Exercise 9A

Question 19:

Let h = 5 and let A = 22.5 be the assumed mean.

For calculating the mean, we prepare the table given below:

Marks	Frequency f_i	Mid value x_i	$u_i = \left(\frac{x_i - A}{h}\right)$	$(f_i \times u_i)$
10 - 15	5	12.5	-2	-10
15 - 20	6	17.5	-1	-6
20 - 25	8	22.5 = A	0	0
25 - 30	12	27.5	1	12
30 - 35	6	32.5	2	12
35 - 40	3	37.5	3	9
	$\Sigma f_i = 40$			$\Sigma(f_i \times u_i) = 17$

Thus, A = 22.5 and h = 5

$\Sigma f_i = 4$ and $\Sigma (f_i \times u_i) = 17$

$$\therefore \text{Mean} = \bar{x} = A + \left[h \times \frac{\Sigma(f_i \times u_i)}{\Sigma f_i}\right]$$

$$= 22.5 + \left(5 \times \frac{17}{40}\right)$$

$$= 22.5 + \frac{17}{8}$$

$$= 22.5 + 2.125 = 24.625$$

Hence the mean of given frequency distribution is 24.625

Question 20:

We have h = 6 and let assume mean A = 33. For calculating the mean we prepare the table.

Age	Frequency f_i	Mid value x_i	$u_i = \left(\frac{x_i - A}{h}\right)$	$(f_i \times u_i)$
18 - 24	6	21	-2	-12
24 - 30	8	27	-1	-8
30 - 36	12	33 = A	0	0
36 - 42	8	39	1	8
42 - 48	4	45	2	8
48 - 54	2	51	3	6
	$\Sigma f_i = 40$			$\Sigma (f_i \times u_i) = 2$

Thus, A = 33, h = 6, $\Sigma f_i = 40$ and $\Sigma (f_i \times u_i) = 2$

$$\therefore \text{Mean}, \bar{x} = A + \left[h \times \frac{\Sigma (f_i \times u_i)}{\Sigma f_i}\right]$$

$$= 33 + \left(6 \times \frac{2}{40}\right) = 33 + 0.3 = 33.3 \text{years}$$

Hence, Mean = 33.3 years

********** END **********