DHARMSINH DESAI UNIVERSITY, NADIAD
BE (IT/CE)--SEM –V
BLOCK EXAMINATION
DESIGN AND ANALYSIS OF ALGORITHMS

Seat No: ____
Max. Marks: 36

Date: 17-10-11

Instructions: (1) All questions are compulsory.
(2) Figures to the right indicate full marks.

Q.1 **Answer the following questions:** **[12]**

A Show that the following equalities are correct: **[2]**
a) $n! = O(n^n)$
b) $\sum_{i=0}^{n} i^2 = \Theta(n^3)$

B Which approach should be used to solve the making a change problem? Justify your answer. **[2]**

C Explain the characteristics of the dynamic programming. Give an appropriate example. **[2]**

D Compare the strassen's matrix multiplication approach with the normal approach. **[2]**

E State the difference between the backtracking and branch and bound. **[2]**

F Give an example when backtracking is preferable over branch and bound. **[2]**

Q.2 **Answer the following questions:** **[12]**

A Solve the following recurrence: **[4]**
F(n) = n ; if n=0 or n=1
= f(n-1) + f(n-2) ; otherwise

B Solve the following knapsack problem using backtracking(m=15): **[4]**

Profits	10	10	12	18
Weights	2	4	6	9

C Mention the general characteristics of the greedy algorithms. Write down the generic template for the greedy algorithm. **[4]**

Q.3 **Answer the following questions:** **[12]**

A Find the LCS for the following strings: "HUMAN", "CHIMPANZEE". **[4]**

B For example, n = 4, w = (5,10,12,13,15,18), and m = 30 for the sum of subset problem. Find the solution using backtracking. (Use fixed size approach to generate state space tree.) **[4]**

C Write an algorithm using which you would solve the 15-puzzle problem. **[4]**

DHARMSINH DESAI UNIVERSITY, NADIAD
Faculty of Technology
Department of Instrumentation & Control Engg.
Subject: - Industrial Instrumentation

B.E. III, Semester: - V[IT] **Date : - 18/10/11**
No. Of hours: 01 **Max. Marks: 36**

Block Examination

Instructions: - 1. Figures to the right indicate maximum marks for that question.
2. Make suitable assumption wherever necessary & mention them clearly.

Q-1. Answer the following in brief. [10]

1. What is Johnson's noise?
2. Define accuracy.
3. State four static characteristics of instrumentation systems.
4. Define SNR.
5. What is the significance of bubbler in air purge system?
6. What is the wavelength of visible light?
7. Name four inferential type of flow measuring instruments.
8. State the working principle of expansion type of thermometers.
9. What is dead zone?
10. Define gauge pressure.

Q-2. Answer the following. [12]

1. Explain any two types of manometers with suitable diagrams.
2. Explain different types of systematic errors briefly.
3. Explain the following types of instruments-
   i. Null and deflection type
   ii. Analog and digital

Q-3. Do as directed.

1. Explain different types of photodiodes with suitable diagrams. [04]
2. Describe the working of a physical pendulum with a suitable diagram and also derive the expressions for time and frequency. [05]
3. Explain working of a C-type of Bourdon tube with a neat diagram. [05]

DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B. E. SEM V INFORMATION TECHNOLOGY
BLOCK EXAMINATION
SUBJECT: ADVANCE MICROPROCESSOR ARCHITECTURE

Date:20/10/2011
Time:1 Hour

MAX.MARK:36

Seat No:_____

Q.1 Answer the following (12)

(a) State true/false and justify. (6)

(1) In 8086 only four segments are active at a time?

(2) Selector 1005H is loaded in LDTR. There will be an exception.

(3)In protected mode of 80386, starting address of memory segment can be anywhere in the 4 Gbytes memory space.

(b) Show how 1234h will be stored in memory starting at address 09000h in 8086 and why. (1)

(c) Why memory of 8086 is set up as two "banks" of half Mbytes each? (1)

(d) If DS=1000h,SS=2000h, BX=1000h, BP=2000H, then instruction mov AL,[BP+1000H] will move the data from 13000H physical memory location.(State True/False and justify.) (2)

(e) What is the lifetime and scope of "Automatic" variable in 'C'? In which memory segment they are created ? Explain how this will help to achieve above characteristics. (2)

Q.2.Answer the following (12)

(A) 1. Explain types of hazards in pipelining and explain various techniques to solve it. (4)

2. Define Thread. Give list of multithreaded processors. (2)

(B) Write a main line program which calls the procedure CEL2FAR to convert Celsius to Fahrenheit. Celsius value has been passes on the stack by main line program and returns the Fahrenheit value in AX. Write main line and procedure program for turbo assembler. Draw the stack frame neatly.

