

University of Asia Pacific
Department of Computer Science and Engineering
Mid-Semester Examination, Fall-2021
Program: B.Sc. in CSE

Course Title: Data Communication

Course No. CSE 303

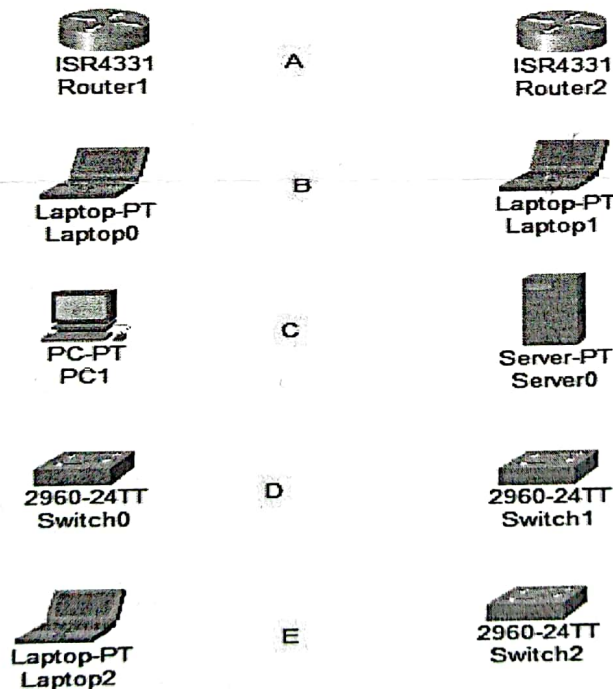
Credit: 3.00

Time: 1.00 Hour.

Full Mark: 60

There are Four Questions. Answer three questions including Q-1 and Q-2.

1. a. A data communication system has five components. **Define** them and describe [10]
their tasks with the proper figure.
- b. You are creating an experimental setup with a few devices in your [10]
laboratory. **Analyze** the type of cable wiring you would consider between the
following connections (A, B, C, D, E) so that proper data communication occurs.



2. a. Suppose you want to measure the effectiveness of a data communication system [10]
that is running in your office. **Illustrate** the fundamental characteristics that
needs to be considered during your measurement.

- b. Based on the following points, list the differences between Hub, Switch, and Router. [10]

POINTS	Hub	Switch	Router
Layer of OSI model			
Main Function			
Data Transmission form			
No. of Ports (approximate)			
Transmission type			
Device intelligence type			
Used in (LAN, MAN, WAN)			
Transmission mode			
Speed			
Type of Address used for data transmission			

3. a. Apply your knowledge of IP addressing and find the error, if any, in the following addresses by applying existing rules of IPV4 format. You must support your answer with a proper explanation. If there is an error, rewrite it correctly, you may use any valid number in the wrong octet. If there is no error, justify whether it is a usable IP address or not. [2*5 =10]
- BA.23.14.67
 - 121.086.45.78
 - 75.45.31.50.314
 - 121.34.7.0
 - 255.255.255.255
- b. For data communications to occur, the communicating devices must be part of a communication system made up of a combination of hardware (physical equipment) and software (programs). From your point of view identify these hardware, software along with their tasks. [10]

OR

4. a. There are four levels of addresses in the OSI model: IP address, MAC address, specific address, and port address. Each address is related to a particular layer of the OSI model. Describe the characteristics, significance of these addresses, and mention the corresponding layer name where they are dealt with proper figures and outlines. [20]

University of Asia Pacific

Department of Computer Science and Engineering

Mid-Semester Examination Fall-2021

Program: BSc in Computer Science and Engineering

Course Title: System Analysis and Design Course No.: CSE 305

Credit: 3.00

Time: 1.00 Hour.

Full Mark: 60

There are Four Questions. Answer three questions including 1 and 2. All questions are of equal value/Figures in the right margin indicate marks.

1. a. Explain agile values in detail. [10]
b. Discuss briefly about agile methodology. [10]
2. Product manager has planned a list of activities to develop a software product as mentioned in the following table.

Activity	Preceding Activity	Time Estimate weeks		
		Optimistic	Most likely	Pessimistic
A	—	4	5	12
B	—	1	1.5	5
C	A	2	3	4
D	A	3	4	11
E	A	2	3	4
F	C	1.5	2	2.5
G	D	1.5	3	4.5
H	B,E	2.5	3.5	7.5
I	H	1.5	2	2.5
J	F,G,I	1	2	3

- a. Determine the expected time of all the activities. [10]
- b. Determine the slack of activities A, B and C. [10]

3. An educational institute maintains data about the following entities:

courses, including course code, course title, credits

program, including program name, total year, total semester and department name

students, including student registration number, student name, email address, mobile number and program enrolled;

instructors, including identification number, instructor name, department, email address, mobile number and designation.

