National University

of Computer & Emerging Sciences Peshawar Campus

Program: BS (AI)
Semester: Fall-2022
Time Allowed: **01 hour**
Course:CS1002-Programming Fundamentals

Examination: **SESSIONAL-II**
Total Marks: 50, Weightage: **15**
Date: November 10, 2022
Instructor: Shoaib M. Khan

NOTE: ATTEMPT ALL Questions.

Palindrome Checking **[CLO 2] [Marks =10]**

Write a program to check whether an entered integer is a palindrome or not.

The Greatest and Least of These **[CLO 2] [Marks =10]**

Write a program with a loop that lets the user enter a series of integers. The user should enter -99 to signal the end of the series. After all the numbers have been entered, the program should display the largest and smallest numbers entered.

Celsius Temperature Table **[CLO 2] [Marks=15]**

The formula for converting a temperature from Fahrenheit to Celsius is

$$C = \frac{5}{9}(F - 32)$$

where *F* is the Fahrenheit temperature and *C* is the Celsius temperature. Write a function named *Celsius* that accepts a Fahrenheit temperature as an argument. The function should return the temperature, converted to Celsius. Demonstrate the function by calling it in a loop that displays a table of the Fahrenheit temperatures 0 through 20 and their Celsius equivalents.

Rainfall Statistics **[CLO 2][Marks =15]**

Write a program that lets the user enter the total rainfall for each of 12 months into an array of doubles. The program should calculate and display the total rainfall for the year, the average monthly rainfall, and the months with the highest and lowest amounts.

Input Validation: Do not accept negative numbers for monthly rainfall figures.

THE END

National University

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Program: BS (SE & AI)
Semester: Fall-2022
Time Allowed: **01 hour**
Course: Islamic Studies (SS1002)

Examination: **SESSIONAL-II**
Total Marks: 30, Weightage: **15**
Date: 10/11/2022
Instructor: M. Anwar

NOTE: ATTEMPT ALL QUESTIONS.

Question # 01 **[CLO 3] [Marks =10]**

Explain the finality of Islam and Prophethood in the light of the Holy Quran and the sayings of the Holy Prophet (Hadees).

Question # 02 **[CLO 4] [Marks=10]**

Briefly ***discuss*** the kinds of Tauheed (Oneness of Allah), its main kinds, and belief in the Prophet and angels.

Problem # 03 **[CLO 5] [Marks =10]**

Outline *at least five* basic moral lessons in the light of Surah Al-Hujurat.

THE END

Name: _____ Roll No. _____ Program: _____

National University

of Computer & Emerging Sciences Peshawar Campus

Student Name: _____ Roll No: _____

Program & Section: _____

Semester: **Fall-2022** Examination: **Sessional II**

Time Allowed: **60 minutes** Total Marks: **45**

Course: **English Composition & Comprehension** Date: **Nov. 11, 2022**

Instructor Name: **Noreen Shah & Sana Gul**

NOTE: Attempt all questions.

Directions: Read the following passages. Determine the main idea of this paragraph. Write in your own words. **CLO: 3** **Marks: _____/5**

Perhaps the oldest evidence of people using money is in the Code of Ur-Nammu. The Code of Ur-Nammu is a system of laws written around 2050 BC. That's like 4,000 years ago! Many of Ur-Nammu's laws carry fines, such as one stating that if a man is proven innocent of sorcery, his accuser must pay 3 shekels. This ancient document shows me two things: Ur-Nammu didn't tolerate false witch-hunts, and money is very old.

Q2. Write one-sentence Thesis Statements for the following topics: **CLO: 2** **Marks: _____/15**

1. Contribution of Technology to Education
2. Leadership Qualities
3. Environmental Pollution
4. Corruption
5. Freedom of Speech

Q3. Paraphrase the following sentences in your own words. Do not change the meanings of the original message. **CLO: 2** **Marks: _____/15**

1. Purchasing a brand-new car is a terrible waste of money.
2. Many wonderful vegetarian cookbooks are available in bookstores.
3. Voters rejected the proposed rapid transit system connecting the southern and northern suburbs, possibly because of racial issues.
4. According to the city superintendent of schools, school uniforms lead to improved behavior and fewer disruptions in the classroom.
5. We must bear greater responsibility for the environment than our ancestors did.

