :4]
[Max. Marks : 100]

Instructions

- (1) Answer Q1 or Q2, Q3 OR Q4, Q5 OR Q6, From section I and Q7 OR Q8, Q9 OR Q10, Q11 OR Q12 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) Black figures to the right indicate full marks.*
- (5) Assume suitable data, if necessary.*

SECTION-I

Q.1 (a) Compare Restoring and Non-Restoring division algorithm. Perform the division using restoring division algorithm.

Dividend = 17; Divisor = 03 [10]

(b) Draw IEEE standards for Single precision and double Precision floating point Numbers. Represent $(309.1875)_{10}$ in single precision and double precision format. [8]

OR

Q.2 (a) Draw Flowchart of Booth's algorithm for non-restoring unsigned division and divide the following unsigned numbers and justify your answer. [10]

Dividend = 1011 ; Divisor = 0011

(b) Draw IAS (Von Neumann) Architecture and explain function of registers in it. [8]

Q.3 (a) State design factors in design of Instruction format. Draw instruction format for INTEL processor and explain various fields in it. [8]

(b) Draw and explain Programmer's model of 8086 [8]

OR

Q.4 (a) Draw timing Diagram for memory read Cycle of 8086 in Minimum Mode and List operations in each T state

(b) State and explain any 4 addressing modes with examples for 8086 processor. [8]

Q.5 (a) Draw and explain single bus organization of the CPU, showing all the registers and Data paths.

(b) Explain design of multiplier control unit using any hardwired design method. [8]

OR

Q.6 (a) Draw and explain general block diagram of the microprogrammed control unit. [8]

(b) Compare horizontal and vertical microinstruction representation. [8]

SECTION-II

Q.7 (a) What is cache Coherence and discuss MESI protocol? [8]

(b) Explain how a memory address is mapped into cache memory address using set associative mapped cache. The main memory is 64K words. The cache memory has 2048 words with block size of 128 words. [8]

OR

Q.8 (a) What is Virtual memory? Explain address translation mechanism for converting virtual address into physical address with neat diagram. [8]

(b) Write short note on (any two) [8]

1) SRAM

2) EPROM

3) RAID

Q.9 (a) What is DMA? Explain DMA Operation with diagram. [8]

(b) Write short notes on keyboard and scanner. [8]

OR

Q.10 (a) Compare :

1) Memory mapped I/O and I/O mapped I/O. [8]

2) Programmed I/O and interrupt driven I/O.

(b) Explain the working principle of the following : [8]

1) Laser Printer.

2) Video displays.

Q.11 (a) Draw and explain loosely coupled multiprocessor configuration with its merits. [10]

(b) Explain function level pipelining with diagram. [8]

OR

Q.12 Write Short note on (Any three): [18]

1) Super Scalar Architecture

2) RISC

3) Cluster

4) UMA

5) NUMA

PUNE UNIVERSITY
[4362]-226 A
S. E. (Information Technology)
Examination-2013
Management and Finance
(2003 Course)

[Total No. of Questions: 6]

[Total No. of Printed Pages: 2]

[Time: 3 Hours]

[Max. Marks: 100]

Instructions:

- (1) Answer **any three** questions from each section.
- (2) Answer **three** questions from section –I and **three** questions from section-II.
- (3) Answers to the **two sections** should be written in **separate answer-books**.
- (4) Neat diagrams must be drawn wherever necessary.
- (5) Black figures to the right indicate full marks.

SECTION-I

- Q. 1. A) Explain the various levels of Management. (8)
B) Discuss the contributes by F.W. Taylor to the thought of Scientific Management (8)
- OR
- A) Explain the following. (8)
i. Division of Labour
ii. Authority and Responsibility
B) Explain the various functions of Management. (8)
- Q. 2. Explain the following in brief
i. SEBI (5)
ii. Economic Goods (5)
iii. Patents Copyrights (6)
- OR
- i. ERP (6)
ii. Utility and its types (5)
iii. Chamber of Commerce (5)
- Q. 3. State the various forms of Business. Explain in details Joint Stock companies with merits and demerits. (18)

OR

Explain the following (18)

- i. Public Sector Undertakings
- ii. Project Organisation Structure
- iii. Line and Staff Structure

SECTION-II

Q. 4. A) Explain different types and sources of recruitment. (8)

B) Define Communication. Explain the process of communication and different types of Communication. (8)

OR

A) Explain the different methods of training. (8)

B) Explain the McGregor's Theory X and Theory Y in brief. (8)

Q. 5. What is Financial Management? Describe the scope and functions of Financial Management. (16)

OR

Explain the following

i. Accounting Rate of Returns (8)

ii. Importance of Balance Sheet (8)

Q. 6. A) Explain Break even analysis with assumption. (9)

B) Explain various types of overheads. (9)

OR

A) Explain any 'two' methods of Capital Budgeting. (9)

B) Explain the following ratios

i. Current Ratio

ii. Debt Equity Ratio

iii. Inventory turnover Ratio

[Total No. of Printed Pages: 8]

[4362]-211

DISCRETE STRUCTURE (2008 Course)

[Max. Marks: 100]

Q.1

A Convert the following English statement in the symbolic form

6

i) If I am not studying maths and I go to a movie then I am in a good mood.

ii) If I am in good mood, then I will studying maths or I will go to a movie.

iii) If I am not in good mood, then I will not go to a movie or I will study maths.

iv) I will go to a movie or I will not study maths if and only if I am in a good mood

B In a town there are 2000 literate person ,of them 60 % news paper

6

A. 55% read newspaper B and 20% read neither A nor B. How many individuals read.

(i) Both the newspaper A and B?

