BARANI INSTITUTE OF MANAGEMENT SCIENCES

Mid-Term Exam Fall Semester 2021

Course Title: Computer Network	**Course Code:** CS-577 4(3-2)
Discipline /Program: BSCS/BSIT	**Total Marks: 36**
Time allowed: 1 hour 15 minutes	**Instructor's Name:** Ms. Sadia Zar

Question 01: [9 marks]

a) What are the advantages of multipoint connection over a point-to-point connection?

b) Which layers in the Internet model are the network support layers?

c) Dialog control and synchronization are two responsibilities of the session layer in the OSI model. Which layer do you think is responsible for these duties in the Internet model? Explain your answer

Question 02: [12 marks]

a) If a periodic signal is decomposed into five sine waves with frequencies of 100, 300, 500, 700, and 900 Hz, what is its bandwidth? Draw the spectrum, assuming all components have a maximum amplitude of 10 V.

b) A non-periodic composite signal has a bandwidth of 200 kHz, with a middle frequency of 140 kHz and peak amplitude of20 V. The two extreme frequencies have an amplitude of 0. Draw the frequency domain of the signal.

c) Can we say if a signal is periodic or non-periodic by just looking at its frequency domain plot? How?

Question 03: [15 marks]

a) 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?

b) If the bandwidth of the channel is 5 Kbps, how long does it take to send a frame of 100,000 bits out of this device

c) How many bits can fit on a link with a 2 ms delay if the bandwidth of the link is
   1. 1 Mbps?
   2. 10 Mbps?
   3. 100 Mbps?

BARANI INSTITUTE OF MANAGEMENT SCIENCES

MID Term Exam

Fall Semester 2021

Course Title: Introduction to Economics	**Course code: Econ-301**
Program: BSCS-6 (A & B)	**Total marks : 18**
Time Allowed: 1 hour and 15 mints	**Instructor name: Fizza Shaukat**

Answer the following questions.

Q1: Logically Explain: **(Marks-6)**

i. Why Demand curve is negatively sloped?

ii. What changes will take place in Total utility, when Marginal Utility remains positive, Marginal utility becomes '0', Marginal Utility is negative.

Q2: Differentiate between the following: **(Marks-6)**

i. Cardinal utility and ordinal utility

ii. *Slope* and elasticity.

iii. Demand and quantity demanded.

Q3: If the price of rice per Kg increases from Rs 200 to Rs 300, the quantity demand reduced from 10 Kg units to 8 Kg. Keeping the answer in view if price change by 7% , what happened to Quantity demand of the commodity. **(Marks-6)**

19-Ari

Barani Institute of Management Science

Affiliated with PMAS-Arid Agriculture University Rawalpindi

Department of Management Sciences

Mid-Term Exam — Spring Semester 2021

Course Title : Pak Studies	Course Code : SSH- 302
Discipline /Program : BSCS- 6 A/B	Total Marks : 12
Time Allowed : 1:30 Hours	Instructor's Name(s):Ms. Misbah Riaz
Student Name:	Student ID:

Note: Attempt all questions, all questions carry equal marks.

Q1: Describe the importance of the Ideology of Pakistan?

Q2: Write a comprehensive note on two Nation Theory?

Barani Institute of Management Sciences (BIMS)

Mid Exam Fall 2021

Course No.: CS-632 **Course Title: Artificial Intelligence**

Total Marks: 18 **Date of Exam: 15-12-2021**

Degree: BSCS **Semester/Section: 6A/6B** **Instructor Name: Dr. Muhammad Imran**

Answer the following questions.

Question 1. Answer the following **(2+3)**

a) Discus the characteristic of expert system explored by waterman.

b) How expert systems can be classified based on expertness, define at least three categories?

Question 2.