Q4. Write One paragraph on each of the following topic sentences. Also, indicate the pattern of the organization before each paragraph. **CLO: 2** **Marks: _____/10**

1. Working allows a person to establish relationships with a wide circle of people.

2. There are different purposes for getting an education in our country.

National University

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Student Name: _____ Roll No: _____

Program: BS CS, SE, AI
Semester: Fall-2022
Time Allowed: 1 hour
Course: Linear Algebra MT 1004

Examination: Sessional-II
Total Marks: 30 Weightage: 15%
Date: 11-11-2022
Instructor Name: Askar Ali

NOTE: Attempt all questions.

Problem#01 (Focused on CLO3) **[Marks:10]**

Determine the basis and dimension for the subspace of R^4 spanned by the vectors presented as

$$(2,\ 4,-2,\ 3),\ (-2,\ -2,\ 2,\ -4),\ (1,\ 3,-1,\ 1).$$

Problem#02 (Focused on CLO3) **[Marks:8]**

Determine whether a set S that consists of the polynomials forms a subspace of P_3 or not? The set S is represented as

$$S = \{p(x) = a_0 + a_1x + a_2x^2 + a_3x^3;\ a_1 = a_2\}.$$

Problem#03 (Focused on CLO3) **[Marks:7+5]**

(a) **Compute** the coordinate vector for $v = (5,-12,3)$ relative to the basis $S = \{\boldsymbol{v_1}, \boldsymbol{v_2}, \boldsymbol{v_3}\}$ for R^3. The basis vectors are defined as

$$\boldsymbol{v_1} = (1,2,3),\ \boldsymbol{v_2} = (-4,5,6),\ \boldsymbol{v_3} = (7,-8,9).$$

(b) **Determine** $\boldsymbol{w}$ if its coordinate vector is given by $[\boldsymbol{w}]_S = (6,-1,4)$ relative to the basis

$$S = \{\boldsymbol{v_1} = (1,0,0),\ \boldsymbol{v_2} = (2,2,0),\ \boldsymbol{v_3} = (3,3,3)\}.$$

National University

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Program: BS (SE & AI)
Semester: Fall-2022
Time Allowed: **01 hour**
Course: MT1003-Calculus & Analytical Geometry

Examination: **SESSIONAL-II**
Total Marks: 55, Weightage: **15**
Date: 12/11/2022
Instructor: Osama Sohrab

NOTE: ATTEMPT ALL PROBLEMS.

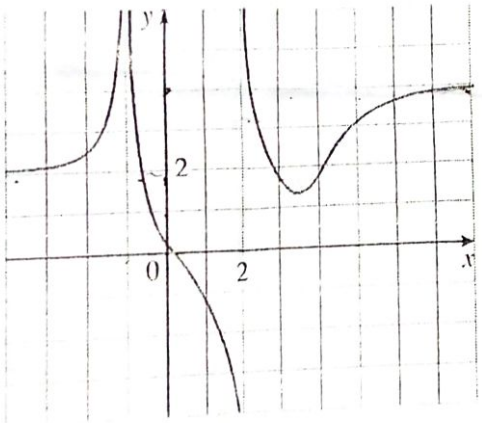
Problem # 01 **[CLO 3] [Marks =10]**

(a) Let $y = \sin(u+2)$, $u = e^{t^2}$ and $t = \cos(s^2)$. **Calculate** $\frac{dy}{ds}$.

(b) **State** why is the function $f(x) = |x+2|$ not differentiable at $x = -2$?

Problem # 02 **[CLO 3][Marks =20]**

(a) **Calculate** the infinite limits, limits at infinity, and asymptotes for the function f whose graph is shown in the figure.



(b) Differentiate the following functions

(i) $y = [\cos x]^{\tan x}$

(ii) $y = [\sin^{-1} x + \ln(\ln x^2)]^{10}$

Problem # 03 **[CLO 4] [Marks=15]**

Consider the function $h(x) = x^2 - x - \ln x$.

Identify:

(a) The intervals on which $h(x)$ is increasing or decreasing.

(b) The local maximum and minimum values of $h(x)$.

(c) The intervals of concavity and the inflection points.

Problem # 04 **[CLO 4][Marks =10]**

(a)For what purpose the traffic authories are using the mean value theorem.

(b) **Compute** the following limit:

$$\lim_{x \to 1^+} \frac{\sqrt{2x}(x-1)}{|x-1|}$$