(ii) Only one newspaper?

C Determine whether the following arguments are valid or invalid.

6

(i) If Aaryan study hard, He will obtain first class. He will get a good job. Therefore if Aaryan study hard, he will get a good job.

(ii) If Geeta goes to class. She is on time. But Geeta is late. She will therefore miss the class.

(iii) I am happy if my program runs. A necessary condition for the program to run is it should be error free. I am not happy. Therefore is not error free.

OR

- | | | | |
|-----|---|---|---|
| Q.2 | A | Prove by mathematical induction.
$2 + 5 + 8 + \dots + (3n-1) = n(3n+1)/2$ | 6 |
| | B | Prove the following by using Venn Diagram.
i) $A \oplus B \oplus C = (A \oplus B \oplus C)$
ii) $(A \cap B \cap C) = A - [(A-B) \cup (A-C)]$
iii) $A \cap B \oplus C = (A \cap B) \oplus (A \cap C)$ | 6 |
| | C | What is multiset? For a given multiset find the following operations
$A = \{a, a, b, c, d, d, d, e\}$
$B = \{a, b, d, f, g\}$ | 6 |

$C = \{b, c, e, e, g, h, h\}$
 $D = \{a, d, d, e, f, f, g, h\}$
 Find. (i) $A \cup B$ (ii) $C \cap B$ (iii) $A - D$ (iv) $B + C$

- Q. 3 A Define the following terms with suitable example. 8
- (i) Group
 - (ii) Subgroup
 - (iii) Ring
 - (iv) Integral Domain

- B Let $G = \{\text{Even, Odd}\}$ and binary operation \oplus is defined as . 4

\oplus	Even	Odd
Even	Even	Odd
Odd	Odd	Even

Show that (G, \oplus) is an abelian group.

- C Let $(A, *)$ be a monoid such that for every x in A , $x * x = e$, where e is identity element. Show that $(A, *)$ is an abelian group. 4

OR

- Q. 4 A Define the following terms with suitable example. 8
- (i) Field
 - (ii) Monoid
 - (iii) Homomorphism
 - (iv) Automorphism

- B Consider (3,4) parity check code. For each of the following received words. 4

Find whether an error will be detected?

- i) 0010
- ii) 1001
- iii) 1101
- iv) 1010
- v) 1111
- vi) 0011

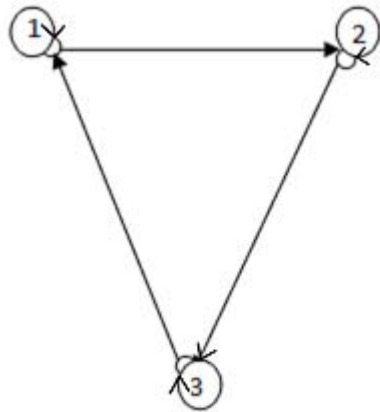
- C What is hamming distance?? Find the minimum distance of the following (2,5) encoding function e . 4

$e(00) = 00000$
 $e(10) = 00111$
 $e(01) = 01110$
 $e(11) = 11111$

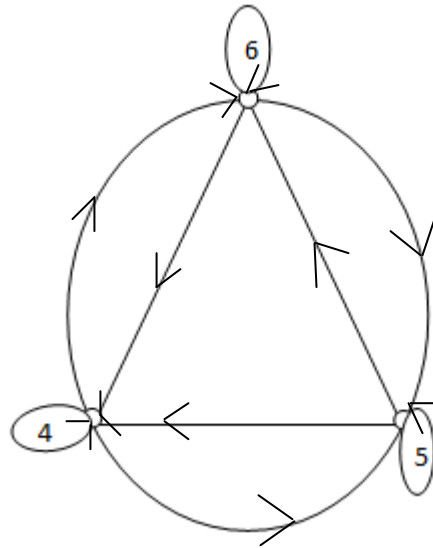
- Q. 5 A Determine whether the relation R whose diagram is given below 6

is an equivalence relation.

I)



ii)



B Let $A=\{1,2,3,4\}$ and $R=\{(1,2),(2,4),(1,3),(3,2)\}$ 5

Find the transitive closure of R by warshall's algorithm.

C For $A=\{1,2,3,\dots,10\}$. Consider the POSET (A,R) whose hasse the 5
diagram below. Find