1) Discus the heuristic search? Write and dry run the best first search algorithm for the tree construction where we have given the Start state and Goal state and we want to reach the goal state. **(1+4)**

Start

2	8	3
1	6	4
7		5

1	2	3
8		4
7	6	5

Goal

Q.No.3. Consider the following map and the straight line distance to the city entitled "M" from every other city. Find the shortest path from "A" to "M" using A* searching algorithm. Draw the tree structure and trace algorithm. Also state the shortest route with cost. **(5)**

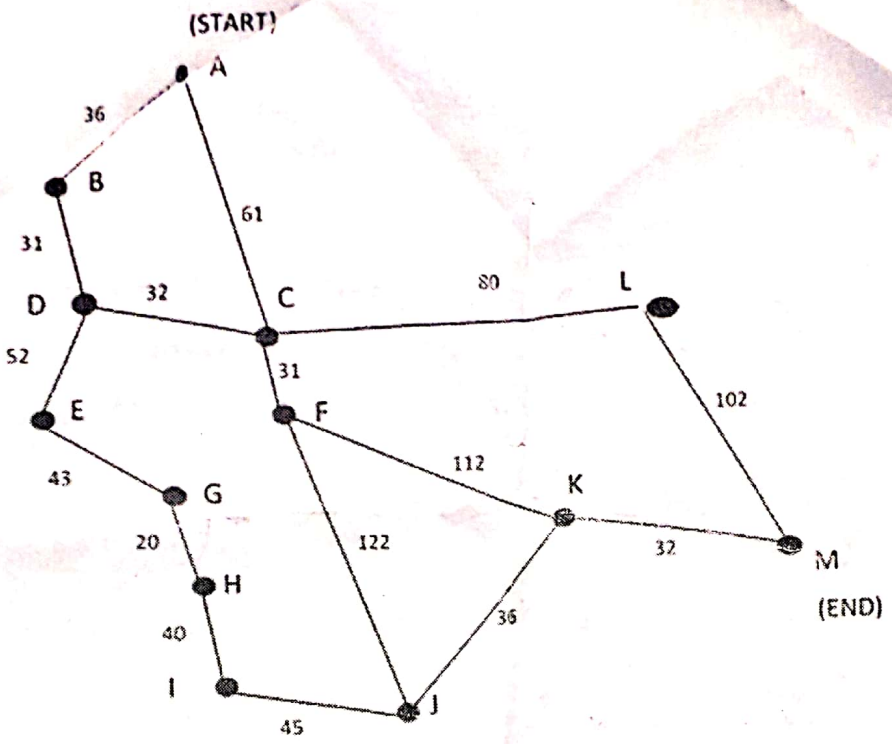
Heuristic value H(n) of each city given in the following table

A	223
B	222
C	166
D	192

E	165
F	136
G	122
H	111

I	100
J	60
K	32
L	102

M	0



Question 4. Answer the following **(3)**

a) Elaborate the goal reduction technique with example

b) We are now trying to solve the miniature of Tower of Hanoi problem. There are 3 towers (A, B, C), and 2 disks (small one and large one). The purpose of this problem is to move both disks from the tower A to tower C (as illustrated in the figure below), subject to following two conditions:

- You can move only one disk at a time
- You cannot put the large disk on top of the small disk

The possible state can be denoted as follows: a :(b c) where 'a' is the state number, 'b' is the tower number for the large disk, and 'c' is the tower number for the small disk. For example 3: (1 3) implies that the large disk is on tower 1 and the small disk is on tower 3 in state 3. **You need to write down all possible states to achieve the goal state.**

6A

Barani Institutes of Management Sciences

Mid-Term	Fall Semester 2021
Course Title: Visual Programming	Course Code : CS-692
Discipline /Program : BSCS	Total Marks : 12
Time allowed : 1 Hour 15 minutes	Instructor's Name(s): Muhammad Siddique,

Question No 1

Part (A)

How namespace overcome the issue of name clashes? How fully qualified name system work in the absence of namespace. Explain with solid reasoning by giving code examples. [2 Marks]

Part (B)

Write a C# program that calculates the area of a circle ($A = \pi r^2$) *using the built-in* function for constant values. *[1 Marks]*

Question No 2

Part (A)

What are the benefits of constructor overloading? Also, write the properties of constructor? [1.5 Marks]

Part (B)

Explain the different ways in which a constructor can be overloaded. Write a sample code of each. [1.5 Marks]

Question No 3

Part (A)

What feature 'output method' provides that a 'call by reference' method does not? Give a code example of 'output method'. [2 Marks]

P-T-O

Part (B)

Why destructor cannot be overloaded while constructor can be? Justify your answer with suitable reason. [1 Mark]

Question No 4

Part (A)

Write a C# program to calculate the MEAN (Average) of a three given numbers. [1.5 Marks]

Part (B)

