



Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Examination Semester: Summer 2017

Course Code: CSE 231 (DAY)

Course Title: Microprocessor and Assembly Language

Course Teacher: All

Time: 1.5 hour

Full Marks: 25

Answer any five of the following questions. Figures in the right-hand margin indicate full marks.

1. a) Explain the purpose of **HOLD** and **HLDA** pins in DMA. 2
- b) Using only MOV, ADD, SUB, INC, DEC and NEG translate the following high level language assignment statements into assembly Language. A, B, C are word variable. 3
 - (i) $C = 3B + 7$
 - (ii) $B = -A$
2. Write a program in assemble language that will read a character from the user. If it is an uppercase letter than it will print "uppercase" or if it is a lowercase letter than it will print "lowercase" or if none of them it will print "not a letter". The sample input/output is given below: 5

Enter a character: X
uppercase
3. In each of the following parts, the first number being added is the content of AX, and the second numbers is the content of BX. Give the resulting value of AX and write down the values of the status flags after each of the following operations? 5
 - i) FFFFh ii) F8B3h
+ FFFFh - D5C9h
----- -----
4. MOV AX, [04375H]. 5

Identify which 8086 memory addressing scheme is used in the above instruction and how many clock cycles are required to execute the instruction. Explain the sequence of 8086 operations in details to execute the above instruction.
5. a) Explain how the data and address lines are multiplexed in 8086 and 8088 microprocessors. Describe the benefits of doing so. 4
- b) What is the result of reset operation in 8086? 1
6. a) Draw the internal architecture of 8086 microprocessor. 3
- b) Find out the offset address of a memory location whose physical address = A9822H and segment address= A4FBH. 2



Daffodil International University
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Mid Term Examination
Course Code: CSE 233
Section: All

Semester: Summer- 2017
Course Title: Data Communication

Time: 1.5 hours

Full Marks: 25

Answer all of the following questions. Figures in the right-hand margin indicate full marks.

- a. You have two computers connected by an Ethernet hub at home. Is this a LAN, a MAN, or a WAN? Explain your reason.
- b. For each of the following four networks, discuss the consequences if a connection fails:
 - i. Five devices arranged in a mesh topology
 - ii. Five devices arranged in a star topology (not counting the hub)
 - iii. Five devices arranged in a bus topology
 - iv. Five devices arranged in a ring topology
- c. When a party makes a local telephone call to another party, is this a point-to-point or multipoint connection? Explain your answer.
- a. Match the following to one or more layers of the OSI model:
 - i. Route determination
 - ii. Communicates directly with user's application program
 - iii. Error correction and retransmission
 - iv. Responsibility for carrying frames between adjacent nodes
- b. How do the layers of the Internet model correlate to the layers of the OSI model? Show the differences between OSI and TCP/IP model.
- a. In the Figure: 1, assume that the communication is between a process running at computer A with port address i and a process running at computer P with port address j. Show the contents of packets and frames at the network, data link and transport layer for each hop.

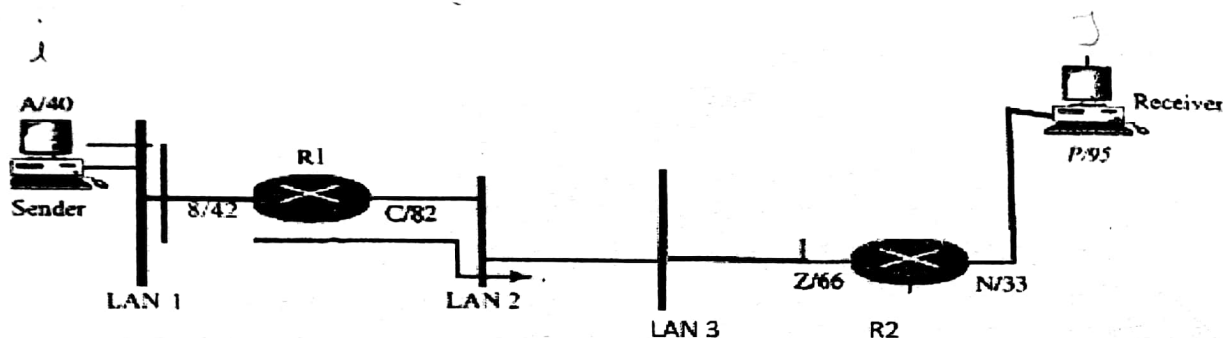
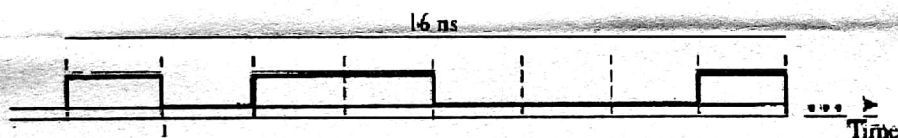