i) $\text{glb}\{2,3\}$

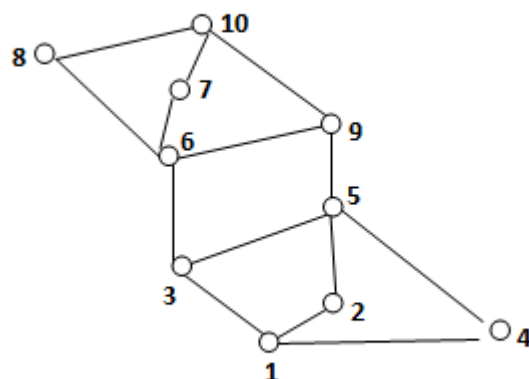
ii) $\text{glb}\{2,7\}$

iii) $\text{glb}\{5,8\}$

iv) $\text{lub}\{3,2\}$

v) $\text{lub}\{4,8\}$

vi) $\text{lub}\{3,5\}$



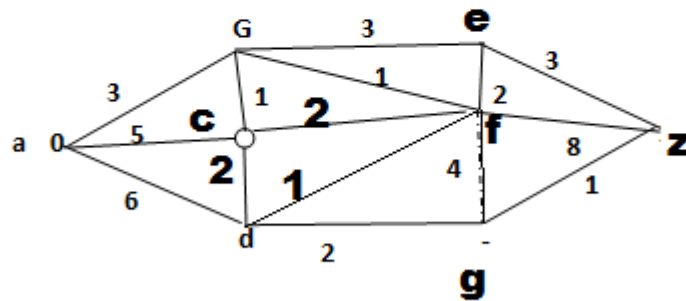
OR

- Q. 6 A Solve the recurrence relation. 6
- (i) $a_n = 2a_{n-1} - a_{n-2}$ with initial conditions $a_1=1.5$ and $a_2=3$
- (ii) $a_n = -3a_{n-1} - 2a_{n-2}$ with initial conditions $a_1=-2$ and $a_2=4$.
- B Identify the types of function for the following statement with justification 4
- i) To each person on the earth assign the number which correspond to his age.
- ii) To each country assign the number of people living in the country.
- iii) To each book written by only one author, assign the author.
- iv) To each country having prime minister assign the prime minister.
- C (c) Let $A=\{1,2,3,4,5\}$ and $\pi=\{\{1,2\},\{3\},\{4,5\}\}$. Find the equivalence relation determined by π and draw the diagraph. 6

SECTION II

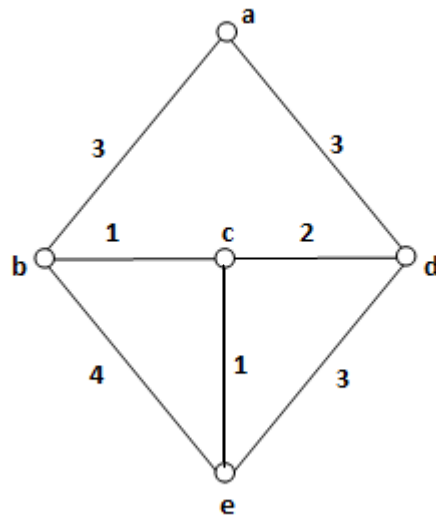
- Q. 7 A Define the following with an example with respect to graph theory. 8
- i) Multi graph
- ii) Isomorphic graph
- iii) Bipartite graph
- iv) Self complementary graph
- v) Planar graph

- B Use Dijkstra algorithm to find the shortest path from a to z. 8



OR

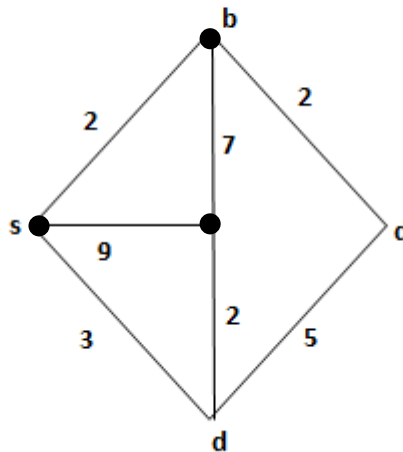
- Q. 8 A State necessary and sufficient condition for the existence of Hamilton path and Circuit in K_{MN} & K_N . 6
- B Show that a complete graph with n vertices consist of $n(n-1)/2$ edges. 5
- C Show that if G is connected planar graph with N vertices, E edges and R regions the $N-E+R=2$ 5
- Q. 9 A Define the following terms with reference to the tree. 6
- i) Binary search tree
 - ii) M-ary tree
 - iii) Tree traversal
- B Use Prim's algorithm to find the minimum spanning tree of the give graph G (below). 5



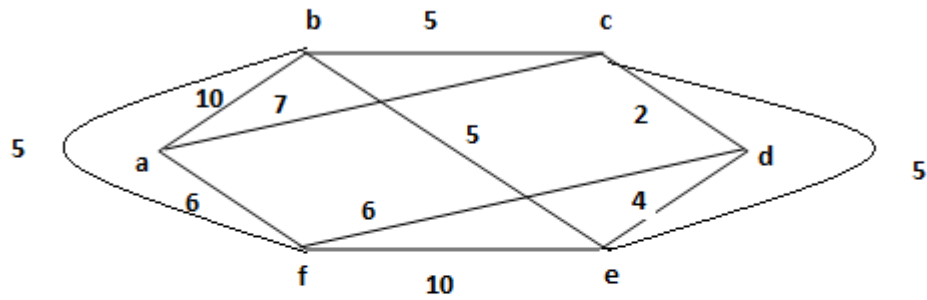
- C Draw a binary tree for input data 200,100,300,50,150,250,400,10,75,125,175. Identify the root, leaf & interior nodes. 5

OR

- Q. 10 A Determine the maximum flow in the following transport network by using labeling procedure. 6



- B Use Huffman coding to encode the following symbol with the frequencies listed. 5
A:0.08,B:0.010,C:0.12,D:0.15,E:0.20,F:0.35. List the prefix code.
- C Find the minimum spanning tree by using Kruskal's algorithm. 5



- Q. 11 A If repetition is not allowed how many 4 digits number can be formed with the digits 1,2,3,4,5,7,8? 6
- i) How many are less than 5000?
 - ii) How many even digits can be formed?
 - iii) How many odd digits can be formed?
- B In how many ways 9 people can be seated at a round table if 6
- i) They can sit anywhere?
 - ii) 2 particular person must not sit next to each other?
- C Five boys and five girls are to be seated in a row. In how many ways they can be seated if 6
- i) All boys must be seated in the five left most seats.
 - ii) No two girls can be seated together
 - iii) Mona and Kiran must be seated together.

