Exercise 1A

Questions 18:
Let us find the LCM of 64, 80 and 96 through prime factorization:

2	64
2	32
2	16
2	8
2	4
	2

2	80
2	40
2	20
2	10
	5

2	96
2	48
2	24
2	12
2	6
	3

$64 = 2\times2\times2\times2\times2\times2 = 2^6$

$80 = 2\times2\times2\times2\times5 = 2^4\times5$

$96 = 2\times2\times2\times2\times2\times3 = 2^5\times3$

L.C.M of 64, 80 and 96 =

$= 2^6\times5\times3 = 64\times15 = 960\text{cm} = 9.6\text{m}$

Therefore, the least length of the cloth that can be measured an exact number of times by the rods of 64cm, 80cm and 96cm = 9.6m

Questions 19:

Let us find the LCM of 48, 72 and 108 through prime factorization:

2	48
2	24
2	12
2	6
	3

2	72
2	36
2	18
3	9
	3

2	108
2	54
3	27
3	9
	3

$48 = 2\times2\times2\times2\times3 = 2^4\times3$

$72 = 2\times2\times2\times3\times3 = 2^3\times3^2$

$108 = 2\times2\times3\times3\times3 = 2^2\times3^3$

$\therefore$ LCM of $48, 72, 108$ is $2^4\times3^3$

$= 16\times27 \text{ sec} = 432 \text{ sec} = 7\text{min } 12 \text{ sec}$

Three bells toll together after 7 min 12 sec

Questions 20:
Interval of beeping together = LCM (60 seconds, 62 seconds)
The prime factorization of 60 and 62:

60 = 30 x 2, 62 = 31 x 2
L.C.M of 60 and 62 is 30 x 31 x 2 = 1860 sec = 31min
electronic device will beep after every 31minutes
After 10 a.m., it will beep at 10 hrs 31 minutes

Questions 21:

$2 = 2 \times 1$

$4 = 2 \times 2$

$6 = 2 \times 3$

$8 = 2 \times 2 \times 2$

$10 = 2 \times 5$

$12 = 2 \times 2 \times 3$

L.C.M of 2, 4, 6, 8, 10, 12 minutes

$= 2 \times 2 \times 2 \times 3 \times 5 = 120$ minutes $= 2$ hours

After every 2 hours they toll together.

Required number of times $= \left(\frac{30}{2} + 1\right) = 16$ times

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