Figure: 1

- b. Write the basic function of ARP and ICMP. 1.0
- a. i. We send a voice signal from a microphone to a recorder. Is this baseband or broadband transmission? 3.5
- ii. What is the phase shift for the following?
- a. A sine wave with the maximum amplitude at time zero
- b. A sine wave with maximum amplitude after $1/4$ cycle
- iii. What is the bit rate for a signal in which 1 bit lasts 0.001 s
- iv. A device is sending out data at the rate of 1000 bps. How long does it take to send out a single character (8 bits)?
- v. What is the bit rate for the signal in Figure



- b. A periodic composite signal with a bandwidth of 2000 Hz is composed of two sine waves. The first one has a frequency of 100 Hz with a maximum amplitude of 20 V; the second one has a maximum amplitude of 5 V. Draw the bandwidth. 1.5
- a. A signal with 200 miliwatts power passes through 10 devices, each with an average noise of 2 microwatts. What is the SNR? What is the SNRdB? 2.0
- b. What are the propagation time and the transmission time for a 2.5-kbyte message (an e-mail) if the bandwidth of the network is 1 Gbps? Assume that the distance between the sender and the receiver is 12,000 km and that light travels at 2.4×10^8 m/s. Which component of the total delay is dominant? Which one is negligible? 2.0
- c. A network with bandwidth of 10 Mbps can pass only an average of 12,000 frames per minute with each frame carrying an average of 10,000 bits. What is the throughput of this network? 1.0



Daffodil International University
Department of Computer Science and Engineering
Faculty of Science and Information Technology
Midterm Examination, Summer 2017

Course Code: CSE 234
Sec: All

Course Title: Numerical Methods
Course Teachers: All

Time: 1.5hours

Total marks: 25

Answer any five from the following six questions:

- ① Suppose a polynomial $p(x)$ is agreed with the data points $(3, 25.14), (3.5, 22.07), (4, 21), (4.5, 18.647), (5, 17.262), (5.5, 16.089)$.
a) Construct a related difference table to find $p(x)$.
b) Find interpolating polynomial $p(x)$ to calculate $p(5.2)$.
c) Find extrapolated value $p(9)$. 5
2. Write algorithm of iterative method. Using this method find the real root of $\cos x - x e^x = 0$ which is correct to three decimal places. 5
3. Define Relative error, Percentage error and Absolute error with example. Round-off the following numbers to four significant figures: 38.46235, 0.70029, 0.0022218, 19.235101.
4. Find the root of the equation $4 \sin x - e^x = 0$ by using Bisection method and correct up to four decimal places. 5
5. Compare Lagrange's and Newton's Interpolation Formula. Applying appropriate method find $\sqrt{122.5}$ 5

$x:$	123	126	129	131
$f(x) = \sqrt{x}$	11.09	11.22	11.35	11.44

6. Find the maximum minimum value of y from the following table: 5

x	0	1	2	3	4
y	0	0.25	0	2.25	16

Department of Computer Science and Engineering
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Midterm Examination **Semester:** Summer 2017
Course Code: 235 (DAY)
Course Title: Introduction to Bioinformatics
Course Teacher: All
Date: 16-07-2017

