HIMANSHI STATIONERY

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Group - 1.C

Assignement - 1 (math II)

(1)

	x_i	f_i	d_i	$f_i d_i$
0 - 10	5	20	-2	-40
10 - 20	15	24	-1	-24
20 - 30	25	40	0	0
30 - 40	35	36	1	36
40 - 50	45	20	2	40

$$\Sigma f_i d_i = -40 + 40 - 24 - 36 = 4$$

$$\bar{x} = A + h \frac{\Sigma f_i d_i}{N} = 25 + \frac{10(4)}{40}$$

$$= 25 + 0.28 = \boxed{25.28}$$

Q-(2) $\bar{x} = Rs\ 38$ $\quad x_{40} = ?$

$\bar{x}_{60} = Rs\ 60$

$$\bar{x}' = \frac{\bar{x} + x_{60} + \dots x_{100}}{100}$$

$$38 = \frac{3600 + 40y}{100} \qquad 60 = \frac{x_1 + \dots + x_{60}}{60}$$

$$380 = 360 + 4y \qquad y = \frac{x_{61} + \dots x_{200}}{40}$$

$$\boxed{y = 5}$$

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Que (3)

		cf	f
0 - 10	less than 10	4	4
10 - 20	" 20	16	12
20 - 30	" 30	40	24
30 - 40	" 40	76	36
40 - 50	" 50	96	20
50 - 60	" 60	112	16
60 - 70	" 70	120	8
70 - 80	" 80	125	5

$\frac{cf}{2} = \frac{125}{2} = 62.5$ class 30 - 40

$$Md = 30 + \left[\frac{62.5 - 40}{36}\right] \times 10 = 36.25$$

Que - (4)

xi	fi	cf
0 - 10	22	22
10 - 20	38	60
20 - 30	46	106
30 - 40	35	141
40 - 50	19	160

$N/4 = 40$ $3N/4 = 120$

$$Q_1 = l + \frac{h}{f}(N/4 - cf) = 14.736$$

$$Q_3 = l + \frac{h}{f}(3N/4 - cf) = 34$$

$$Q = 1/2 (Q_3 - Q_1)$$
$$= 1/2 (34 - 14.73)$$
$$= 9.8316$$

Que-5

10-20	4
20-30	6
30-40	20
40-50	32 f_0
50-60	33 f_1
60-70	17 f_2
70-80	8
80-90	2

$$M_0 = l + h\frac{(f_1 - f_0)}{2f_1 - f_0 - f_2}$$

$$= 50 + 10\frac{(33-32)}{2\times 33 - 32 - 17} = 50 + \frac{10}{66-49}$$

$$M_0 = 50 + \frac{10}{17} = 50.58$$

Q6

	f
0-5	2
5-10	5
10-15	7
15-20	13
20-25	21
25-30	16
30-35	8
35-40	3

Σf_i 75

Que-(8)

	x_i	f_i
0-10	5	4
10-20	15	7
20-30	25	28
30-40	35	12
40-50	45	9

$$H.M = \frac{60}{4/5 + 7/15 + 28/25 + 12/35 + 9/45}$$

$$= \frac{60}{0.8 + 0.46 + 1.12 + 0.34 + 0.2}$$

$$H.M = \frac{60}{2.92} = 20.54$$

(11) $$H.M = \frac{5}{1/2 + 1/4 + 1/7 + 1/12 + 1/19}$$

$$H.M = 5/1.023$$

$$H.M = 4.887$$

Ans-10

	f_i	cf
0-10	5	5
10-20	10	15
20-30	20	35
30-40	40	75
40-50	30	105
50-60	20	125
60-70	10	135
70-80	4	139

$\frac{139}{2} = 69.5$

$d_i = x_i - A/h$	d_i^2	$f_i d_i$	$f_i d_i^2$
-4	16	-20	80
-3	9	-30	90
-2	4	-40	80
-1	1	-40	40
0	0	0	0
1	1	20	20
2	4	20	40
3	9	12	36
		-78	386

$$\sigma = \sqrt{h^2\left(\frac{1}{N}\Sigma f_i d_i^2\right) - \left(\frac{1}{N}\Sigma f_i d_i\right)^2}$$

$$= \sqrt{100\left(\frac{1}{139} \times 386 - \left(\frac{1}{139} \times (-78)^2\right.\right.}$$

$$\sigma = \sqrt{246.200}$$

$$\sigma = \sqrt{15.69078}$$

Q-7 $$G.M = \text{Antilog}\left(\frac{1}{N}\sum_{i=1}^{n} \log x_i\right)$$

$$G.M = (x_1, x_2 \ldots\ldots x_n)^{1/n}$$

$$= (180 \times 190 \times 240 \times 386 \times 492 \times 562)^{1/6}$$

$$= 317.88$$

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Ans-9

x_i	f_i	cf	$f_i x_i$	$x_i - \bar{x}$
10	2	2	20	33.15
20	8	10	160	23.15
30	20	30	600	13.15
40	35	65	1400	3.15
50	42	107	2100	6.85
60	20	127	12000	16.85

$N = 127$

$N/4 = 31.75$ $\qquad 3N/4 = 95.25$

$Q_1 = 40$ $\qquad Q_3 = 50$

$Q_1 = 1/2$ $\qquad (Q_3 - Q_1) = 1/2\,(10) = 5$

$\boxed{Q = 5}$

$$\bar{x} = \frac{\Sigma f_i x_i}{\Sigma f_i} = \frac{5480}{127}$$

$$\boxed{\bar{x} = 43.15}$$