Faridpur Engineering College,Faridpur
Class Test-1
Date: 19-02-2020
Subject: Electrical Drives and Instrumentation (EEE407)

me: 30 mins.

FullMarks: 20

1. Define stepper motor. Explain the construction and working principle of a PMSM. 04
2. What is resolution and slewing? Classify stepper motor. 02
3. A stepper motor has 50 rotor teeth 20 pairs of stator poles. Determine (i)step angle (ii)Resolution (iii) Number of steps required for the shaft to make 20 revolutions 05
4. What is transformer? Derive the e.m.f equation of a transformer. 05
5. A 4000/400-V, 50Hz, 1-phase transformer is built on a core having an effective cross-sectional area of 147square-cm and has 80 turns in the low voltage winding.Calculate
   a. The value of maximum flux density in the core 02
   b. The number of turns in the HT side. 02

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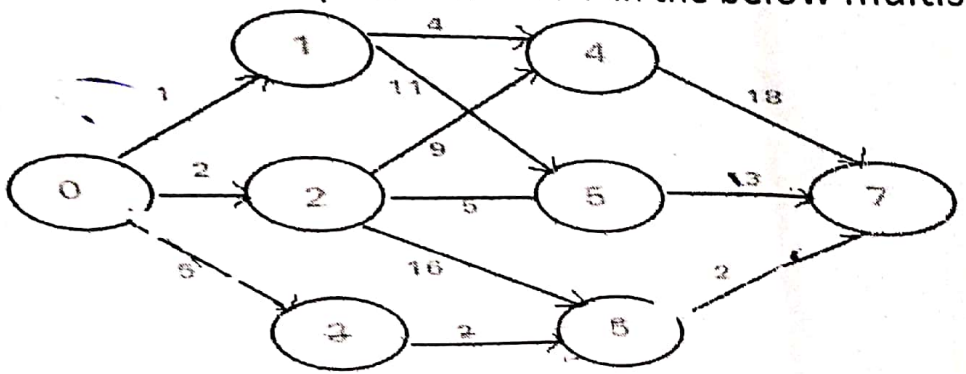
Faridpur Engineering College(Affiliated)

Subject : Computer Science & Engineering

Course : Algorithms Course Code : CSE – 401

1. What is meant by dynamic programming? There are 4 matrices of dimensions 20*30, 30*50, 50*10 and 10*5. Find the minimum number of multiplications required to multiply these matrices and put proper parenthesis using dynamic programming. 4
2. What is meant by the term optimum solution? Write down depth-first search algorithm. 4
3. What are the elements of dynamic programming? Using forward approach calculate the minimum cost path from 0 to 7 in the below multistage graph.: 4



4. What are meant by backtracking, explicit constraint, implicit constraint, live node, dead node, E-node? 4
5. What is N- queens problems? Explain the state space tree for the 4-queens problems. 4

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Subject : Computer Science & Engineering

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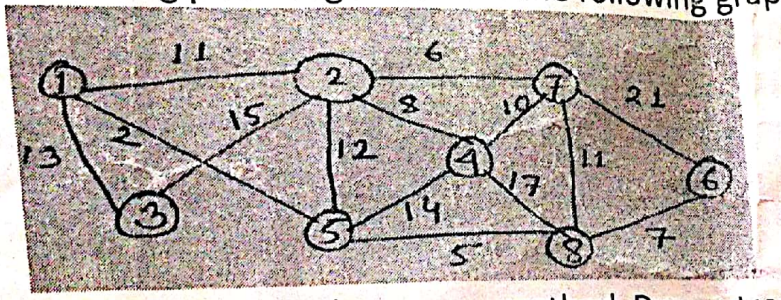
1. Define algorithm. Explain characteristics of an algorithm. 4
2. Define space and time complexity. Explain asymptotic notations with example. 4
3. Write the greedy algorithm to generate shortest path. Compute minimum spanning tree using prims algorithm for the following graph : 4



4. Define divide and conquer method. Draw a tree of calling merge sort, and merge considering low = 1 and high = 10 for the following numbers : 4
   310,285,179,652,351,423,861,254,450,520.
5. Define feasible and optimal solution. Consider the following characters and its frequency value : 4

Character	a	b	c	d	e	f
Frequency	5	9	12	13	16	45

Convert the character into code-word applying the Huffman coding method.