Write a C# program that calculate the sum of right diagonal of array size [3][3]. [1.5 Marks]

Barani Institute of Management Sciences

Mid-Term Exam **Fall Semester 2021**

Course Title: Object oriented analysis and design	Course Code : CS-553
Discipline /Program : BSCS 6A, 6B	Total Marks : 18
Time allowed : 1:15 Hours	Instructor's Name(s): F. R. Shamil

Case Study:

The Employees Loan Management System will help an organization to manage a loan for its employees online in an efficient way. Employees can request loans, which will be reviewed by the HR department and then loans will be approved or rejected. In case, the loan is rejected, the employee will be informed of the reason for loan rejection.

However, in the case of loan approval, Loan approval terms and conditions, the loan repayment schedule will be provided to the employee. If the employee will agree with the loan offer, terms and condition, and repayment schedule, the loan will be granted to the employee and automatic deduction from employee salary will be made.

Functional Requirements:

User's Requirements:

FR1. View Loan policies, loan limit, and other details according to employee rank and salary.

FR2. Apply for a loan using a loan application.

FR3. Receive acceptance or rejection

FR4. Receive loan acceptance terms and condition and installment plan in case loan is accepted

FR5. Provide scanned copies of required documents

FR6. View loan status and report of monthly paid and remaining installments.

Admin's Requirements:

FR7. Define loan policies and rules according to employee rank.

FR8. Receive employees' requests for loan

FR9. Approve/Disapprove loan

FR10. Calculate whether a loan can be fully or partially granted.

Question 01: Draw use case diagram for the given case study? **(6 Points)**

Question 02: Draw class diagram for the given case study? **(6 Points)**

Question 03: what are space and usability requirements. Give examples. **(6 Points)**

Final Examination –

BARANI INSTITUTE OF MANAGEMENT & SCIENCES

Final Exam Fall 2021

Course Title: Int. to Economics	**Course Code:** Econ-301
Discipline /Program: BSCS-6A,B	**Total Marks:** 30
Time Allowed: 2hr 30min	**Instructor's Name:** Ms. Fizza Shaukat

Q1: Explain the types of inflation in details with suitable examples? (Marks 6)

Q2: Differentiate between the following. (Marks 12)

a. Monopoly and oligopoly.
b. Implicit and explicit cost
c. Economic profit and accounting profit

Q3: Answer the following questions: (Marks-8)

a. What are the conditions of firm equilibrium?
b. Briefly explain how price reaches equilibrium?

Q4: What are the characteristics of perfect competitions? (Marks-4)

PMAS Arid Agriculture University Rawalpindi

University Institute of Information Technology

Final Examination – Fall - 2021

BSCS 6th

Visual Programming CS-692

Registration No._____ **Total Time: 120 Minutes**

Instructor: Mr.M.Siddique **Maximum Points: 20**

Q No 1

Define with reason why C# does not allow multiple inheritances? Suggest solution how to cope with this problem by giving suitable code example which demonstrate the implementation of multiple inheritance. [4 marks]

Q no 2

Internationally time is being followed in 24hrs and locally in 12Hrs for frequent traveler it is a hassle. To avoid this situation, implement the methods which could convert the time in 24hrs and 12hrs as well on a single button click as shown in Fig1? [4 marks]

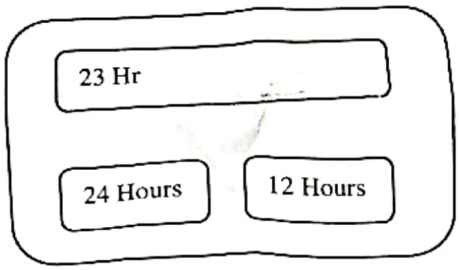


Fig 1

Q no 3

Keeping in mind the concept of dynamic polymorphism, make a general class with name "shape" having some data members and a method name "area". Create two more specified classes "rectangle" and "triangle" which are inherited from this parent class name "shape" and shows overriding methodology. Moreover, calculate each overridden method by passing object to their respective classes which will be displayed in the main class named "tester". [4 marks]

Q No 4

Define the term threads and explain its all states. Also write a program which show the creation of thread and start of thread using thread library which you will be used in your C# Program? [4 marks]

**********| Best of Luck **********

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Q No 5

Write the output of the following program. [4 marks]

