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| **paf_kiet_logo** | **COLLEGE OF COMPUTING AND INFORMATION SCIENCES** | | |
| **Midterm Assessment Spring 2021 Semester** | | |
| **Class Id** |  | **Course Title** |  |
| **Program** | BSCS | **Campus / Shift** | Main Campus / Morning |
| **Date** | 14th – March 2021 | **Total points** |  |
| **Duration** | 02 hours | **Faculty Name** | Mr. Sanjay Kumar / Mr. Adnan Ullah Khan |
| **Student Id** |  | **Student Name** |  |

**Instructions:**

* Filling out Student-ID and Student-Name on exam header is mandatory.
* Do not remove or change any part of exam header or question paper.
* Write down your answers in given space or at the end of exam paper with proper title “Answer for Question# \_ \_”.
* Answers should be formatted correctly (font size, alignment and etc)
* Handwritten text or image should be on A4 size page with clear visibility of contents.
* Only PDF format is accepted (Student are advise to install necessary software)
* In case of CHEATING, COPIED material or any unfair means would result in negative marking or ZERO.
* A mandatory recorded viva session will be conducted to ascertain the quality of answer scripts where deemed necessary.
* **Caution:** Duration to perform Midterm Assessment is **02 hours only**. Extra 01 hour is given to cater all kinds of odds in submission of Answer-sheet. **Therefore, if you failed to upload answer sheet on LMS (in PDF format) within 03 hours limit, you would be considered as ABSENT/FAILED.**

**Question #1.**

1. You are about to leave for school in the morning and discover that you don’t have your glasses. You know the following statements are true:
2. If I was reading the news paper in the kitchen, then my glasses are on the kitchen table.
3. If my glasses are on the kitchen table, then I saw them at breakfast.
4. I did not see my glasses at breakfast.
5. I was reading the newspaper in the living room or I was reading the newspaper in the kitchen.
6. If I was reading the newspaper in the living room then my glasses are on the coffee table.

Write above five statements into Mathematical logic

1. State and prove first De Morgan Law.
2. Show that the conditional statement [￢p ∧ (p ∨ q)] → q is a tautology without using truth tables.

**Question #2.**

1. Determine the truth values of each of these statements if domain of each variables contain all real numbers.
   1. ∀x∀y (x / y = 1). 2.∀x∃y (x / y = 1). 3. ∃x∀y (x ∙ y = 0).
2. Let A, B, and C be sets. Show that (A−B)−C = (A−C)−(B −C).
3. Copy the vein diagram and shade the region for expression .

Diagram, venn diagram

Description automatically generated

**Question #3.**

1. Draw the graph of the function f(n)= 1− n from Z to Z.
2. Show that the function is invertible from R to R.
3. Prove or disprove .

**Question #4.**

1. Find at least three different sequences beginning with the terms 1, 3, 9 whose terms are generated by a simple formula or rule.
2. Function f and g are defined for x by f:x

Find x such that (fοg)(x)=9.

1. Find .