

ELEMENTS OF ELECTRICAL ENGINEERING

Course Code : UE25EE141A/B



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ELEMENTS OF ELECTRICAL ENGINEERING (UE25EE141A/B)

DOMESTIC TARIFF STRUCTURE AND CALCULATION

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Energy consumption & Tariff calculation Numerical

QUESTION 2:

The list of loads and average consumption hours per day of a typical household is given below:

S.No.	Name of the Appliance	Wattage	Average consumption hours per day
1.	Eight Bulbs	20 W each	10 hours
2.	2 Ceiling fans	80W each	10 hours
3.	3 Geysers	1KW each	1 hour
4.	Refrigerator	250W	24 hours
5.	Television	60W	6 hours
6.	Mixer Grinder	800W	30 minutes
7.	Water Pump	900W	40 minutes

Energy consumption & Tariff calculation

Considering a 31 day month, Determine

- i) Total number of units consumed in a month
- ii) Monthly bill for the above consumption units considering a domestic connection of 6KW sanctioned load with the tariff details given below:

S.No	Type of Charges	Tariff Details	
1.	Fixed Charges for the sanctioned load	Rs. 60 /- for first KW Rs. 75/- for every additional KW	
2.	Energy consumption Charges	0 to 50 units	@ Rs. 4.5 per unit
		51 to 100 units	@ Rs. 5.95 per unit
		101 to 200 units	@ Rs. 7.5 per unit
		201 to 300 units	@ Rs. 8.55 per unit
		301 to 400 units	@ Rs. 8.6 per unit
		Above 400 units	@ Rs. 9.0 per unit
3.	Fuel Adjustment Charges	@ 20 paisa per unit consumed	
4.	Tax on Energy consumption charges only	9.5 %	

Energy consumption & Tariff calculation

CALCULATIONS

S.No	Name of the Appliance	Wattage	Avg consumption hours/ day	Units consumed per day
1.	Eight Bulbs	20 W each	10 hours	$8*20*10 = 1600\text{Whr} = 1.6\text{KWhr} = 1.6 \text{ units}$
2.	2 Ceiling fans	80W each	10 hours	$2*80*10 = 1600\text{Whr} = 1.6\text{KWhr} = 1.6 \text{ units}$
3.	3 Geysers	1KW each	1 hour	$3 * 1\text{KW} * 1\text{Hr} = 3 \text{ unit}$
4.	Refrigerator	250W	24 hours	$250\text{W} * 24\text{hrs} = 6000\text{Whr} = 6 \text{ units}$
5.	Television	60W	6 hours	$60*6 = 360\text{Whr} = 0.36 \text{ units}$
6.	Mixer Grinder	800W	30 minutes	$800 * (30/60) = 400\text{Whrs} = 0.4 \text{ units}$
7.	Water Pump	900W	40 minutes	$900 * (40/60) = 600\text{Whrs} = 0.6 \text{ units}$

- Total units consumed per day = 13.56 units per day
- Total units consumed per month = 420.00units per month

Energy consumption & Tariff calculation

TARIFF DETAILS AND CALCULATIONS

S.NO.	TYPE OF CHARGES	TARIFF DETAILS	TARIFF CALCULATIONS
1.	Fixed Charges for the sanctioned load	Rs. 60 /- for first KW Rs. 75/- for every additional KW	$1*60 + 5*75 = \text{Rs. } 435/-$
2.	Energy consumption Charges	0 to 50 units @ Rs. 4.5 per unit 51 to 100 units @ Rs. 5.95 per unit 101 to 200 units @ Rs. 7.5 per unit 201 to 300 units @ Rs. 8.55 per unit 301 to 400 units @ Rs. 8.6 per unit Above 400 units @ Rs. 9.0 per unit	$50*4.5 + 50* 5.95 + 100*7.5 + 100*8.55 + 100*8.6+20*8.6 = \text{Rs. } 3159.5/-$

Energy consumption & Tariff calculation

S.NO.	TYPE OF CHARGES	TARIFF DETAILS	TARIFF CALCULATIONS
3.	Fuel Adjustment Charges	@ 20 paisa per unit consumed	$420*0.2 = \text{Rs. } 84/-$
4.	Tax on Energy consumption charges only	9.5 %	$0.095*3159.0 = \text{Rs. } 300.10/-$

Monthly bill = (1) + (2) + (3) + (4) = Rs 3978.65/-



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THANK YOU

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