

16-08-18

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27
BCA – I SEMESTER
MID SEMESTER TEST: AUGUST 2018
CA-1218 –DISCRETE MATHEMATICS

Time- 1 hour

Max Marks-30

Answer any five of the following questions

5*6=30

1. If the universal set is given by $S=\{1,2,3,4,5,6\}$ and $A=\{1,2\}$, $B=\{2,4,5\}$, $C=\{1,5,6\}$ are three sets. Find the following sets:

- $A \cup B$
- $A \cap B$
- $A - B$
- A^c
- $A \cap (B \cup C)$
- $A \cap (B \cup C)$

2.

- Let A and B be two finite sets such that $n(A) = 20$, $n(B) = 28$ and $n(A \cup B) = 36$ find $n(A \cap B)$.
- Given three sets P, Q and R such that:
 $P = \{x: x \text{ is a natural number between } 10 \text{ and } 16\}$,
 $Q = \{y: y \text{ is an even number between } 8 \text{ and } 20\}$ and
 $R = \{7, 9, 11, 14, 18, 20\}$
 - Find the difference of two sets P and Q
 - Find $P \times Q$
 - Find $R - P$
 - Find $Q - P$

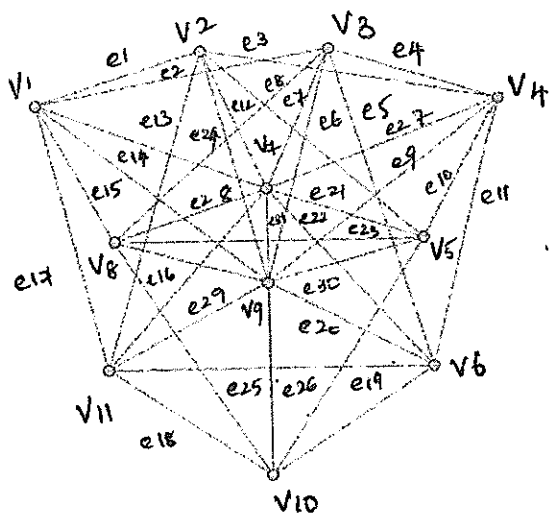
3. Define the following terms with suitable examples:

- Reflexive Relation
- Cartesian Product
- Symmetric Relation
- Void Relation
- Cardinal number of a set.

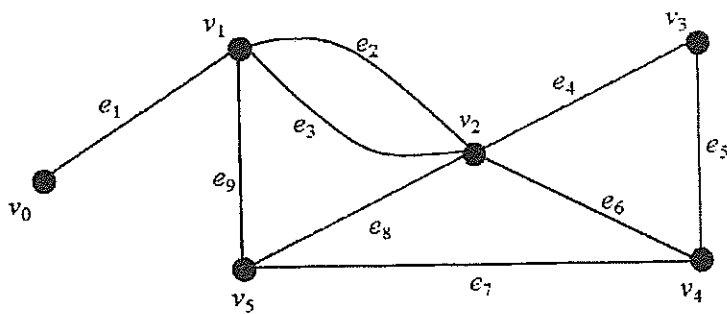
4. Construct a truth table for the following $(P \wedge (Q \wedge R)) \vee \sim((P \vee Q) \wedge (R \vee P))$

5. Construct PCNF for the following statement $(P \wedge Q) \vee (\sim P \wedge Q) \vee (Q \wedge R)$

6. Find the following a) Edge- disjoint b) Incidence c) Parallel edges



7.



Find the following

- a) Path from v_5 to v_2
- b) Walk from v_1 to v_4
- c) Circuit of length 5