Name: ABID ALI

Roll: 2019380141

Ans No: 1

1 (D)

2) (B)

3) (D)

4) (C)

5) (B) $\{\{1,3\},\{2,4,5\}\}$

6) (C)

7) (A)

8) (C)

9) (C)

10) (B)

Ans No: 2

(1) not

(2) 0

(3) mn

(4) Reflexivity, Symmetry, Transtivity

(6) $\{(1,1), (2,1), (3,1), (4,2)\}$

(7) 120 $\quad {}^{10}C_2$

(8) 1840 $\quad \binom{17+4-1}{17}$

(9). isomorphic

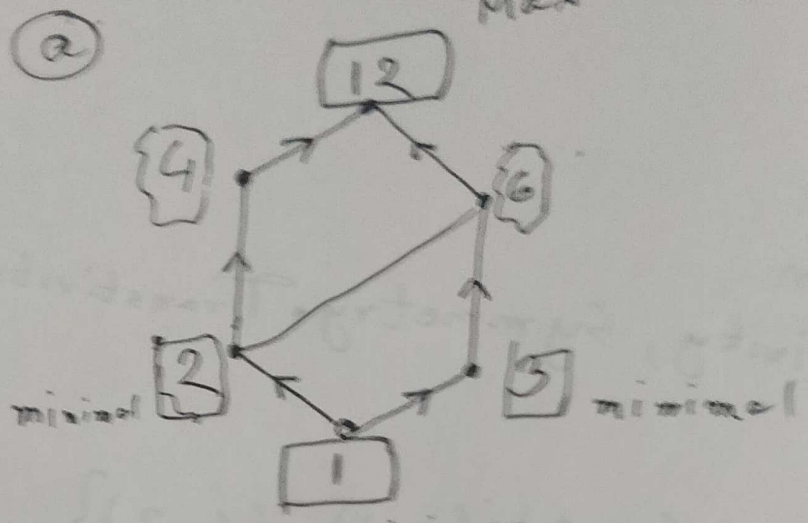
(10) has

(5)

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix}$$

Ans No. 3(2)

(a)



(b)

The minimal elemet : 2, 3

The maximal " : 4, 6

The maximum " : 12

The minimum " : 1

The least upper bound = ϕ [Doesn't exist]

The greatest lower " = ϕ ["]

Ans No: 3(1)

①	$s \rightarrow \neg t$	Premise
②	t	Premise
③	$\neg s$	1 & 2
④	$\neg s \rightarrow r$	Premise
⑤	r	Hypothelial syllogism ③ & ④
⑥	$p \rightarrow \neg r$	Premise
⑦	$\neg p$	5 & 6
⑧	$p \vee q$	Premise
9	q	T 7 & 8 I

Ans No: 3(3)

Homogenous recurrence, $a_n = -5a_{n-1} - 6a_{n-2}$

Characteristic

$$x^2 = -5x - 6$$

$$\Rightarrow x^2 + 5x + 6 = 0$$

$$\Rightarrow x^2 + 3x + 2x + 6 = 0$$

$$x_1 = (-3) \text{ \& } x_2 = -2$$

$$a_n = C_1(-3)^n + C_2(-2)^n$$

We get $a_1 = 56$, $a_2 = 278$

$$a_n^{(h)} = a_1(-3)^n + a_2(-2)^n$$

a_1 & a_2 are constants,

Ans No: 3(4)

$$|A| = \left[\frac{1000}{5}\right] = 200$$

$$|B| = \left[\frac{1000}{6}\right] = 166$$

$$|C| = \left[\frac{1000}{8}\right] = 125$$

$$|A \cap B| = \left[\frac{1000}{5 \times 6}\right] = 33$$

$$|A \cap C| = \left[\frac{1000}{5 \times 8}\right] = 25$$

$$|B \cap C| = \left[\frac{1000}{24}\right] = 41$$

$$A \cap B \cap C = \left[\frac{1000}{24 \times 5}\right] = 8$$

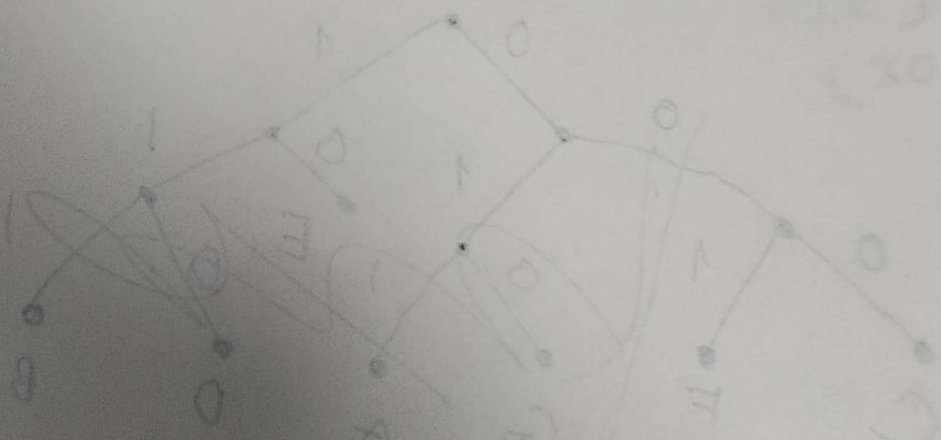
$$|A \cup B \cup C| = |A| + |B| + |C| - |A \cap B| - |A \cap C| - |B \cap C| + |A \cap B \cap C|$$