OR

- Q. 12 A Two dice are rolled together .Event A denotes that sum of numbers on top faces is even and event B denotes that there is a 4 on at least one of the top faces. Find 6
- (i) $P(A \cup B)$
 - (ii) $P(A \cap B)$

- B A bag A contains 2 white and 4 black balls. Another bag B contains 5 white and 7 black ball .A ball is transferred from bag A to bag B ,then a ball is drawn from bag B. Find the probability that it is white. 6
- C In a university 60 % professors are male and 40 % are females. Also 50 % of male professors are and 60% of female professors know computer programming. Find the probability that a professor knowing computer programming is a female. 6

University of Pune
S.E. (Computer Engineering/Information Technology)
4362-215

Examination - 2013
Humanities and Social Sciences.
(2008 Pattern)

[Total No. of Questions : 6]

[Total No. of Printed Pages :3]

[Time : 3 Hours]

[Max. Marks : 100]

Instructions :

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

Section I

Q1.

- a) Family system is core requirement for social development. Discuss. [8]
- b) India is a Multicultural Society. Explain in brief. [8]

OR

- a) Explain the role of Panchayat Raj System in India. [8]
- b) Explain the Secular Policy of India. [8]

Q2.

- a) Education is important for Economic development. Explain with reference to Indian Education Policy. [8]
- b) Trace out the impacts of Industrial Revolution. [8]

OR

- a) Comment on Evolution of Human Society in brief. [8]
- b) Describe the role of Government in Health Care Sector in India. [8]

Q3.

- a) Industrial Development of India is quite remarkable. Explain in brief. [9]
- b) Agriculture is the backbone of Indian Economy. Discuss. [9]

OR

- a) India is a land of greater opportunities for investments in Infrastructure sector. Explain. [9]
- b) Discuss the role of Technology in generation of the employment for masses. [9]

Section II

Q4.

- a) Discuss the various energy sources in India. [8]
- b) Impact of population growth faced by India for overall Economic development is a serious problem. Comment. [8]

OR

- a) Explain the importance of preservation of Ecological systems. [8]
- b) What are the different types of pollutions? What are the different ways and means of controlling them? [8]

Q5.

- a) Explain the objectives of Five Year Plans. [8]
- b) Explain the basic feature and problems Indian Economy. [8]

OR

- a) Explain the development prospects of Indian Economy in globalised world. [8]
- b) Explain Law of Demand with exceptions. [8]

Q6. A) Write short notes on: [18]

1. WTO
2. Functions of RBI
3. Cost Analysis

OR

- A) Explain the following Ratios. [9]
1. Profitability Ratios
 2. Capital Turnover Ratio
 3. Inventory Turnover Ratio
- B) Discuss the functions of Financial Institutions in India. [9]

UNIVERSITY OF PUNE
[4362]-222
S. E. (Semester - I) Examination -2013
S.E (IT)
Fundamental of Data Structure
(2008 Pattern)

[Total No. of Questions:12]
[Time : 3 Hours]

[Total No. Printed Pages:3]
[Max. Marks : 100]

Instructions :

- 1) *Answers to the two sections should be written in separate answer-books.*
 - 2) *Black figures to the right indicate full marks.*
 - 3) *Assume suitable data, if necessary.*
-

Section I

- Q.1 a) Write C function to interchange two variables without using their variable. [6]
- b) Explain various operators in „c’. [4]
- c) What is structure in C? Give its applications. [6]

OR

- Q.2 a) Explain use of “break” and “continue” keywords in “C” with suitable example. [6]
- b) What do you mean by precedence and associativity of operators? Explain with suitable example. [6]
- c) Determine value of each of the logical expression. Assume (x=5,y=10 and z=6). [4]
- i) $x = z \parallel y > x$
- ii) $x < y \&\& x > y$
- Q.3 a) Explain any four functions used for file handling. [8]
- b) Write a C function using pointer to add two matrices and return the resultant matrix to calling function. [8]
- c) Differentiate between pass by reference and pass by value. [2]

OR

- Q.4 a) Write a C function to add and multiply two matrices. [8]
b) Write a C function to reverse a string without using library functions. [6]
c) Describe the following declarations: [4]
i) int A [10];
ii) float **ptr;
iii) int *p[10];
iv) void (*p)(float x);
- Q.5 a) Explain linear and non- linear data structures. [6]
b) Determine the frequency counts for all the statements in the following [6]
program segment-
i = 10;
for (i=10; i<=n;i++)
for (j = 1; j<i; j++)
x = x+1;
c) What is an abstract data type? Explain with example. [4]

OR

- Q6. a) What is frequency count of a statement? Explain its use in algorithm [6]
analysis.
b) Write an algorithm to find smallest element in a array of integers and [8]
analyze its time complexity.
c) What is persistent data structure? [2]

SECTION -II

- Q.7a) Write a pseudo C function for Binary search and comment on time and [8]
complexity in best, average and worst cases.
b) Consider following numbers. Sort them using “ insertion sort” Comment [8]
on time and space complexity in best, average and worst cases. Show
output after each pass. 54,23,76,45,32,0,-24,30,-12

OR

- Q.8. a) Compare Merge sort and quick sort. Comment on time and space [8]
complexity in best, average and worst cases for both.
b) Consider following numbers. Sort them using “Merge sort”. Show output [8]
after each pass 54,14,88,56,25,11,45,91,30,12,4
- Q.9 a) Explain the two dimensional arrays in details with column and row major [6]
implementation and address calculation in both the cases.

