## Quiz-9 Solution (XXX) (3

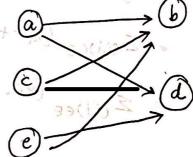
- 1) a = {b,c,d}

  2xix for earlier 2xix {bid} = ixib; 3 c = {e, f, d, b} (xxx - 1x + a)
  - d = { e, f, g}
  - e= {b, c, d, h}
- equation ) if the signs F.B. 18= 7 scj
  - tg = E(hz -in) & aulor art services

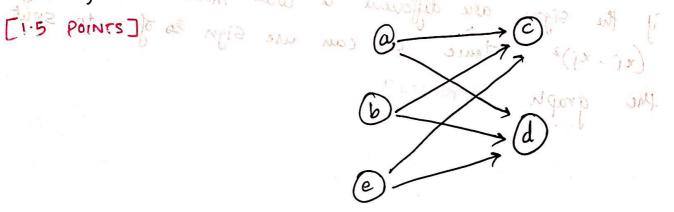
    A = FZ, dz

    Louis t will inmane the VER = Af

( Support = 3) 1= 13



- [USNPOINTS]



- 2) Green: {w, x, y 3 C
  - D Red : { w, y3
  - Blue: {4, 23 В
- Pxy = Pc
  - PXZ = E
- Pyz = PB
- Pwz = E
- Pion = Pc
- Pwy = (1-(1-Pc)(1-Po))
- L = Pxy Pyz Pwx (1-Pxz) (1-Pwz) Pwy [1.5 POINTS]
  - = Pc2 PB [1-(1-Pc)(1-P0)](1-E)2
    - = Pc2 PB (Pc+PD PcPD) [1.5 POINTS]

Take decivative and equate to zero to getter the values of Pc and PD.

3) 
$$\chi^{T}L\chi = \sum_{i,j=1}^{n} L_{ij} \chi_{i} \chi_{j}$$

$$= \sum_{i,j=1}^{n} (D_{ij} - A_{ij}) \chi_{i} \chi_{j}$$

$$= \sum_{i} d_{i} \chi_{i}^{2} - \sum_{(i,j) \in E} 2\chi_{i} \chi_{j} \text{ for each edge } (i,j) [i \text{ point}]$$

$$= \sum_{(i,j) \in E} (\chi_{i}^{2} + \chi_{j}^{2} - 2\chi_{i} \chi_{j})$$

$$= \sum_{(i,j) \in E} (\chi_{i}^{2} - \chi_{j}^{2})^{2} [i \text{ point}]$$

To minimize the above equation, if the signs of ni and ni are same it will decease the value of (ni-nj)2 but if the signs are different it will increase the value of (ni-xj)2. Hence we can use sign to sput the graph [2 points]

> C = Pay Pax Pax (1-Paz) (1-Paz) Pay = Pz Ps [1-(1-Pa)(1-Pa)] (1-E)<sup>2</sup>

Take sometime and equals to zero to gate the values of

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