$= 200 + 166 + 125 - 33 - 25 - 41 + 8$

$= 400$

$\overline{|A \cup B \cup C|} = Total - |A \cup B \cup C|$

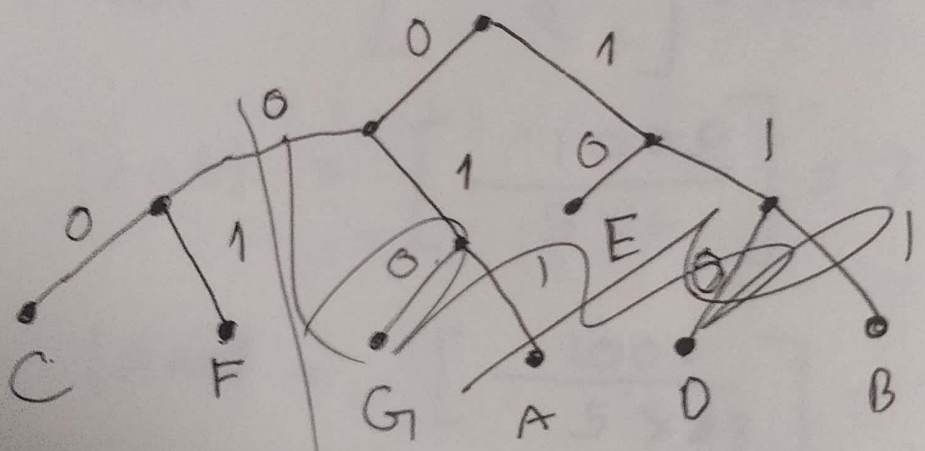
$= 600$ (Ans)



Ans No: 3(6)

A: 0.10, B: 0:25, C: 0.05, D: 0.15
E: 0.30, F: 0.07, G: 0.08

(a)



A: 011, B: 111, C: 000, D: 110,
E: 10, F: 001, G: 010

(b) Weight: Number of bits

A: 3, B: 3, C: 3, D: 3, E: 2
F: 3, G: 3

Formula

$$= \sum_{i=a}^{e} \omega_i \times f_i$$

~~$= (3).(0.10) + (3).(0.25) + (3).(0.05)$~~

~~$+ (2).(0.30) + (3).(0.07) + (3).(0.08)$~~

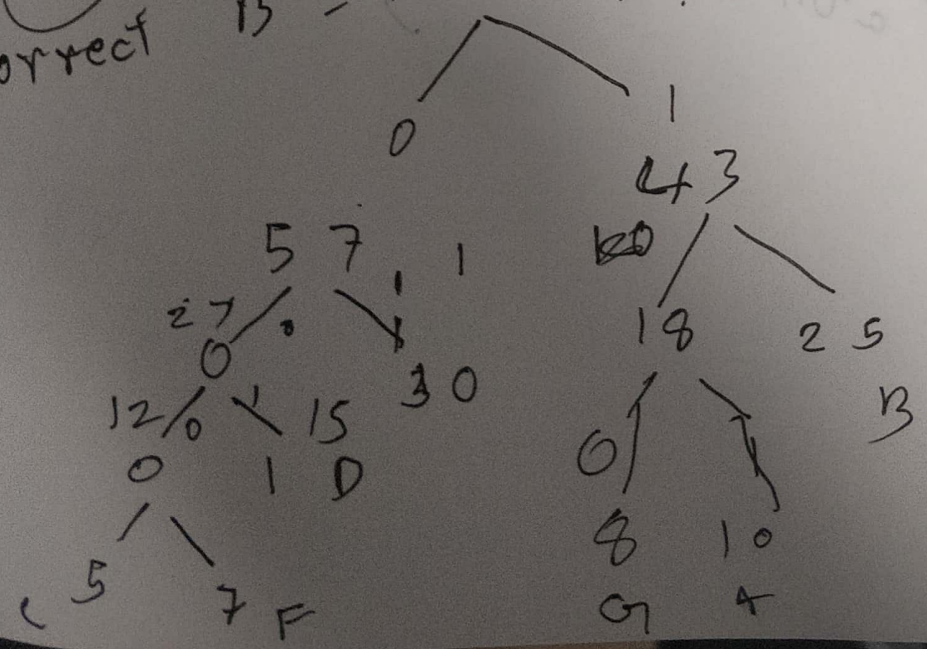
$= (5+7) \times 4 + (15+8+10) \times 3 + (30+25) \times \frac{3.57}{2}$

$= 2.57$ (Ans)

$= 2.57$

(a) Correct

A : 101 , D : 00 , G : 100
B = 11 F : 01



Ans No: 3(5)

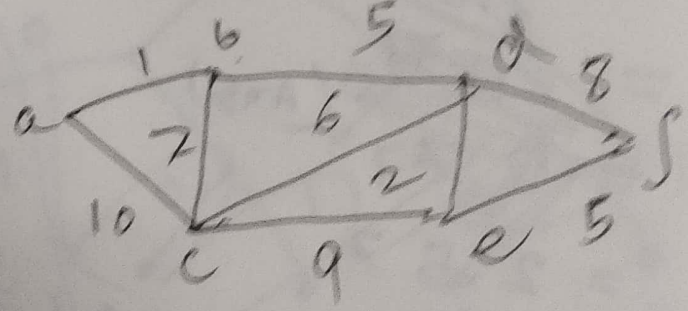
a to b : a → b, d = 1

a to c : a → b → c, d = 8

a to d : a → b → d, d = 6

a to e : a → b → d → e, d = 8

a to f : a → b → d → e → f, d = 13



Path : a b d e f