- b) Write an algorithm for multiplication of sparse matrix. Compare simple and fast transpose. Comment on Time and space complexity for both. [10]

OR

- Q.10 a) Write ADT for array. Explain the concept of polynomial representation using link list with suitable example. [6]

- b) Write a pseudo C code for addition of two polynomials and comment on time complexity of them assuming n terms in first polynomial and m terms in other. [10]

- Q.11 a) Compare array and link list. [6]

- b) Write pseudo C code to delete a node from doubly link list. [6]

- c) Represent following GLL. [6]

1) ((a,b) , c, (d,e))

2) (p,q(r,(t,u,s),v,w))

OR

- Q.12 a) Compare Single Link List and Doubly Link List. [6]

- b) Write pseudo C code to add a node in singly circular link list with integer data. [6]

- c) Write pseudo C function to display the singly circular link list storing character data in the reverse manner and comment on time and space complexity of your function. [6]

[Total No. of Questions:12]

[Total No. of Printed Pages: 3]

UNIVERSITY OF PUNE
[4362]-223
S.E. (Information Technology)
Examination-2013
(Computer Graphics)
(2008 Course)

[Time: 3 Hours]

[Max. Marks: 100]

Instructions:

- 1 Answer three questions from Section I and III 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 Black figures to the right indicate full marks.
- 5 Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- 6 Assume suitable data, if necessary.

SECTION I

- | | | | |
|-----------|----|---|-----|
| Q.1 | a. | Consider the line from (5,5) to (13,9). Use the Bresenham's algorithm to rasterize the line. | [8] |
| | b. | Explain filtering technique for anti-aliasing | [4] |
| | c. | Explain raster scan display | [4] |
| OR | | | |
| Q.2 | a. | Explain the term display file and display file interpreter. Explain two data structures for implementing display file. | [8] |
| | b. | Explain DDA line drawing algorithm along with its advantages and disadvantages. | [8] |
| Q.3 | a. | Give 2D transformation matrices for translation and scaling. Prove that two successive 2D-rotations about the origin commute. | [8] |
| | b. | Explain flood fill algorithm for filling polygons | [8] |
| | c. | Give the homogeneous coordinate transformation matrix for counter clockwise rotation about the origin by 90degrees. | [2] |

OR

- Q.4 a. Find the reflection of a point A[5,9] about the line $y=x+5$ [10]
 b. Find the transformation matrix that transforms the given square ABCD to half its size with centre still remaining at the same position. The coordinates of square are: A(1,1), B(3,1), C(3,3), D(1,3). Also find resultant coordinates of square. [8]
- Q.5 a. Explain parallel projections and perspective projection in detail. [8]
 b. Give examples one for each case of 3D objects having [8]
 i) Never a vanishing point,
 ii) at most one vanishing point,
 iii) at most two vanishing point,
 iv) at most three vanishing points.

OR

- Q. 6 a. Explain general parallel projection onto a given plane. [8]
 The view plane passes through a point $V(x_0, y_0, z_0)$ and normal to the view plane is given by $N=n_1i+n_2j+n_3k$. The direction of projection is given by vector $V=a_i+b_j+c_k$. Give your answer stepwise along with transformation matrix at each step.
 b. Write short note on (any two) [8]
 i> Polygon inside Test
 ii> Joystick
 iii> Polygon meshes

SECTION II

- Q. 7 a> Explain HSV and YIQ colour models [10]
 b> Explain in detail the steps for designing animation sequences [8]

OR

- Q.8 a> Explain different methods of controlling animation [8]
 b> Write short notes on [10]
 i> Colour mixing
 ii> RGB colour model
- Q.9 a> What is Jittering? State the advantages of distributed ray tracing. [4]
 b> Explain diffuse reflection [4]
 c> What is the basic purpose of ray tracing algorithm? [8]
 Explain ray tracing to find shadows

OR

- | | | | |
|------|----|---|-----|
| Q.10 | a> | Compare Gouraud and Phong's method of shading | [8] |
| | b> | Explain Specular reflection with figure in detail | [8] |
| Q.11 | a> | Explain cubic spline interpolation methods | [8] |
| | b> | Explain in brief Monte-Carlo method for rendering | [8] |

OR

- | | | | |
|------|----|---|-----|
| Q.12 | a> | How fractals are used to generate fractal surfaces?
Give two examples of fractal surfaces. | [8] |
| | b> | Write a short note on (any two) | [8] |
| | | i> GPU | |
| | | ii> Quadratic Surfaces | |
| | | iii> Texture Mapping | |

[Total No. of Questions: 12]

[Total No. of Printed Pages: 3]

UNIVERSITY OF PUNE

[4362]-224

S. E. (IT) Examination - 2013

Processor Architecture & Interfacing (2008 Course)

[Time: 3 Hours]

[Max. Marks: 100]

Instructions:

- 1 *Answer Q.1 or 2,3 or 4, and 5 or 6 from section-I and Q.7 or 8,9 or 10 and 11 or 12 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 indicate full marks.*
- 5 *Assume suitable data, if necessary.*

SECTION -I

- Q.1 A Calculate physical address for the following 80386 8 instructions. Assume content of 80386 registers as CS=3000h, DS=4000h, SS=1000h, ES=2000h, BX=2341h, DI=4563h, SI=7856h, BP=4567h
- i. MOV[BP+SI+1000h],AX
 - ii. MOV [BX][DI], CX
 - iii. MOV [BP+4455h], AX
 - iv. MOV AX, ES:[BX]
- B What is the necessity of prefetch queue? How does queue work in JUMP and CALL instruction execution? 8

OR

- Q.2 A With the help of suitable timing diagram explain Non-pipelined write bus cycle for 80386. 8
- B State the features of 80386. Draw the real mode register set of 80386 and explain their functions. 8
- Q. 3 A Explain the following assembler directives with example. 8
 i) MODEL ii) MACRO iii) EXTRN iv) PROC
- B Explain any four programming tools for assembly language program with respect to function, input, output & command 8

OR

- Q. 4 A Draw control word format of 8255 PPI and explain Mode 0 and Mode 1 (Input and output). 8
- B Compare the following: 8
 i. DOS and BIOS
 ii. NEAR and FAR procedures
- Q. 5 A Explain the protection mechanism implemented by 80386 using privilege level checking. 12
- B Explain the significance of following in 80386 processor. 6
 i) IOPL ii) VM iii) ET

OR

- Q. 6 A What is the significance of following Descriptor Table Registers? Explain with diagram. 12
 i) GDTR ii) IDTR iii) LTDR
- B What is privileged instruction? Explain its significance with examples. 6

SECTION II

- Q. 7 A What is multitasking? Draw neat diagrams to explain- 12
 i) Task Register ii) Task state segment iii) TSS Descriptor

- B What is the significance of debug registers? Explain DR6 & DR7. 6

OR

- Q. 8 A Compare real mode and protected mode of 80386 with respect to segmentation, interrupts processing, privilege protection and register access. 12

- B Explain the working of confirming code segment. 6

- Q. 9 A Explain the interrupt structure of 8051 microcontroller. How does 8051 assign priority to the various interrupts? 8

- B Explain the following SFR's of 8051- 8
i) TCON Register ii) PCON Register

OR

- Q. 10 A Give significance of following pins in 8051- 8
i) \overline{PSEN} ii) \overline{EA}/V_{pp} iii) ALE iv) $\overline{INT0}$

- B Explain following 8051 instructions- 8
i) DIV AB ii) MOVC A, @A+PC iii) AJMP addr
iv) RETI

- Q. 11 A Write 8051 algorithm to generate square wave of 2KHz frequency using Timer 1 of 8051. Assume crystal frequency of 11.0592MHz. 8

- B State the features of PIC 16F8XX 8

OR

- Q. 12 A Explain the timer and counter operations in Mode 1 and Mode 2 of 8051. 8

- B Explain Mode 1 and Mode 2 of serial communication in 8051 microcontroller. 8

[Total No. of Questions: 12]

[Total No. of Printed Pages: 5]

UNIVERSITY OF PUNE

[4362]-225

S.E. (I.T.) Examination-2013

DATA STRUCTURES AND FILES (2008 Course)

[Time: 3 Hours]

[Max. Marks: 100]

Instructions:

- (i) Answer Question Nos. **1** or **2**, **3** or **4**, **5** or **6** from **Section-I** and Question Nos. **7** or **8**, **9** or **10** and **11** or **12** from **Section-II**.
- (ii) Answers to the two Sections should be written in separate answer-books.
- (iii) Neat diagrams must be drawn wherever necessary.
- (iv) Figures to the right square brackets indicate full marks.
- (v) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- (vi) Assume suitable data, if necessary.

SECTION-I

- Q.1
- (a) What is file? Explain the different types of file organization? [8]
 - (b) What is collision? Explain linear probing with and without replacement for student database with roll numbers: [8]
55, 88, 26, 37, 70, 60, 62, 41, 86, 64
Hash Table Size = 11 and Hash Function = Key mod 11

OR

- Q.2 (a) Write a pseudo code to perform the following operations on Direct Access files: [8]
- (i) To modify record with given key value
 - (ii) To delete record with given key value
 - (iii) Insert record at specific location with given key value
- (b) What do you understand by Hash Table? Why they came into existence? Discuss different Hash functions. [8]

- Q.3 (a) What is stack? Explain the different ways of implementation with application. [8]
- (b) Explain Multistacks. Convert the following expression into postfix form using stack representation of each step. [8]
- $((A + B) * C - (D - E)) * (F + G)$

OR

- Q.4 (a) Write a pseudo code to evaluate following postfix expression: [8]
- 6 2 3 + - 3 8 2 / + * * 3 +
- (b) What is importance of stack in recursion? Explain importance of implicit and explicit stack. [8]

- Q.5 (a) What is priority queue? Explain insert and delete operations in detail using multidimensional array implementation. [8]

- (b) Write a pseudo code to perform insertion and deletion of element in a Circular queue using linked list representation [6]
- C) Explain applications of Queue. [4]

OR

- Q.6** (a) What is Queue? Explain types of queues with application. [8]
- (b) What is dequeue? Write a pseudo code to perform insertion and deletion of element in a Linked implementation of dequeue. [10]