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Basic_Example
{
  class Program
  {
    static void Main(string[] args)
    {
      Scooter sc = new Scooter();
      sc.ScooterType();
      Car c = new Car();
      c.CarType();
      Console.ReadKey();
    }
  }
    Class Tyre
    {
      protected void TyreType()
      {
        Console.WriteLine("This is Tubeless Tyre");
      }
    }
    Class Scooter : Tyre
    {
      public void ScooterType()
      {
        Console.WriteLine("Scooter Color is Red");
        TyreType();
      }
  }
    Class Car : Tyre
    {
      Public void CarType()
      {
        Console.WriteLine("Car Type : Ferrari");
        TyreType();
      }
    }
  }
```

**********| Best of Luck **********

PMAS Arid Agriculture University Rawalpindi

University Institute of Information Technology

Final Examination – Fall - 2021

BSCS 6th

Visual Programming CS-692 – Practical Paper

Registration No._____ **Total Time: 30 Minutes**

Instructor: M.Siddique **Maximum Points: 20**

Q No 1

C# program to implement multiple-inheritance using abstract class and interface. [7 Marks]

Q No 2

Write a C# which show how to implement the same method in multiple classes in C#? [7 Marks]

Q No 3

C# program to demonstrate the concept of method Hiding. [6 Marks]

BARANI INSTITUTE OF MANAGEMENT SCIENCES

Final-Term Exam Fall Semester 2021

Course Title : Object Oriented Analysis & Design	**Course Code :** CS-553
Discipline /Program : BSCS	**Total Marks :** 30
Time allowed : 2:30 hours	**Instructor's Name: Mr Fazal rehman shamil,**

Case study:

Car rental companies serve people who need a temporary vehicle, for example, travelers, those who do not own their own car, or owners of damaged vehicles who are waiting for repair or insurance compensation.

Managing such a business using a manual system is a very tiresome job and takes longer to generate different types of reports.

To overcome this problem we will develop a website for this company to be able to move their business online and to increase the availability and efficiency of their business processes.

The system should have the following features:

- The system should have a user registration process in order to get login into the system.
- Authorize users will insert detail of different vehicles.
- The user will enter the detail of the vehicle owner.
- Admin will set monthly, daily and hourly charges for different vehicles.
- Vehicle charges will be based on time duration and type of vehicle.
- Customers will be able to view detail of different vehicles.
- Vehicle owner detail should only be visible to company staff.
- The customer should be able to book a vehicle for a specific time.
- The customer will also provide guarantor details.
- The system should be able to disable the booked vehicle.

Reports:

- List of all vehicles (type-wise, rent wise)

- List of the available vehicle.
- List of booked vehicle. o Transaction Report.
- Total vehicles rented per day and per month etc.

Qno 1: Draw activiy diagram for above given case study. **(7)**

Qno 2: Explain Performance, Space, and Portability Requirements according to the given case study. **(7)**

Qno 3: For the given case study, Elaborate the classes and objects and their relationships in a most suitable diagram . **(7)**

Qno 4: Explain Structural design patterns with examples. **(9)**

Good Luck ☺

Pir Mehr Ali Shah

Arid Agriculture University, Rawalpindi

