FACULTY OF COMPUTER SCIENCE & MULTIMEDIA

Program	**: Bachelor of Information Technology (Hons.)**
Course	**: DISCRETE MATHEMATICS**
Course Code	**: BIT 114**
Year/ Semester	**: I Year /I Semester**
Assessment	**: Assignment**
Weightage	**: 20 Marks**
Date	**: 11thMay2020–Monday**

Instruction to candidates

1) Plagiarism - The University will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as serious academic offence. The work that a student submits for grading must be the student's own work, reflecting his or her learning. Where work from other sources is used, it must be properly acknowledged and referenced.
2) Times New Roman, font size 12, alignment justified and 1.5 line spacing
3) Header to indicate: course Code & Name on the top left and Program and Semeser on the right
4) Footer to indicate: Page numbers on the bottom right
5) Kindly save your file in PDF format

1. Define contradiction and tautology. Show that the compound proposition $[p \wedge (p \rightarrow q)] \rightarrow q$ is tautology.

2. Without expanding show that

$$\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ bc & ca & ab \end{vmatrix} = (a-b)(b-c)(c-a)$$

3. Define homogeneous recurrence relation. Solve the recurrence relation.
   a. $a_n = 6a_{n-1} - 8a_{n-2}$ for $n \geq 2$, $a_0 = 4$, $a_1 = 10$

4. Define the terms tree, minimum spanning tree, simple, multiple and pseudo graph. Write Prim's and Kruskal's algorithm to construct minimum spanning tree. Explain the process of generating spanning tree using Kruskal's algorithm? Assume example of your own.

****BEST OF LUCK****