University of Asia Pacific

Department of Computer Science and Engineering

Program: B.Sc. in CSE

Mid-Semester Examination **Fall-2023** **3rd Year 1st Semester**

Course Code: CSE 309 Course Title: Object Oriented Programming II: Visual and Web Design Credit: 3.0

Time: 1.00 Hour. Full Mark: 20

There are **Three** Questions. Answer all of them. Part marks are shown in the margins.

1. a. Write a python function that takes a number of positional arguments (int) and returns the average and the summation of those numbers. You do not have to take user input. Here is an example of how you will call your function. **[4]** **[CLO1]**

Function call	Function returns
fun(1,2,3,4,5)	3, 15
fun(1,2)	1.5, 3

b. Analyze the provided Python code to determine the final output after its execution. Subsequently, justify your conclusion. **[4]** **[CLO2]**

```
addition = 0
my_list = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
output = my_list[-2:-9:-2]
print(output)
for i in output:
    if(i/2 == 0):
        addition += i

print(addition)
```

Write corresponding HTML scripts to generate the following table. **[4]** **[CLO3]**

Serial No.	Product Name	Product Price
1.	Rice	150
2.	Meat	350
Total		500

4n ,12

3. Imagine you're creating a system to handle various vehicles for a transportation company. Each vehicle has basic details like its brand, model, and manufacturing year. Additionally, different vehicles have specific characteristics, such as mileage for cars, motorcycles, and bicycles. You've decided to build this system using the principles of object-oriented programming, specifically through inheritance. **[2+4+2 =8]** **[CLO3]**

a. Main Class: (at least have 3 attributes)

Create a class named Vehicle to represent the common features shared by all vehicles. This class should include attributes like brand, model, and year of manufacture.

Also, define a method named describe() to provide a description of the vehicle.

b. Subclass: (Must extend Main class and at least have 3 extra attributes)

Develop a subclass called Car, which inherits from the Vehicle class. In addition to the common attributes, the Car class should have an extra attribute to store its mileage.

Implement a method named calculate_mileage() to return the car's mileage.

c. Provide an example illustrating how to create a Car object and utilize its methods.

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Mid-Semester Examination **Fall-2023** **3rd year 1st Semester**

Course Code: CSE 311 Course Title: Microprocessors and Assembly Language Credit: 03

Time: 1.00 Hour Total Marks: 20

There are **Three** Questions. Answer all of them. Part marks are shown in the margins.

1. a. Draw block diagram of a Basic Computer System. Discuss Life Cycle of a Microprocessor. [4] CO1

   b. Differentiate between the followings: [3] CO1
      i. Port and Register
      ii. Stack and Queue
      iii. AX and DX

2. a. Suppose AL= 0FFH and BL= (last two digits of your ID) Hex, find out the situation of status flags for the following instructions: [3] CO1
      i. MOV AL, BL
      ii. ADD AL, BL
      iii. NEG AL

   b. Write down the functions of BIU and mention the elements [2] CO1

3. a. Write the assembly code for the following actions: [6] CO2
      i. Input the first letter of your name
      ii. Display the letter in the next line
      iii. Display your name as a string in the next line with a beep sound

   b. Write an assembly program to swap two 8-bit numbers using a third register. [2] CO2

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Mid-Semester Examination **Fall-2023** **3rd year 1st Semester**

Course Code: CSE 305 Course Title: System Analysis and Design Credit: 3.00

Time: 1.00 Hour. Full Mark: 20

There are **Three** Questions. Answer all of them. Part marks are shown in the margins.

1. Differentiate between Prof. Hoffer's method and Prof. Kendall's method of System Development Life Cycle (SDLC) with respective diagrams. **[4]** **[CO1]**

2. Construct the critical path based on the information presented in the Table below. **[6]** **[CO2]**

Activity	Immediate Predecessor	Expected Time/ Duration (Days)
A	----	2
B	A	3
C	A	4
D	B, C	3
E	D	5
F	D	6
G	E, F	7

3. a. Develop fully attributed Entity Relationship Diagram (ERD) considering following example. **[4]** **[CO4]**

   In a university, a student enrolls in courses. A student must be assigned to at least one or more courses. Each course is taught by a single professor. To maintain instruction quality, a professor can deliver only one course.

   b. Design Data Flow Diagram Level 0 (DFD-0), and Level 1 (DFD-1) for students' course registration system. **[3*2=6]** **[CO4]**

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Program: B.Sc. in CSE

Mid-Semester Examination | **Fall-2023** | **3rd year 1st Semester**

Course Code: CSE307 | Course Title: Theory of Computation | Credit: 3.00

Time: 1.00 Hour. | Full Mark: 20

There are **Two** Questions. Answer all of them. Part marks are shown in the margins.

