الكود: الاسم:

(a)From the following distribution of data find

Age	0 -5	5 -10	10-15	15-20	20-25
frequency	4	8	12	13	3

(i)Circles or Pie diagram (ii) Standard deviation by shortest method
(iii) Median for grouped data (iv) Mode for grouped data

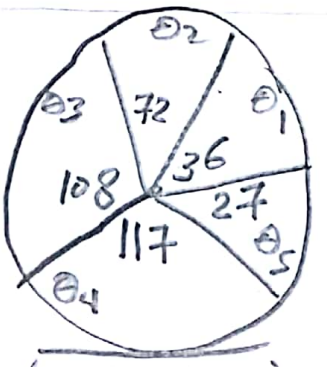
(b) Let P (A / B) = 0. 4, P (B/ A) =0.6 and p(A ∪ B) = 0. 9 . Find the value of P (A) and P (B)

(c) Calculate rank correlation coefficient for 8 students in two examinations

1st examination	pass	pass	Very good	Good	excellent	pass	Very good	good
2st examination	pass	good	Very good	weak	pass	good	pass	weak

class	x_i	f_i	$d_i=x_i-a$	$d_i f_i$	$d_i^2 f_i$	C.f	$\theta_i = 2f_i/N$
0-5	2-5	4	-10			4	36
5-10	7-5	8	-5			12	72
10-15	12-5	12	0			24	108
15-20	17-5	13	5			37	117
20-25	22-5	3	10			40	27

(a)



$a = 12.5$, (b) $\sigma = \sqrt{\frac{\sum f_i d_i^2}{\sum f_i} - \left(\frac{\sum f_i d_i}{\sum f_i}\right)^2} = \sqrt{\frac{1225}{40} - \left(\frac{15}{40}\right)^2} = 5.521$

(iii) $\text{Median} = \ell + \frac{\frac{N}{2} - C}{f} * i = 10 + \frac{20 - 12}{12} * 5 = 13.333$

$\frac{N}{2} = 20$, $\ell = 10$, $C = 12$, $f = 12$, $i = 5$

(iv) $\text{Mode} = \ell + \frac{f - f_{-1}}{2f - f_{-1} - f_1} * i = 15 + \frac{13 - 12}{2(13) - 12 - 3} * 5 = 15.454$

(b) $P(A/B) = \frac{P(A \cap B)}{P(B)} = 0.4 \Rightarrow P(A \cap B) = 0.4\, P(B)$

$P(B/A) = \frac{P(A \cap B)}{P(A)} = 0.6 \Rightarrow P(A \cap B) = 0.6\, P(A)$

$P(B) = \frac{3}{2} P(A)$

$0.9 = P(A) + P(B) - P(A \cap B) \Rightarrow 0.9 = \frac{5}{2} P(A) - 0.6\, P(A)$

$P(A) = \frac{0.9}{1.9} = \frac{9}{19}$

1st	R_1	2nd	R_2	d^2
P	7	P	5	
P	7	G	2.5	
VG	2.5	VG	1	
G	4.5	W	7.5	
ex	1	P	5	
P	7	G	2.5	
VG	2.5	P	5	
G	4.5	W	7.5	

$$\rho = 1 - \frac{6\sum d^2}{n(n^2-1)}$$

$\sum d^2 = 87$; $n = 8$

$$\rho = 1 - \frac{6 * 87}{8(63)} = -0.035714$$