Q.3. Answer the following (12)

(A) The contents of CALL gate descriptor is as follows. (4)

0000h		6
ECh	08h	4
0080h		2
0000h		0

Describe the CALL gate descriptor based on the content and specify what is the 32-bit offset for the Subroutine within the segment?

(B) (6)

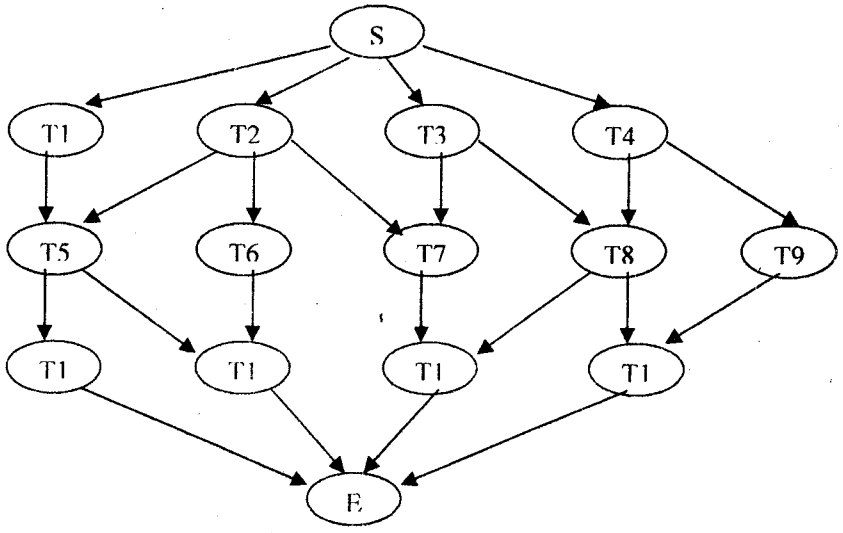

Fig 1: Task Graph and Timings

T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13
3	4	5	4	6	7	6	5	6	8	9	10	9

A Task graph with various tasks is given in above Figure. Assuming that 4 processors are available assign tasks to processors.

(C) The size of IVT and IDT tables are same. State True/False and justify. (2)

Dharmsinh Desai University
Faculty of Technology
BLOCK EXAM INATION(Repeter)
B.Tech –Semester: V (IT)
Subject: Computer and Communication Network

Date: 21/10/2011 **Max Marks: 36**
Time: 2:30 to 3:30 **Seat No._____**

Instructions: 1. Assume the data if necessary and mention it.
2. Figure to the right indicates full marks.

Q.1 Answer the following questions: **[12]**

A In case of local area network the interconnected computers are located in **[1]**
(a)the same room(b) the same building (c) the same campus (d) all of above.

B Which layer of the OSI model concerned with transmission of raw bits over a communication channel? **[1]**

C What is the principle difference between connectionless communication and connection-oriented communication? **[2]**

D When a frame is said to be orphan? How a monitor station handles this frame? **[2]**

E Give the difference between subnetting and supernetting. **[2]**

F Given IP address 200.17.21.128/27. Find the address of the 5th host of the 5^{th} subnet. **[2]**

G Match the following: **[2]**

(1) TCP	(a) Connectionless service
(2) Error control	(b) Load shedding
(3) Forbidden region	(c) Acknowledgements
(4) UDP	(d) Sliding window protocols
(5) Congestion control	(e) Static routing
(6) Flow control	(f) Connection management
	(g) Dynamic routing
	(h) Pipelining

Q.2 Answer the following questions(Attempt any two) **[12]**

A Briefly describe the working of IEEE Standard 802.4,also give a list control frames used in this with their meaning. **[6]**

B What is the remainder obtained by dividing x^7+x^5+1 by the generator polynomial x^3+1? **[6]**

C (1)Explain Token bucket and leaky bucket algorithms. **[3]**
(2)Write short note on OSPF and ARP. **[3]**

