

G. H. RAISONI COLLEGE OF ENGINEERING  
2020-2021 EVEN TERM

CAE - 2 EXAMINATION SUMMER - 2021 (ONLINE  
MODE)

DEPARTMENT: ARTIFICIAL INTELLIGENCE

SEM/SEC : 4<sup>th</sup> / A

DATE : 24/04/2021

SUBJECT : GTNS

ROLL NO : A-58

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REG NO : 2019AAIE1117028

C03.

Q3.

i.  $\frac{51}{19}$  as continued fraction.

$$51 = 19 \times 2 + 13$$

$$\frac{51}{19} = [2, 1, 2, 6, ]$$

$$51 = 19 \times 2 + 13$$

Pg no. 1 *Hawari*

$$\frac{51}{19} = 1 \times \frac{13}{19}$$

$$\frac{51}{19} = 1 + \frac{1}{19/13} \quad \text{--- (1)}$$

$$19 = 51 \times 1 + 2$$

$$\frac{19}{51} = 1 + \frac{2}{13}$$

$$\frac{19}{13} = 1 + \frac{1}{13/2}$$

$$\frac{51}{19} = 1 + \frac{1}{1 + 1/13/2}$$

$$51 = 19 \times 2 + 13$$

$$\frac{51}{2} = 2 + \frac{13}{2}$$

$$\frac{51}{19} = 1 + \frac{1}{\frac{1+1}{2+13/2}}$$

$$\Rightarrow \frac{51}{19} = [2, 1, 2, 6]$$

ii.)  $-1, 1, 1, 2, 1$  as a rational no.

$$\Rightarrow \frac{-1 + \frac{1}{\frac{1+1}{\frac{1+1}{2+1}}}}{1}$$

$$= \frac{-1 + \frac{1}{\frac{1+1}{1+\frac{1}{3}}}}{1}$$

$$= \frac{-1 + \frac{1}{\frac{1+1}{4/3}}}{1}$$

$$= \frac{-1 + \frac{1}{1+\frac{3}{4}}}{1}$$

$$= \frac{-1 + \frac{4}{7}}{1}$$

$$= \frac{-7+4}{7}$$

$$\boxed{[-1, 1, 1, 2, 1] = -\frac{3}{7}}$$

C02.

i. Given sequence  $\Rightarrow 1, 0, 5, 0, 25, 0, 125, 0$   
Generating -fn. = ?

In the given sequence,

$$a_0 = 1, a_1 = 0, a_2 = 5, a_3 = 0, a_4 = 25, \dots$$

$$\therefore g(x) = a_0 + a_1x + a_2x^2 + a_3x^3 + a_4x^4 + \dots$$

$$\therefore g(x) = 1 + 0x + 5x^2 + 0x^3 + 25x^4 + 0x^5 + 125x^6 + 0x^7 + \dots$$

$$g(x) = 1 + 5x^2 + 25x^4 + 125x^6 + \dots$$

$$g(x) = 1 + 5x^2 + 5 \cdot 5x^4 + 5 \cdot 55x^6 + \dots$$

$$\therefore g(x) = 1 + 5x^2 + 5^2x^4 + 5^3x^6 + \dots$$

$$\therefore g(x) = \frac{1}{1 - 5x^2}$$

$\therefore$  The generating function for the given sequence  $1, 0, 5, 0, 25, 0, 125, 0, \dots$

$$\text{is } G.F = \frac{1}{1 - 5x^2}$$



C02.

ii) All head and tails are identical.  
we can obtain 5 heads (and 2 tails)  
in  ${}^7C_5$ .

$$= {}^7C_5$$
$$= \frac{7!}{5! 2!}$$

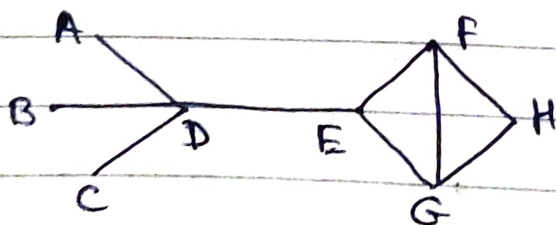
$$= \frac{7 \times 6}{2}$$

$$= 21$$

C01.

Q.1.

Given graph :



$$V(u) = 8 = n$$

$$E(u) = 9 = m$$

$$m - (n - 1) = 9 - (8 - 1)$$

$$= 9 - 7$$

$$= 2$$

Now the spanning tree is going to have 8 vertices and 7 edges.

