

Yogesh Kare.

IPMV - 20/7/22

Paper Solution.

Sem - VI EXTC.

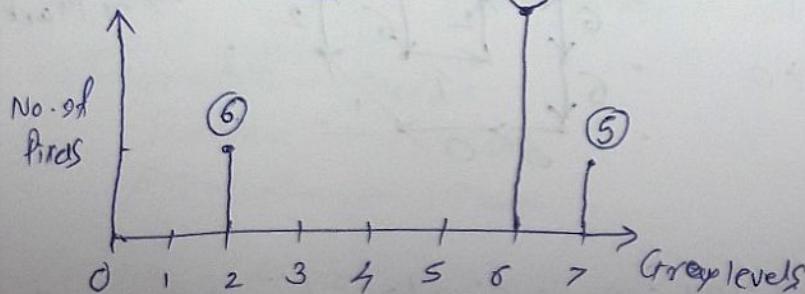
TYBtech / sem VI / EXTC (Supple / July 2022)

- Q. 1.
- a) Any 5 differences for 5 Marks
 - b) Any 5 differences for 5 Marks
 - c) Concept of opening & closing - 2 Mark
Example 3 Mark
 - d) Definition 1 Mark
Any 4 Mark for 4 Mark

- Q 2
- a) Concept of segmentation - 1 Mark
Point detection - 2 Mark
Line detection - 2 Mark
 - b) Bayes Classifier - ~~5~~ 4 Mark

c)

Gray level	No of pixels	Prpt.	CDF	CDF X 7	Round off	4 Marks
0	0	0	0	0	0	
1	0	0	0	0	0	
2	0	0	0	0	0	
3	6	0.24	0.24	1.68	2	- 6
4	14	0.56	0.8	5.6	6	- 14
5	5	0.2	1	7	7	} 5
6	0	0	1	7	7	
7	0	0	1	7	7	
	<u>25</u>					



→ 2 Marks

- d) Sobel - 2 M
- Prewitt - 2 M
- Roberts - 2 M.

Q. 3

a) Thresholding - 4 Marks

b) SVM - 4 Marks

c) DFT

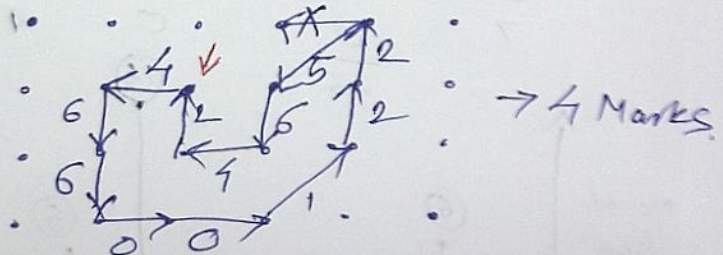
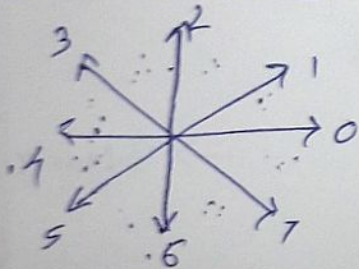
$$\begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & -i & -1 & i \\ 1 & -1 & 1 & -1 \\ 1 & i & -1 & -i \end{bmatrix} \begin{bmatrix} 0 & 1 & 2 & 1 \\ 1 & 2 & 3 & 2 \\ 2 & 3 & 4 & 3 \\ 1 & 2 & 3 & 2 \end{bmatrix} \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & -i & -1 & i \\ 1 & -1 & 1 & -1 \\ 1 & i & -1 & -i \end{bmatrix}$$

$$\begin{bmatrix} 4 & 8 & 12 & 8 \\ -2 & -2 & -2 & -2 \\ 0 & 0 & 0 & 0 \\ -2 & -2 & -2 & -2 \end{bmatrix} \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & -i & -1 & i \\ 1 & -1 & 1 & -1 \\ 1 & i & -1 & -i \end{bmatrix}$$

$$\begin{bmatrix} 3 & 2 & -8 & 0 & -8 \\ -8 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ -8 & 0 & 0 & 0 & 0 \end{bmatrix}$$

d) Chain code

4 6 8 0 0 1 2 2 5 6 4 2



2 0 2 0 1 1 0 3 1 6 6 2 → Circular chain code - 2 Marks

Q 4 a) Haar Transform → 4 Marks
Haar Matrix - 2x2

b) Matching classifier - 4 Marks

Q4c) Detect edge.