Design and explain the Entity Relationship Diagram (ERD) for the educational institute. [20]

OR

4. Suddenly Anika, Keya, and Hamida have come to visit Tamanna's house. As they met after a long time they wanted to enjoy their time and food together. So they decided to order something from food panda. Food panda is the most popular food delivery app in our country. To order something from the app we need to register in the app using our location and email and as a result food panda will collect our information. Food panda deliver the food through their delivery man and received the payment from us. As the food was delicious Anika was satisfied with their service. So she gave them positive feedback.

Design and explain food panda's system using USE CASE diagram. [20]

University of Asia Pacific
Department of Computer Science & Engineering
Mid-Semester Examination Fall -2021
Program: B. Sc. Engineering (3rd Year/1st Semester)

Course Title: Theory of Computation
 Time: 1.00 Hour.

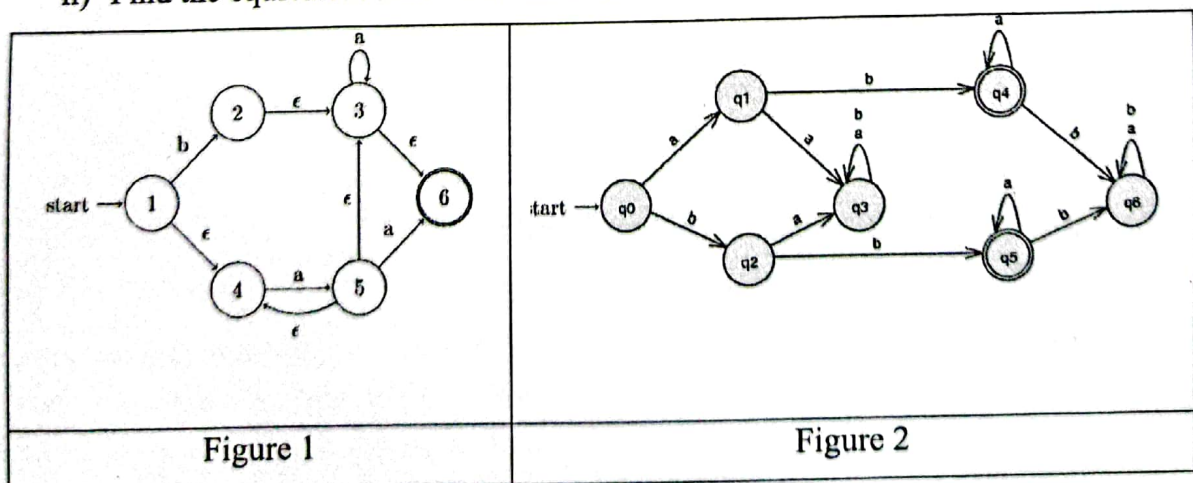
Course No. CSE 307

Credit: 3.00

Full Mark: 60

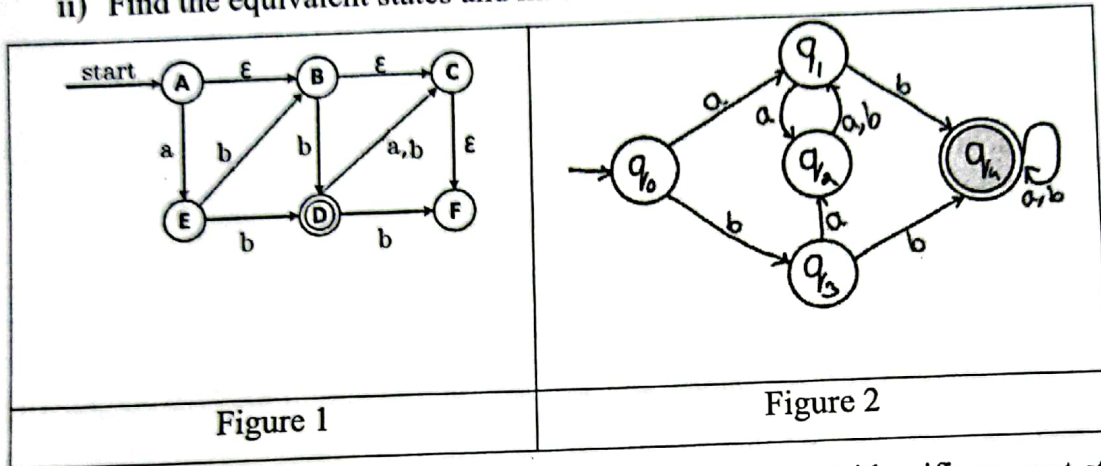
There are **Four** Questions. **Answer questions 1, 4 and (2 or 3).** All questions are of equal value/Figures in the right margin indicate marks.