Office of the controller of Examinations

Final Exam (Theory) / Fall 2021 ( )

Course No.: **CS-632** Course Title: **Artificial Intelligence**

Total Marks: **30** Date of Exam:

Degree: **BSCS** Semester: **6** Section: **A/B/**

Answer the following questions.

Attempt all questions

Q1: Answer the following questions **(6)**

i. Explain the Goal Reduction technique with example **(3)**

ii. Define Components of Expert System **(3)**

Q.2 a) Genetic algorithm is a technique to solve the optimization problem, explain its components. **(5)**

b) Coral image dataset is a benchmark image dataset to test the various computer vision applications. It contains images of 100 categories, and there are 1000 images from diverse contents such as sunset, beach, flower, building, buses, horses, mountains, fish, food, elephant, etc. We have extracted some Gray Level Co-occurrence Matrix texture features from Coral image data set of elephant and horses class which are given below. You need to classify the image 9 using KNN algorithms, where k = 3. **(8)**

Image	Homogeneity	Correlation	Contrast	Energy	Image Class
Image 2	2.1	3.6	4.4	5.1	Horse
Image 3	0.4	1.3	2.5	3.3	Elephant
Image 4	2.3	2.6	2.6	2.1	Elephant
Image 5	3.3	3.3	3.4	3.1	Horse
Image 6	4.2	2.1	4.2	4.3	Horse
Image 7	2.2	2.3	2.5	2.6	Horse
Image 8	3.9	2.5	3	2.5	Elephant
Image 9	3.1	2.1	2.2	4.2	?

Q.3 Consider the following data with Result as class label and apply decision tree algorithm to decide the root node. You are required to compute the following:

a) Compute the Entropy of "Result".

b) Compute Information Gain of Short Attendance, *Employment Status and Gender.*

c) Identify the root node based on information gain.

[8]

Student ID	Short Attendance	Employment Status	Gender	Result
2080191	No	Jobless	Male	Fail
2080192	Yes	On Job	Male	Pass
2080193	Yes	Jobless	Female	Fail
2080194	No	On Job	Female	Fail
2080195	Yes	Jobless	Female	Pass
2080196	Yes	On Job	Male	Fail
2080197	No	Jobless	Male	Fail
2080198	Yes	Jobless	Female	Pass
20801919	Yes	On Job	Male	Fail
20801920	Yes	Jobless	Male	Pass

Q4. Use Naive bayes algorithm to predict the flue of a patient with parameters (Y, N, Mold, Y) based on following data set. **(5)**

chills	runny nose	headache	fever	flu?
Y	N	Mild	Y	N
Y	Y	No	N	Y
Y	N	Strong	Y	Y
N	Y	Mild	Y	Y
N	N	No	N	N
N	Y	Strong	Y	Y
N	Y	Strong	N	N
Y	Y	Mild	Y	Y

Pir Mehr Ali Shah

Arid Agriculture University, Rawalpindi

Office of the controller of Examinations

Final Exam (Practical) / Fall 2021 (Paper Duration45 mnts)

To be filled by Teacher

Course No.: **CS-632**

Course Title: **Artificial Intelligence**

Total Marks: **20**

Date of Exam:

Degree: **BSCS/**

Semester: **6**

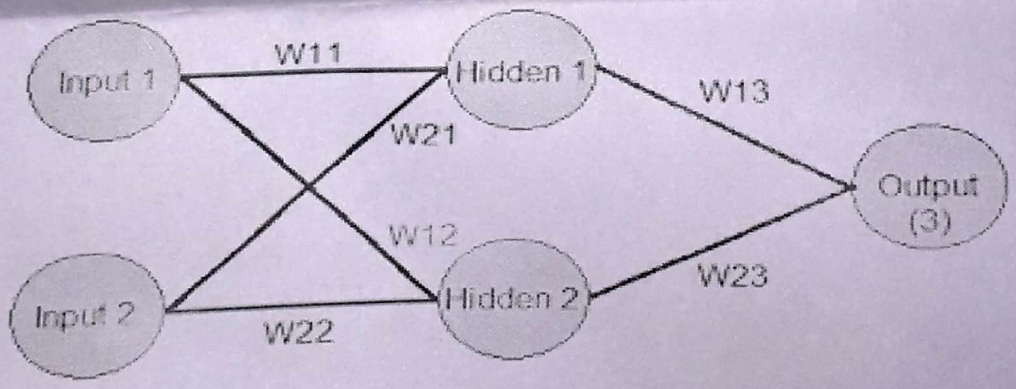
Section: **A/B**

Answer the following questions.

Question No. 1: Explain how you will train neural network for XOR problem using Back Propagation? Show its one iteration of 1st pattern **[10]**

The initial weights and threshold levels are set randomly as follows:

$w_{11} = 0.5, w_{12} = 0.9, w_{21} = 0.4, w_{22} = 1.0, w_{13} = -1.2, w_{23} = 1.1$, *Alpha=.25* *X1=1, X2=1,* Tar get =0



Question No. 2: Consider a set of data points {(-10, 13), (-6, 9, 5), (-6, 17), (-2, 13), (-3, 0,), (10, 15,)}. Use the k-means clustering procedure with k = 3 to group these data points. Start with the three initial cluster centers: (-6, 9), (-2, 13), (10, 15,). Show your working for 2 iterations. Use $D = \sqrt{(x_i - y_i)^2}$ for distance calculation. [10]