Nama :
NPM :
Kelas :
Tgl Ujian :
Mata Kuliah :
Nama Dosen :
Ttd

1.)

79	67	83	X=9
60	89	79	
79	50	65	
90	89	59	

Diketahui : gray scale 128.

$f_{maks} = 127$

Jawaban : a.) Operasi negasi ?

$fo(1,1) = 127 - fi(1,1) = 127 - 79 = 53$
$fo(1,2) = 127 - fi(1,2) = 127 - 60 = 67$
$fo(1,3) = 127 - fi(1,3) = 127 - 79 = 53$
$fo(1,4) = 127 - fi(1,4) = 127 - 90 = 37$
$fo(2,1) = 127 - fi(2,1) = 127 - 67 = 60$
$fo(2,2) = 127 - fi(2,2) = 127 - 84 = 43$
$fo(2,3) = 127 - fi(2,3) = 127 - 50 = 77$
$fo(2,4) = 127 - fi(2,4) = 127 - 84 = 43$
$fo(3,1) = 127 - fi(3,1) = 127 - 83 = 44$
$fo(3,2) = 127 - fi(3,2) = 127 - 74 = 53$
$fo(3,3) = 127 - fi(3,3) = 127 - 65 = 62$
$fo(3,4) = 127 - fi(3,4) = 127 - 54 = 73$

79	67	83		53	60	44
60	84	74	→	67	43	53
74	50	65		53	77	62
90	84	54		37	43	73

Citra Input | citra output

1.) b. Operasi kontras ?

Dik :

74	67	83
60	89	74
74	50	65
90	84	54

x = 9

6 = 2

P = 40

Jawaban = $f_o(1,1) = 6 \cdot (f_i(1,1) - P) + P = 2 \cdot (74-40)+40 = 108$

$f_o(1,2) = 6 \cdot (f_i(1,2) - P) + P = 2 \cdot (60-40)+40 = 80$

$f_o(1,3) = 6 \cdot (f_i(1,3) - P) + P = 2 \cdot (74-40)+40 = 108$

$f_o(1,4) = 6 \cdot (f_i(1,4) - P) + P = 2 \cdot (90-40)+40 = 140$

$f_o(2,1) = 6 \cdot (f_i(2,1) - P) + P = 2 \cdot (67-40)+40 = 94$

$f_o(2,2) = 6 \cdot (f_i(2,2) - P) + P = 2 \cdot (84-40)+40 = 128$

$f_o(2,3) = 6 \cdot (f_i(2,3) - P) + P = 2 \cdot (50-40)+40 = 60$

$f_o(2,4) = 6 \cdot (f_i(2,4) - P) + P = 2 \cdot (84-40)+40 = 128$

$f_o(3,1) = 6 \cdot (f_i(3,1) - P) + P = 2 \cdot (83-40)+40 = 126$

$f_o(3,2) = 6 \cdot (f_i(3,2) - P) + P = 2 \cdot (74-40)+40 = 108$

$f_o(3,3) = 6 \cdot (f_i(3,3) - P) + P = 2 \cdot (65-40)+40 = 90$

$f_o(3,4) = 6 \cdot (f_i(3,4) - P) + P = 2 \cdot (54-40)+40 = 68$

74	67	83
60	89	74
74	50	65
90	84	54

Citra Input

→

108	94	126
80	128	108
108	60	90
140	128	68

Citra Output

2.) Tuliskan kode program matlab :

a. Operasi kecerahan dengan K = 70

Jawaban =
```
> Img = imread ('D:/pengolahan citra/mobil.png');
> K = Img + 70;
> imshow (K);
```

b. Menampilkan histogram ?

Jawaban =
```
> Img = imread ('mobil.png');
> red = rgb2red (Img);
> Imhist (red);
```

```
> Img = imread ('mobil.png');
> Green = rgb2green (Img);
> Imhist (Green);
```

```
> Img = imread ('mobil.png');
> Blue = rgb2blue (Img);
> imhist (Blue);
```

KIKY

4.)