- 1.a) Differentiate the transition function between Deterministic Finite Automata and Nondeterministic Finite Automata. 6
- b) Let $\Sigma = \{\text{the letters/symbols of your own first name}\}$ 14
 Suppose you want to construct the following language:
 “The set of all strings that accept any string of any length but will not accept your first name as a string in the beginning.”
 Draw a corresponding NFA.
2. Suppose my name is ‘abdul baten’. I use the first letter of my first name and last name in the below figures. Use first letters of your own name (first name and last name) in the figure(s), draw it in your script and then: 6 + 14
- i) Find out the ϵ -closure for each state. (Figure 1)
- ii) Find the equivalent states and minimized DFA. (Figure 2)



3. Suppose my name is 'abdul baten'. I use the first letter of my first name and last name in the below figures. Use first letters of your own name (first name and last name) in the figure(s), draw it in your script and then: 6
+
14

- Find out the ϵ -closure for each state. (Figure 1)
- Find the equivalent states and minimized DFA. (Figure 2)



- 4.a) C identifiers are strings of letters, digits, and underscores. C identifiers must start with a letter or underscore followed by any combination of letters, digits or underscores. 10
Example of some valid variables:

`_`, `a_345`, `i`, `I`, `il2b`, `_88`

- b) Write regular expression for 24-hour clock system. The format is [hh]:[mm]. 10
- [hh] refers to a zero-padded hour between 00 and 24 (where 24 is only used to denote midnight at the end of a calendar day).
 - [mm] refers to a zero-padded minute between 00 and 59.

Example of some valid times:

00:00, 00:01, ..., 00:59, ..., 11:23, ..., 21:44, ..., 23:59

University of Asia Pacific

Department of Computer Science & Engineering

Mid-Semester Examination Fall -2021

Program: B. Sc Engineering (3rd Year/ 1st Semester)

Course Title: Object Oriented Programming II – Visual and Web Programming

Course Code: CSE 309 Credit: 3.00

Time: 1.00 Hours.

Full Mark: 60

There are **Four** Questions. Answer any **Three**. All questions are of equal value/Figures in the right margin indicate marks.

1. Write a python code that has a class named 'MyClass'. That class will have two functions, named 'MaxFromList' and 'DivisibleByFive'. [20]

'MaxFromList' function will return the maximum value from a give list.

'DivisibleByFive' function will print the list elements which are divisible by 5.

2. Perform the following operation on a list named 'MyList' [20]
 - a. Initialize the list with empty elements.
 - b. Append five numbers into the list using Input().
 - c. Sort the list elements.
 - d. Print the list elements.
 - e. Print the length of the list.
 - f. Remove an element from the list.
 - g. Print the last three elements of the list with negative indexing.
 - h. Print the list elements backward.
3. Create a HTML page which contains 3 div sections. Apply background color, font, font size to random options as you might. Also create a form that will take

input a persons first name, last name, gender (Radio Button), check box of 5 different programming language. [20]

Or,

4. Create a random list of 10 float variables, and another list of 10 integer values ranging from 10 to 99. Now create a scatter plot using matplotlib putting integer values in X-axis and float values in Y-axis. [20]

University of Asia Pacific
Department of Computer Science & Engineering
Mid-Semester Examination Fall -2021
Program: B. Sc. Engineering (3rd Year/ 1st Semester)

Course Title: Microprocessors and Assembly Language

Course No. CSE 311

Time: 1.00 Hours.

Credit: 3.00

Full Mark: 60

Answer three questions including Q-1 and Q-2.

1. a) Define microprocessor and briefly explain the tasks performed by it. [10]
Mention the major functions of BIU and EU in 8086 microprocessor.
- b) Evaluate the memory capacity or maximum addressable memory of a [10]
microprocessor containing the following specification:

Data Bus = 16 bit

Address Bus = 24 bit

Illustrate the corresponding memory architecture using bank layout.