Faridpur Engineering College(Affiliated)

2nd Year 2st Semester - 2020

Class Test – 2

Course : Theory of Computation

Course Code : CSE – 405

Marks :20

Time : 50 Minutes

1. Define Context Free Grammar (CFG). Design CFGs generating the following languages: 3
   i. L={ w|w is a palindrome, $w=w^R$ over $\sum=\{a,b\}$}
   ii. Construct the CFG for the language heaving any number of a's over the set$\sum=\{a\}$.
2. Define the following terms with example: 4
   i. Parse Tree
   ii. Sentential From
   iii. Yield of Parse Tree
   iv. Inherent Ambiguity.
3. Define ambiguity in grammar. Why does ambiguity arise in grammar? Consider the following grammar; 4
   *E->E+E | E*E | (E) | I*
   E->a | b | Ia | Ib | I0| I1
   Is the grammar is unambiguous? If not , redesign it to be unambiguous.
4. Define Chomsky's Normal Form (CNF). Consider the grammar 5
   S-> ASA|aB
   A->B|S
   B->b|€
   i. Are there any useless symbol? Eliminate them if so.
   ii. Eliminate €-Productions.
   iii. Eliminate unit productions.
   iv. Put the grammar into CNF.
5. Define Push Down Automata (PDA). Describe the PDA acceptance by final state and PDA with acceptance by empty stack with example. 2
6. Design PDA that recognizes the following language:
   $L=\{a^n b^m c^n | m,n>=0\}$

University of Dhaka
Faridpur Engineering College(Affiliated)
Subject : Computer Science & Engineering
2nd Year 2st Semester - 2020
Class Test – 1

Course : Theory of Computation
Course Code : CSE – 405
Marks :20
Time : 40 Minutes

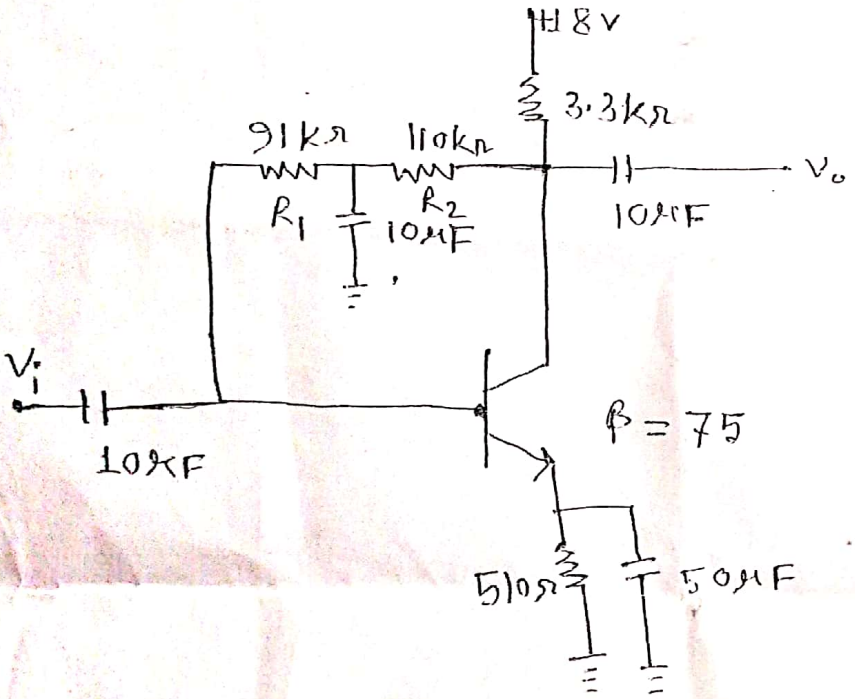
1. What is Automata theory? Mention the major benefits of studying Automata theory? 3
2. Define 4
   i. Alphabets
   ii. Strings
   iii. Languages
   iv. Power of Alphabet
3. What operation can be performed on a language? Distinguish between Closure (L^+) and Kleen's Clouser (L^*). 4
4. Determine the languages for the following statements 3
   i. The set of string with 101 as substring.
   ii. The set of Binary numbers whose values is a prime number.
   iii. The language of all strings consisting of n 0's followed by n 1's for some n>=0.
5. Write down the Formal definition of DFA? Construct DFAs for the following languages 6
   i. Construct a DFA over {a,b} where $L=\{a^m b^n / m,n>=1\}$
   ii. L={w € {0,1}, w represent a binary number is not divisible by 4}
   iii. L={w € {a,b}, every a in w is followed by 'ab'}
   iv. All string over {0,1} except the empty string.

CT 02 Time: 30 min

1. Explain the operation of Monstable Multivibrator with 555 timer. 8
2. Explain the principal and construction of pulse transformer. 6
3. What is clamper circuit? Please solve a mathematics mention on the board. 6

Class Test – 01 , Time : 20 Min

1. What is Q- point ? Determine the dc Level of I_B and V_c for the network. 2+5



2. Explains that CMOS works as an inverter ? 7

3. What do you mean by noise margin ? Write down the characteristics of TTL families. 3+3