$$\begin{bmatrix} 0 & 30 & 60 \\ 5 & 32 & 62 \\ 10 & 38 & 64 \end{bmatrix}$$

Prewitt Mask

$$\begin{bmatrix} -1 & 0 & 1 \\ -1 & 0 & 1 \\ -1 & 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} -1 & -1 & -1 \\ 0 & 0 & 0 \\ 1 & 1 & 1 \end{bmatrix} \rightarrow 2 \text{ Marks}$$

$$\begin{bmatrix} -90 & 0 & 90 \\ -99 & 0 & 99 \\ -112 & 0 & 112 \end{bmatrix} \cdot \begin{bmatrix} 60 & 60 & 60 \\ 57 & 57 & 57 \\ 54 & 54 & 54 \end{bmatrix} \rightarrow 2 \text{ Marks}$$

$$\sqrt{G_x^2 + G_y^2}$$
$$\begin{bmatrix} 108.16 & 60 & 108.16 \\ 114.2 & 57 & 114.23 \\ 124.3 & 54 & 124.3 \end{bmatrix} \rightarrow 2 \text{ Marks}$$

Edge.

Q4d) Shape Number & Euler's Number - 6. Marks

Q5) a) Degradation Model

Diagram - 1 Mark

Explanation - 1 Mark

b) Fourier descriptors - 4 Mark

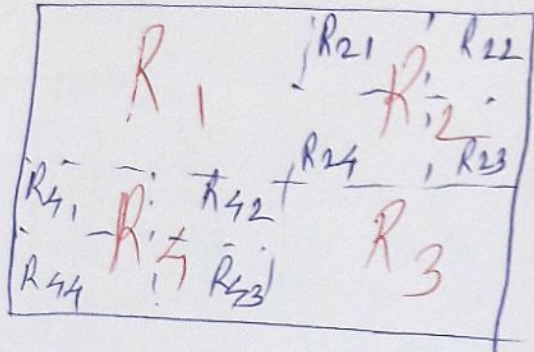
c) K-Means Clustering - 2 Mark

Advantage - 2 Mark

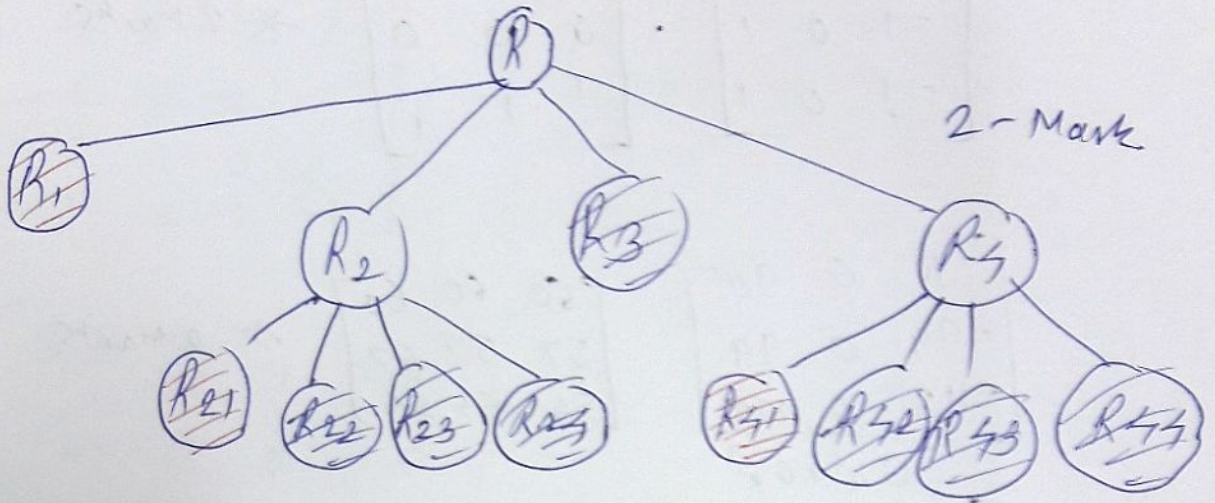
Disadvantage - 2 Mark

d)

Q5 d) Segmentation



→ 4 Mark



2-Mark