2. a) 8086 is a 16 bit microprocessor but 20 bit addresses are too large to fit in [10]
16 bit registers. How can you resolve this issue?
Explain the process of generating physical address from logical address
in 8086 microprocessor.
- b) Suppose, you have 3 best friends named A, B, and C. [10]

CS = (Last 4 digit of your student id) H

IP = (Last 4 digit of your phone number) H

SS = (First 4 digit of your student id) H

SP = (First 4 digit of your phone number) H

Now, find out the physical address of the first instruction to be executed
and the first location of the Stack to be used to execute the code.

3. a) Perform the following operations and mention the values of each of these registers after you execute the operations assuming: [10]

AX = first 4 digits of your student ID

BX = last 4 digit of your student ID

CX = first 4 digit of your best friends student ID

DX = last 4 digits of your best friends student ID

i) MOV AX, DX

ii) INC CX

iii) ADD BX, AX

- b) Represent the flag bits in an 8086 microprocessor using appropriate figure. After the execution of the instructions stated in (Q-3a) show the status of the CF, PF, ZF, SF, OF Flags with proper justification. [10]

OR,

4. a) Let, AX = 4234H and BX = 1234H. [10]
Using these data briefly compare the following instructions:

i) MOV and XCHG

ii) CMP and SUB

iii) Register addressing mode and Immediate addressing mode

- b) Determine the addressing modes of the following instructions providing appropriate justification for your answer: [10]

i) XOR AX, DX

ii) ADD AL, 45

iii) MOV AX, [BX+DI]

iv) MOV AX, [SI]

v) SUB AL, [SI+BP+2000]

University of Asia Pacific
Department of Computer Science & Engineering
Mid-Semester Examination, Fall 2021
Program: B.Sc. in Computer Science & Engineering
Year: 3rd Semester: 1st

Course Code: HSS 301 Course Title: English for Communication Credit Hour: 2

Time: 1 Hour

Total Marks: 20

Read the passage carefully and use the reading techniques *scanning and skimming* to find out answers to the following questions:

There is a famous expression in English: "Stop the world, I want to get off!" This expression refers to a feeling of panic, or stress, that makes a person want to stop whatever they are doing, try to relax, and become calm again. 'Stress' means pressure or tension. It is one of the most common causes of health problems in modern life. Too much stress results in physical, emotional, and mental health problems.

There are numerous physical effects of stress. Stress can affect the heart. It can increase the pulse rate, make the heart miss beats, and can cause high blood pressure. Stress can affect the respiratory system. It can lead to asthma. It can cause a person to breathe too fast, resulting in a loss of important carbon dioxide. Stress can affect the stomach. It can cause stomach aches and problems digesting food. These are only a few examples of the wide range of illnesses and symptoms resulting from stress.

Emotions are also easily affected by stress. People suffering from stress often feel anxious. They may have panic attacks. They may feel tired all the time. When people are under stress, they often overreact to little problems. For example, a normally gentle parent under a lot of stress at work may yell at a child for dropping a glass of juice. Stress can make people angry, moody, or nervous.

Long-term stress can lead to a variety of serious mental illnesses. Depression, an extreme feeling of sadness and hopelessness, can be the result of continued and increasing stress. Alcoholism and other addictions often develop as a result of overuse of alcohol or drugs to try to relieve stress. Eating disorders, such as anorexia, are sometimes caused by stress and are often made worse by stress. If stress is allowed to continue, then one's mental health is put at risk.

It is obvious that stress is a serious problem. It attacks the body. It affects the emotions. Untreated, it may eventually result in mental illness. Stress has a great influence on the health and well-being of our bodies, our feelings, and our minds. So, reduce stress: stop the world and rest for a while.

1. Write 'T' for *True* and 'F' for *False* for the following statements: $5 \times 1 = 5$

- a) Stress cannot create emotional problems. _____.
- b) Stress has no influence on food digestion. _____.
- c) When people are under stress, they remain calm. _____.
- d) Alcohol is used to reduce stress. _____.
- e) Overreacting to petty problems cannot be attributed to stress. _____.

2. Find out synonymous words from the above passage for the following words. $5 \times 1 = 5$

- a) Fear (Para-I) _____
- b) Countless (Para-II) _____
- c) Exhausted (Para-III) _____
- d) Intense (Para-IV) _____
- e) Alleviate (Para-V) _____

3. Write one *literal* and one *figurative* sentence using each word: $5 \times 2 = 10$

- a) Linchpin
- b) Bite the bullet
- c) Rollercoaster
- d) Sunshine
- e) At a crossroads