Q.3 Answer the following questions: **[12]**

A Find the shortest path from A to F using distance vector routing for the fig. 1. **[5]**

B Briefly explain TCP transmission policy. **[5]**

C If the unit exchanged at data link level is called a frame and unit exchanged at network level is called packets, do frames encapsulate packets or packets encapsulate frames? Explain your answer. **[2]**

OR

Q.3 Answer the following questions: **[12]**

A Draw Manchester and differential Manchester encoding for the following binary pattern 100011110111011 **[4]**

B Give limitations of SMTP. **[3]**

C Diffrentiate:Stop-and-wait Go-Back-N and Selective Repeat protocols **[5]**

DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
BLOCK EXAMINATION
B.E. INFORMATION TECHNOLOGY
SEMESTER V
SUBJECT: DATABASE MANAGEMENT SYSTEM

Date: 22-10-2011
Time: 12:00 To 1:00

Max Marks: 36
Seat No: - _____

Q1.	**Answer the following questions:-**	**[12]**
(1)	What is the purpose of different database abstraction levels?	[2]
(2)	Give Difference between Primary key and Unique Key	[2]
(3)	Every view Serializable schedule is conflict Serializable. State True or False with justification.	[2]
(4)	Explain Deadlock Prevention techniques.	[3]
(5)	Explain system structure of Distributed Database system.	[3]
Q2.	**Answer the following questions:-**	**[12]**
(1)	Draw E-R diagram of Human Resource Management.	[6]
(2)	Explain any deadlock free Concurrency control Protocol.	[6]
Q3.	**Answer the following questions:-**	**[12]**
(1)	Explain Desirable properties of Decomposition.	[6]
(2)	Explain Immediate Database Modification Log Based Technique.	[6]

DHARMSINH DESAI UNIVERSITY, NADIAD.

SATURDAY
OCTOBER 22, 2011.

B.E. SEM. V [CE/IT] EXAMINATIONS
DISCRETE MATHEMATICS
BLOCK EXAM

Seat No.:
Time: 1 hr.
Max. Marks: 36

Instruction: Figures to the right indicate maximum marks for that question.

Q-1 [12]

1. Construct truth table for the $(p \vee q) \vee p$
2. Write grammar that specifies the language $L = \{a^{2i}b^{2j} / i \geq 1, j \geq 1\}$
3. Give an example of semi group which is not monoid.
4. In how many ways can the letters in the words MISSISSIPPI be arranged, if the two P's must be separated?
5. A tree has 2n vertices of degree 1, 3n vertices of degree 2, and n vertices of degree 3. Determine the number of vertices and edges in the tree.
6. Let $(A, \leq)$ be distributive Lattice. Show that if $a \wedge x = a \wedge y$ and $a \vee x = a \vee y$ for some a, then $x = y$

Q-2 ATTEMPT ANY THREE [12]

1. Prove that $K_{3,3}$ and K_5 are non planar graph.
2. A man hiked for 10 hours and covered a total distance of 45 miles. It is known that he hiked 6 miles in the 1st hour and only 3 miles in the last hour. Show that he must have hiked at least 9 miles within a certain period of two consecutive hours.
3. Find a deterministic Finite state machine that recognizes the set: $L = \{0^i 10^j / \ i, j \geq 1\} \cup \{0^k / k \geq 3\}$
4. Write Shortest path algorithm.

Q-3 [12]

1. Prove that $(Z_5, \oplus, \otimes)$ is ring.
2. Find Particular solution of $a_r - 4a_{r-1} + a_{r-2} = (r+1)2^r$
3. Show that $\binom{r}{0}^2 + \binom{r}{1}^2 + \binom{r}{2}^2 + \ldots\ldots + \binom{r}{r}^2 = \binom{2r}{r}$

OR

Q-3 [12]

1. Prove that Finite integral domain is a field.
2. Let $(A, \vee, \wedge, -)$ be a finite Boolean algebra. Let b be any non zero element in A, And $a_1, a_2, \ldots a_k$ be all the atoms of A such that $a_i \leq b$, then $b = a_1 \vee a_2 \vee \ldots\ldots \vee a_k$ is the unique way to represent b as a join of atoms.
3. Prove that the number of vertices is one more than the number of edges in a tree.