SECTION-II

- Q.7** (a) What is Binary search tree? Write a pseudo for deletion and insertion of a node in Binary search tree. [8]
- (b) Write a non recursive function in C to traverse a binary tree in inorder traversal and preorder traversal. [8]

OR

- Q.8** (a) What is threaded binary tree? Explain with example. [8]
- (b) For a binary tree, the inorder and postorder traversal is as follows: [8]

Inorder:- H,D,I,B,E,A,J,F,K,C,G

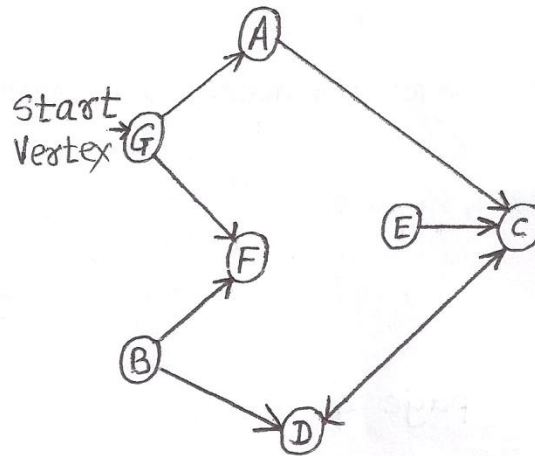
Postorder:- H,I,D,E,B,J,K,F,G,C,A

Create a binary tree & write pseudo code to print non leaf nodes of the tree and find height of the tree.

- Q.9** (a) Explain different types of representation of graphs with [4]

example.

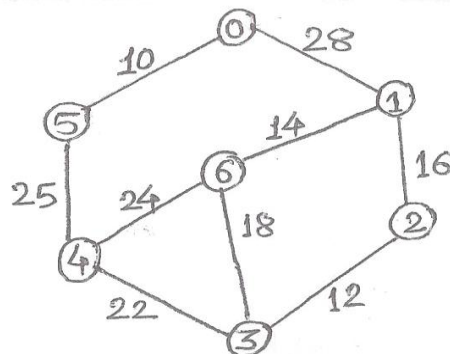
- (b) Write a non recursive pseudo code to perform DFS and BFS traversal for following a graph: [10]



- (c) Define: [4]
- (i) Complete graph
 - (ii) Path

OR

- Q.10** (a) What is topological sorting? Explain with example. [6]
- (b) Write a pseudo 'C' code to find minimum spanning tree using Kruskal's algorithm for following graph: [8]



- (c) What is a minimal spanning tree? How it is different from the shortest path sequence of a given graph? Justify your answer with an example. [4]

- Q.11** (a) Construct an AVL tree by inserting the following elements in the order of their occurrence. Show the balance factor and type of rotation at each stage. [12]

55,66,77,15,11,33,22,35,25,44,88,99

- (b) Write a note on OBST [4]

OR

- Q.12** (a) What is Heap? Sort the following numbers in ascending order using heap sort. [8]

12,2,16,30,8,28,4,10,20,6,18

- (b) Draw a Huffman's tree for the given data set and find the corresponding Huffman codes: [8]

Data	Frequency
A	15
B	6
C	7
D	12
E	25
F	4
G	6
H	1
I	15

ii) Explain phase modulation. [4]

b) Compare FDM and TDM. [8]

OR

Q4 a) Explain BPSK and QAM. Draw constellation diagram of it. [8]

b) Explain the concept of multiplexing. Explain TDM, FDM and WDM [8]

Q5 Write short notes on:

i) Unguided media [6]

ii) Virtual Circuit Network [6]

iii) Modem standards [6]

OR

Q6 a) Compare any two types of the guided transmission media. [6]

b) Explain ADSL modem. [6]

c) Explain structure of circuit switches. [6]

SECTION-II

Q7 a) What is HDLC? Explain with the help of its frame format. [8]

b) Explain any two sliding window protocol. [8]

OR

Q8 a) Explain error detection and error correction in block coding. [8]

b) Explain point-to-point protocol (ppp) [8]

Q9 a) Explain pure and slotted aloha [8]

b) Compare FDMA, TDMA and CDMA [8]

OR

Q10 a) Describe different controlled access protocol mentioned below in [8]

Short i) Reservation ii) Polling iii) Token passing

b) Describe gigabit Ethernet with reference to the following: [8]

i) MAC sublayer ii) Frame bursting iii) Topology

Q11 a) Draw and explain SONET layers in detail. [6]

b) Explain the terms: i) passive hubs ii) Active hubs iii) Repeaters [6]

c) Write short note on Bridges. [6]

OR

Q12 a) Write short note on “Backbone Network” [6]

b) Explain two-layer and three-layer switches. [6]

c) Discuss how an STS multiplexer is different from an add/drop [6]

multiplexer

UNIVERSITY OF PUNE
[4362]-226B
S. E.(Information Technology)Examination - 2013
PROGRAMMING PARADIGM AND METHODOLOGY
(2003 Pattern)

[Total No. of Questions:12]
[Time : 3 Hours]

[Total No. of Printed Pages :3]
[Max. Marks : 100]

Instructions :

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

SECTION-I

- Q1 a) Discuss the various programming language paradigms with their Computational models. Give the suitable diagrammatic representation Of the same. [10]
- b) Given a context free grammar (CFG): $S \rightarrow 0S0/1S1/0/1$ Give a derivation tree for 0 1 1 0 1 1 0 and give the description of string which can be represented by the given CFG. [8]

OR

- Q2 a) Compare functional, imperative and object-oriented programming Paradigm with respect to the following issues: [10]
- i) Syntactic structure ii) Type system and semantics
- b) Explain the machine level language, assembly level language and high level language and high level languages with suitable example. [8]
- In what circumstances does it still make sense to program in machine level and assembly level languages?

