Homework

1.

In Bulb 1,	Bulb 2,
P = 50W	P = 100W
V = 220V	V = 220V

we know,

$$R = \frac{V^2}{P} = \frac{220 \times 220}{50}$$

$$R_1 = 968\,\Omega$$

$$R = \frac{V^2}{P} = \frac{220 \times 220}{100}$$

$$r = 484\,\Omega$$

i) **In Series**

i will be same for both

$$p = i^2 R$$

$$P \propto R$$

So 50W will grow brighter.

ii) **In Parallel connection**

V across both bulb will be same

as,

$$P = \frac{V^2}{R}$$

$$\boxed{P \propto \frac{1}{R}}$$

so, bulb with Resistance will glow brighter, i.e $R_2 = 484\,\Omega$
i.e 100W.

2. Given,

$P = 100W$

$V = 120v$

$R = ?$

we know,

$P = \dfrac{V^2}{R}$

So, $R = \dfrac{V^2}{P}$

$\Rightarrow R = \dfrac{14400}{100}$

$= 144 \, \Omega$

3. c) $P = V \times I$

$P = 1500 \, W$

$V = 250V$

$\therefore I = \dfrac{P}{V} = \dfrac{1500}{250} = 6A$

ii) Energy $P \times t$

$= 1500 \times 50$

$= 75000 \, Watt \, hr.$

iii) Total cost $= 75 \times 22 = 21 cb$