1. a. **Define** the five points of Deterministic Finite Automaton? [5] [CO1]

   b. **Define** alphabet? Suppose if $\sum$ is an alphabet and $\sum$={a,b}, then **build** $\sum^3$. [5] [CO1]

2. a. Let $\sum$ = {0,1} [5] [CO2]

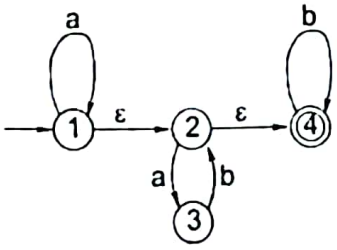
   Suppose you are wanting to **construct** the following language:

   "The set of all strings that have 001 or 100 as a substring."

   i) **Build** the regular expression for this language.

   ii) **Build** (draw) the corresponding NFA.

   b. **Construct** DFA from the following ϵ-NFA using transition table. [5] [CO2]



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Program: B.Sc. in CSE

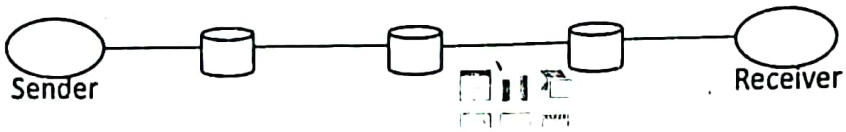
Mid-Semester Examination **Fall-2023** **3rd year 1st Semester**

Course Code: 303 Course Title: Data Communication Credit:3.0

Time: 1.00 Hour Full Mark: 20

There are **Three** Questions. Answer all of them. Part marks are shown in the margins.

1. a. [5] [CO1]



There is a network with a bandwidth of 1 Mbps. A message of size 1000 bytes has to be sent. A packet-switching technique is used. Each packet contains a header of 100 bytes. Out of the following, calculate the number of packets by which the message must be divided so that the total time taken is minimum-

i. 1 packet
ii. 10 packets
iii. 20 packets

b. What network topologies should be considered for optimizing the connectivity and performance of the Computer Science and Engineering (CSE) department at the UAP campus? How can be the best solution identified?" [2] [CO1]

2. Construct the digital signal diagrams using the following line coding schemes if you want to send 2 data packets: 11111111 and 10101010 to your friend. Briefly compare these line coding schemes and discuss which scheme would be better. [6] [CO2]

i. Manchester
ii. Differential Manchester
iii. NRZ-I

3. a. Specify the data communication model's architecture or its individual components. [2] [CO1]

b. Describe the OSI networking model, including an overview of each layer and the associated protocols [3] [CO1]

c. In wireless local area networks (WLANs), outline the major protocols in the IEEE 802.11 standard to the promote effective communication in terms of data rate, bandwidth, and frequency comparison? [2] [CO2]

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Department of Computer Science & Engineering
Program: B.Sc. in Computer Science & Engineering

Mid-Semester Examination **Fall-2023** **3rd year 1st semester**

Course Code: HSS (CSE) 301 Course Title: English II: English for Communications

Credit Hour: 2.0 Time: 1 hour Total Marks: 20

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

Minimalist Living

Minimalist living is a lifestyle that advocates for simplicity, intentionality, and the removal of excess in all aspects of life. At its core, minimalist living is about focusing on what truly matters, embracing the idea that less can be more, and finding contentment in the absence of material possessions. In a world often overwhelmed by consumerism and a constant desire for more, minimalism offers a refreshing approach. It encourages individuals to declutter their physical spaces, owning only what they need and cherish, and discarding the rest. This process of purging possessions can be liberating, as it allows one to let go of the burden of materialism and instead concentrate on experiences and personal growth. Minimalist living extends beyond tangible belongings; it also applies to time, relationships, and commitments. By prioritizing what truly adds value to one's life and eliminating unnecessary distractions, individuals can focus on meaningful relationships, personal development, and pursuits that align with their passions and values. Living with less does not imply sacrificing comfort or joy; rather, it emphasizes finding joy in simplicity and appreciating the little things. Minimalism encourages creativity in making the most of limited resources and fosters a greater sense of gratitude for what is already present. *(202 words)*

a. Summarize the above text using not more than 70 words. **5x1 = 5**

b. Find out synonymous words from the above passage for the following words. **5x1 = 5**

i. Fulfillment = Complete
ii. Removing = Deleting
iii. Touchable =
iv. Line up =
v. Nurture =

2. Transform the following sentences into interrogative forms as directed. **5x1 = 5**

a. Jim sells <u>20 kilos</u> of sugar a day.

b. She has completed the project on time. (yes-no)

c. Afnan and Adnan go shopping <u>once a week</u>.

d. Sarah had to <u>cancel her flight</u> because of a security check.

e. They reached the summit of the mountain. (yes-no)

3. Write short notes on any two of the following. 2.5x2 = 5

a. Inference

b. Denotations vs connotations

c. Sender's credibility

GOOD LUCK!