- Q3 a) What are the advantages of user defined enumeration types? [4]
b) List out the basic building blocks of a programming language? Explain any four in details. [8]
c) Differentiate between structure and union data types. [4]

OR

- Q4 a) Explain the following control flow statements with any programming Language code: [10]
i) sequence statement
ii) selection statement
iii) loop structure
iv) iterative statement
v) nested loop structure
b) Explain features of object oriented programming languages. [6]
- Q5 a) Write a recursive function to find factorial of a number in c++. Show Steps graphically. [8]
b) What do you mean by storage classes in 'C'? Explain each in brief. [8]

OR

- Q6 a) Define the terms function and macro. How do they differ from each other. [8]
b) Give the suitable code in 'C' to illustrate the call by value & call by reference [8]

SECTION-II

- Q7 a) What is meant by constructor and destructor? What are the different Types of constructors? [8]
b) Explain the concept of compile time polymorphism? Explain the concept of function overriding [8]

OR

- Q8 a) Define the following terms in OOPs: [8]
i) data member
ii) member function
iii) Class
iv) Object
b) Explain the distinction between private, protected and public class members and same distinction for base class in C++ [8]

- Q9 a) Define concept of inheritance. Explain different types of inheritances. [10]
b) What do you mean by exception in c++? Explain exception handling [6]
with a suitable example

OR

- Q10 a) What are the different components of PROLOG program? [8]
b) Explain the following preliminary notation used by PROLOG with [8]
suitable example: i) Facts ii) Existential Query iii) Clauses
iv) Deductions.
- Q11 a) What are the different data types supported by PASCAL? Explain with [6]
suitable example.
b) Explain how a variable declaration is done in functional programming [6]
and logic programming.
c) Write a 'C' program to compare two strings without using library [6]
functions.

OR

- Q12 a) Discuss about how we can achieve modularity in C, C++, LISP and [8]
PROLOG.
b) What are the different file opening modes in 'C'? Explain each in [6]
brief.
c) Explain ternary operator in c with suitable example. [4]

University of Pune
S.E. (Information Technology)
4362-226C
Examination - 2013
Microprocessor Systems
(2003 Pattern)

Total No. of Questions : 12

[Total No. of Printed Pages :3]

[Time : 3 Hours]

[Max. Marks : 100]

Instructions :

- (1) Answer Q. 1 or 2, 3 or 4, and 5 or 6 from section I and Q. 7 or 8, 9 or 10, and 11 or 12 from section II.*
- (1) Answers to the **two sections** should be written in **separate answer-books**.*
- (2) Figures to the right indicate full marks.*
- (3) Neat diagrams must be drawn whenever necessary.*
- (4) Assume suitable data, if necessary.*

Section I

Q1.

- a) Draw and explain the basic architecture of 8086 processor. [8]
- b) List out the different flags in the 8086 microprocessor? Draw and explain the flag register of 8086. [8]

OR

Q2.

- a) Draw and explain the programmers model of 8086. [8]
- b) Draw and explain minimum mode configuration of the 8086 microprocessor. [8]

Q3.

- a) With the help of suitable examples explain the following addressing modes of processor 8086: [10]

- i) Register addressing
- ii) Relative Base Index (with 16 bit displacement)
- iii) Immediate
- iv) Direct
- v) Implied
- b) What is the difference between i) FAR & Near procedures ii) Macros and Procedure. [8]

OR

Q4.

- a) What is the difference between i) .EXE and .COM ii) DOS and BIOS. [10]
- b) What is meaning of Assembler Directives? Explain any four directives. [8]

Q5.

- a) Give the features of 8254. Draw the block diagram and control word format of 8254. [8]
- b) Explain different types of interrupts in 8086. [8]

OR

Q6.

- a) Draw and explain the block diagram of Priority Interrupt Controller (PIC) 8259. [8]
- b) Which are the different operating modes of 8254? Explain any three in detail. [8]

Section II

Q7.

- a) Draw Block Diagram of 8255 PPI and explain. [10]
- b) Which are the different operating modes of 8255? Explain any one in detail. [6]

Q8.

- a) Draw and explain block diagram of USART 8251. [10]

- b) Give the difference between Synchronous and Asynchronous Communication. [6]

Q9.

- a) What is Call Gate? Explain its role in changing P.L. [10]
b) What is physical address of 80386 on “POWER-ON”. Explain. [6]

OR

Q10.

- a) Explain the logical address to Linear address conversion when 80386 is operating in PM mode. Explain necessary registers used for the same. [10]
b) Explain CR0 register format of 80386. [6]

Q11.

- a) Explain Task switching operation in 80386. [8]
b) What is Exception? Explain its types. [6]
c) Explain significance of Busy Bit and NT (Nested Task) Bit. [4]

OR

Q12.

- a) Draw diagram of Pentium Processor Architecture and explain. [10]
b) What is backlink field? Explain its significance. [6]
c) How 80386 switches from RM to PM? [2]