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Q1 (A):

Given That:

$P = 200000$

$S = 10,000$

$N = 20$ years

Required

$D =$ Depreciation?

Sol:

We know that

$$D = \frac{P - S}{n}$$

$$= \frac{200000 - 10000}{20}$$

$= 9500$ annually

Q1 (B):

Given Data:

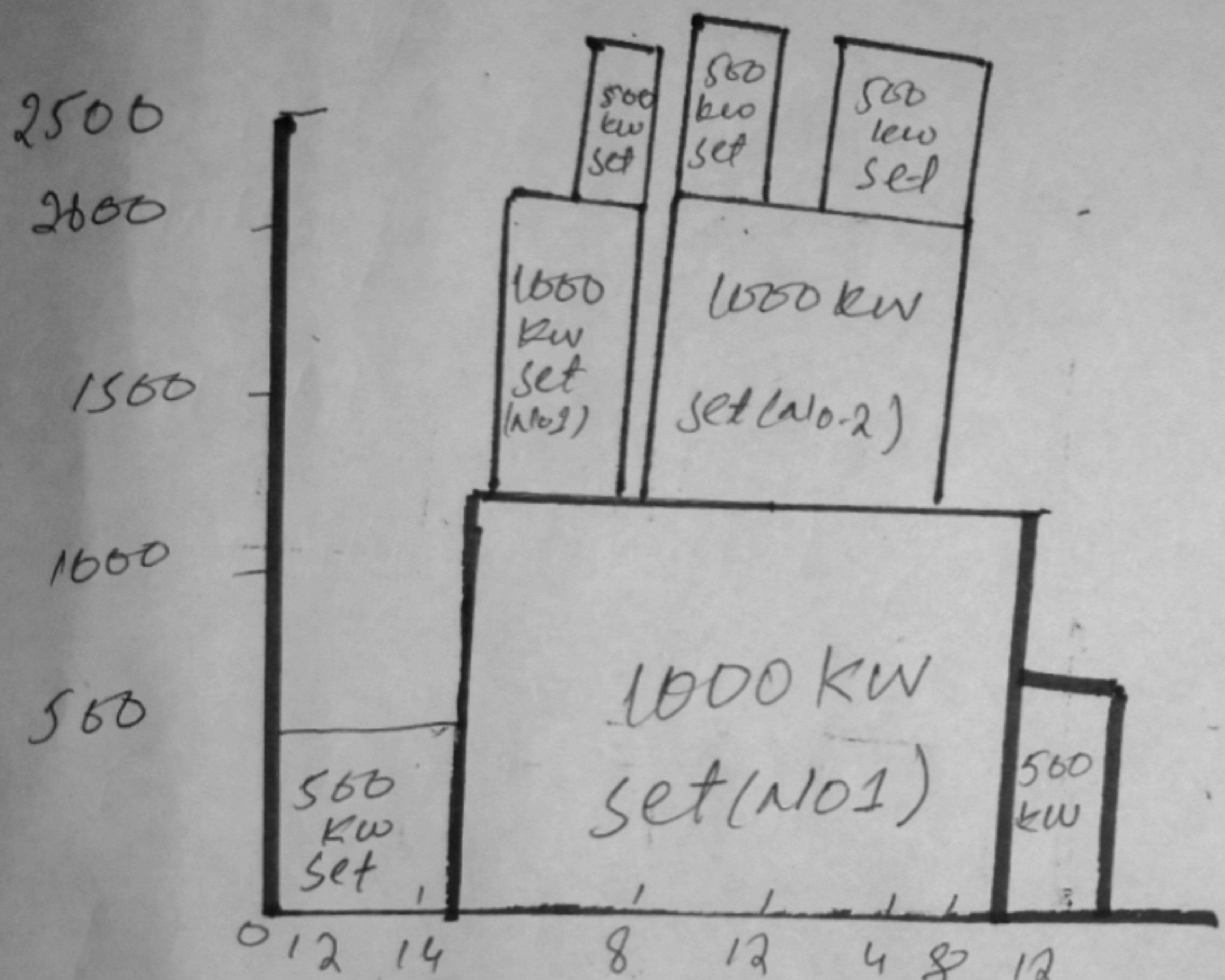
Energy = E = 10000 kWH
Current = I = 40A.
Voltage = V = 230 volts.

Solution:

* Power demand of consumer = $P = VI\cos\theta$
$= 230 \times 40 \times 1 = 9200W$
* Electricity consumption = $500 \times 9.2 = 4600$ kWH
* The cost of Electricity is Rs 2 per kWH of for the first 500 hours = $4600 \times 2 = 9200$
* for the Remaining unit that is $(10000 - 4600) = 5,400$ Consumer has to pay $5400 \times 1 = 5400$.

Annual bill is therefore $9200 + 5400 =$ Rs 14600 The flat Rate equivalent is $14600/10000$ = Rs 1.46 per kWh

Q2: In Time Table the load curve plotted from the Table Data. (3)



The maximum demand is 25000 kw. If water resource were not available in the vicinity the plant would normally be disel-electric

* Energy generated during 24 hrs.

= (500×5) + (750×1) + (1000×1) + (2000×2) + (2500×3) + (1500×1) + (2500×4) + (2000×2) + (2500×2) + (1000×2) + (500×1)

= 38,150 kWh

Maximum demand = 2500kw

Load factor = $\frac{\text{Energy generated during 24hrs.}}{\text{Maximum demand} \times \text{24 hrs.}}$

$= \frac{38,750}{2500 \times 24}$

$= 64.7\%$.

from the nature of the load curve, it will be Seen that this the load of a Small industrial town well distributed during day and night.

Two Set each other of 1000kw capacity

On Set of 500kw capacity.

The Total installed capacity of the station will, there fore be 1000+1000+500/1000 35kw.

plant Capacity factor = Energy produced during 24 hours (kwh)

$= \frac{381750}{3500 \times 24} = 0.46$ or 46%

with the operating schedule fixed ⑤
as above, the energy that could have been generated by the capacity of plant actually running for the scheduled time would be.

(500×6)+(1000×2)+(2000×2)+(2500×3)+
(1500×2)+(2500×4)+(2000×2)+(2500×2)+
(1000×2) = 39000 kwh

Energy actually produced = 38,750 kwh.

$$\text{plant use factor} = \frac{\text{Energy produced (kwh)}}{\text{Capacity of plant (kw)} \times \text{Numbers of hours}}$$

$$= \frac{38,750}{39000} = 0.994 \text{ or}$$

99.4%

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THE END