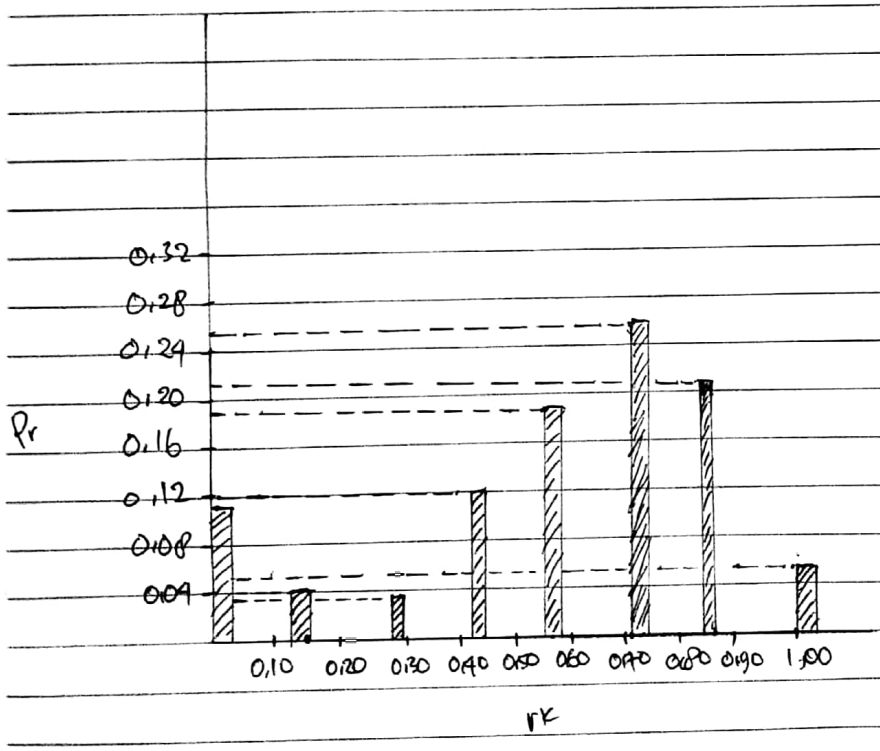
K	0	1	2	3	4	5	6	7	
Nk	250	91	77	310	460	644	520	148	n = 2500

Buatlah Ekualisasi histogramnya!

Jawaban : Langkah 1 Menghitung rk (rata-rata keabuan awal)

K	rk = k/L	nk	Pr(rk) = nk/n
0	0/7 = 0.00	250	0.10
1	1/7 = 0.14	91	0.04
2	2/7 = 0.29	77	0.03
3	3/7 = 0.43	310	0.12
4	4/7 = 0.57	460	0.18
5	5/7 = 0.71	644	0.26
6	6/7 = 0.86	520	0.21
7	7/7 = 1.00	148	0.06

Langkah 2 Menggambar Histogram ekualisasi awal



Langkah 3 Menghitung Sk (frekuensi kumulatif)

k	rk = k/L	nk	Pr (rk) = nk/n	Sk
0	0/7 = 0.00	250	0.10	0.10
1	1/7 = 0.14	91	0.09	0.14
2	2/7 = 0.29	77	0.03	0.14
3	3/7 = 0.43	310	0.12	0.29
4	4/7 = 0.57	460	0.18	0.47
5	5/7 = 0.71	644	0.26	0.73
6	6/7 = 0.86	520	0.21	0.94
7	7/7 = 1.00	148	0.06	1.00

Langkah 4 Mencari nilai Sk yg ~~akan~~ mendekati rk.

K	rk = k/L	~~Sk~~ Sk	~~Pr(rk) = nk/n~~ Sk ≈ rk	Sk ≈ rk	nk
0	0.00	0.10	0.10 ≈ 0.14	0.14	250
1	0.14	0.14	0.14 ≈ 0.14	0.14	91
2	0.29	0.17	0.17 ≈ 0.14	0.14	77
3	0.43	0.29	0.29 ≈ 0.29	0.29	310
4	0.57	0.47	0.47 ≈ 0.43	0.43	460
5	0.71	0.73	0.73 ≈ 0.71	0.71	644
6	0.86	0.94	0.94 ≈ 1.00	1.00	520
7	1.00	1.00	1.00 ≈ 1.00	1.00	148

Langkah 5. Meringkas nilai Sk, menghitung pikselnya, menghitung ekualisasi akhir akhir Ps(sk) dan Buat Kurva.

Sk	nk	Ps(sk) = nk/n
0.14	250+91+77 = 418	0.17
0.29	310	0.12
0.43	460	0.18
0.71	644	0.26
1.00	520+148 = 668	0.27