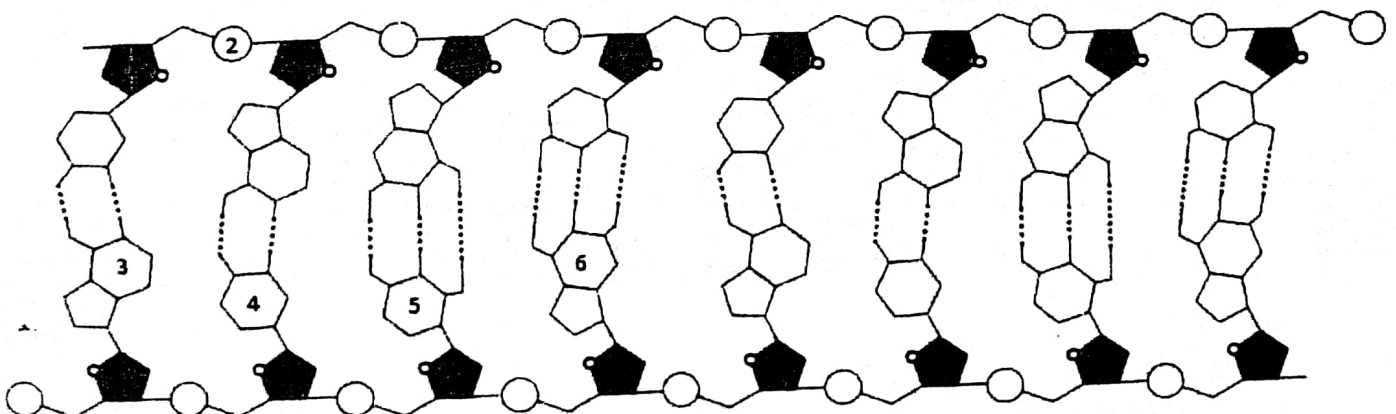
Time: 1.5 hours

Full Marks: 25

Question No. 1 is COMPULSORY. From Question 2, 3 and 4, answer any two. Figures in the right-hand margin indicate full marks.

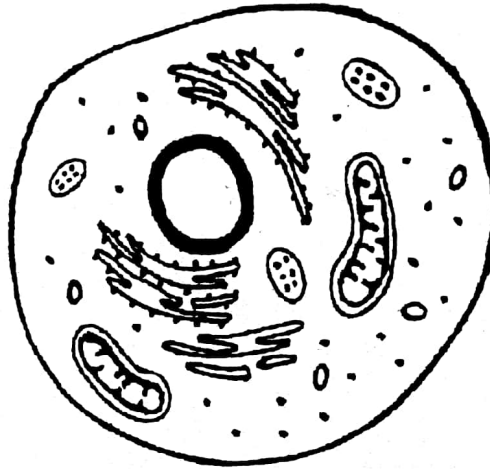
1. What is Okazaki fragment? Describe the DNA Replication Process with appropriate figure. 5
2. (a) What is Bioinformatics? Write some major applications of Bioinformatics. 3
(b) Perform Global Alignment on the following two sequences – 7
Seq1: ACTGATTCA
Seq2: ACGCATCA
[Mismatch: -1, Match: +1, Gap: -2]
3. (a) Write one major difference between each of the following pairs 5
 - i. Genotype VS Phenotype
 - ii. Gene VS Genome
 - iii. Purine VS Pyrimidine
 - iv. Nucleotide VS Nucleoside
 - v. DNA VS RNA

(b) Identify all the 6 components from the figure below. For example, look at the figure. There is a component pointed as 1. Just write out what its name is. You have to do this for all the six components. 3



(c) Is this a prokaryotic cell? Justify your answer with 2 reasons.

2



4. (a) Describe the Central Dogma process with appropriate figure.

5

(b) Write down the challenges of Multiple Sequence Alignment.

3

(c) Identify the mutation types and where it is occurring -

2

i. (Before mutation): ACGTTGAC

(After mutation): ACGTCGTTGAC

ii. (Before mutation): Seq1: ACCTAGCGCC

Seq2: AGGCTCTAGG

(After mutation): Seq1: ACTCTCGGCC

Seq2: AGCGATCAGG