# 18EE23/ Module 5

## Question 01 (ES)

| 1. Estimate total daily cost of energy for the following loads of the consumer.   The electricity cost is Rs.5 per unit.   1. An electrical installation consists of 13 light points of 80 *W* each, 5 light points of 50 W lamp, 6 fans of 100 *W* capacity and a pump motor of 1 HP. Assuming that 45% of light and fans are used for 6 hours per day and that the water pump works for 2 hours daily. Find out the monthly consumption and cost of electricity bill, based on the tariff of 3 Rs per *KWh.* | | | ES |
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|  | Response template | Information for graders |  |
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## Question 02 (ES)

| 1. Calculate the total bill amount of a house for 30 days if 4 bulbs of 50W for 6 hours, 3 tube lights of 40W for 12 hours, a TV of 100W for 5 hours, a refrigerator of 300W for 24 hours are used. The cost per unit is Rs.4 2. An electrical installation comprises 9 light points of 80 W each, 6 light points of 50 W lamp, 6 fans of 80 W capacity and a pump motor of 1 HP. Assuming that 60% of light and fans are used for 6 hours per day and that the water pump works for 2 hours daily. Find out the monthly consumption and cost of electricity bill, based on the tariff of 3.5 Rs per KWh. | | | ES |
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## Question 03 (ES)

| 1. A household uses the following electric appliances: 2. Refrigerator of rating 400 W for 24 hours each day. 3. Two electric fans of rating 80 W each for 12 hours each day. 4. Six electric bulbs of 18 W each for 6 hours each day.   Calculate the electricity bill of the household for the month of June if the cost per unit of electric energy is Rs.3.00.   1. An electrical installation consists of 12 light points of 80 W each, 10 light points of 50 W lamp, 2 fans of 100 W capacity and a pump motor of 1.5 HP. Assuming that 40% of light and fans are used for 5 hours per day and that the water pump works for 2 hours daily. Find out the monthly consumption and cost of electricity bill, based on the tariff of 4.5 Rs per KWh. | | | ES |
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## Question 04 (ES)

| 1. A geyser is rated at 4kW, 230V, 50Hz. If it is switched ON for 50 minutes daily, what would be the energy cost saving, at the rate of Rs.3 per unit if it is replaced by a solar water heater? 2. An electrical installation consists of 14 light points of 100 W each, 7 light points of 50 W lamp, 8 fans of 80 W capacity and a pump motor of 1.5 HP. Assuming that 70% of light and fans are used for 5 hours per day and that the water pump works for 3 hours daily. Find out the monthly consumption and cost of electricity bill, based on the tariff of 3 Rs per KWh. | | | ES |
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## Question 05 (ES)

| 1. Calculate the total daily Energy requirement for the following loads   The electricity cost is Rs.6 per unit for the first 20 units, Rs.4 per  unit for the next 30 units and Rs.2 per unit for usage above this.   1. An electrical installation consists of 18 light points of 80 *W* each, 6 light points of 50 W lamp, 5 fans of 100 *W* capacity and a pump motor of 2 HP. Assuming that 55% of light and fans are used for 5 hours per day and that the water pump works for 2 hours daily. Find out the monthly consumption and cost of electricity bill, based on the tariff of 5 Rs per *KWh.* | | | ES |
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## Question 06 (ES)

| 1. Estimate Total cost of daily Energy requirement for the following loads     Take electricity cost to be Rs.6 per unit.  b. Estimate the monthly electricity bill for the subsequent load fitted in an electrical installation.  (a) 15 lamps 50 watts each working 4 hours/ day.  (b) 4 ceiling fans 100 watts each working 8 hours/day.  (c) 2 kw heater working 2 hours/day.  (d) Water pump of 0.5 HP runs for 2 hours per day  Rate of charges for light and fans is 3.5 Rs / unit and heater and motor 4 Rs/unit. | | | ES |
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## Question 07 (ES)

| 1. A house using electrical tools as listed in the following table   How much electrical energy is used for 1 month (30 days)?  b. Determine the monthly electricity bill for the following load fitted in an electrical installation.  (a) 12 lamps 50 watts each working 8 hours/ day.  (b) 10 ceiling fans 80 watts each working 5 hours/day.  (c) 3 kw heater working 1 hours/day.  (d) Water pump of 1 HP runs for 1 hours per day  Rate of charges for light and fans is 3 Rs / unit and heater and motor 4 Rs/unit. | | | ES |
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## Question 08 (ES)

| 1. A domestic consumer has 10 number of lamps of 60 watts each, connected in his house. His demand is given as follows:   Midnight to 5am ………..50 watt  5 am to 6 pm …………....no-load  6pm to 7 pm ……………390watt  7pm to 9pm …………….340watt  9pm to 12 midnight …….190watt  Plot the load curve,  Determine: i) Average load ii) Maximum load iii) load factor iv) Energy consumption during one day.   1. Estimate total daily cost of energy for the following loads of the consumer.     The electricity cost is Rs.5 per unit. | | | ES |
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## Question 09 (ES)

| 1. In a house, there are 5 lamps of 25 Watt used 14 hours per day, a 200-Watt refrigerator used 24 hours per day, and a 125-Watt water pump used 8 hours per day. How much electrical energy used for a month (30 days)? 2. Calculate the total bill amount of a house for 30 days if 4 bulbs of 50W for 6 hours, 3 tube lights of 40W for 12 hours, a TV of 100W for 5 hours, a refrigerator of 300W for 24 hours are used. The cost per unit is Rs.4. | | | ES |
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## Question 10 (ES)

| 1. Estimate the total daily energy requirement for the following loads.     Take electricity cost to be Rs. 8 per unit.   1. A household uses the following electric appliances: 2. Refrigerator of rating 400 W for 24 hours each day. 3. Two electric fans of rating 80 W each for 12 hours each day. 4. Six electric bulbs of 18 W each for 6 hours each day.   Calculate the electricity bill of the household for the month of June if the cost per unit of electric energy is Rs.3.00. | | | ES |
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## Question 11 (ES)

| 1. Find the total cost of daily energy consumed for the following loads.     Take electricity cost to be Rs. 10 per unit.  b. A geyser is rated at 4kW, 230V, 50Hz. If it is switched ON for 50 minutes daily, what would be the energy cost saving, at the rate of Rs.3 per unit if it is replaced by a solar water heater? | | | ES |
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## Question 12 (ES)

| 1. Calculate the total daily Energy requirement for the following loads     The electricity cost is Rs.6 per unit for the first 20 units, Rs.4 per unit for the next 30 units and Rs.2 per unit for usage above this.  b. Estimate Total cost of daily Energy requirement for the following loads    Take electricity cost to be Rs.6 per unit. | | | ES |
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## Question 13(ES)

| 1. A house using electrical tools as listed in the following table     How much electrical energy is used for 1 month (30 days)?   1. A domestic consumer has 10 number of lamps of 60 watts each, connected in his house. His demand is given as follows:   Midnight to 5am ………..50 watt  5 am to 6 pm …………....no-load  6pm to 7 pm ……………390watt  7pm to 9pm …………….340watt  9pm to 12 midnight …….190watt  Plot the load curve,  Determine: i) average load ii) maximum load iii) load factor iv) energy consumption during one day. | | | ES |
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## Question 14 (ES)

| 1. In a house, there are 5 lamps of 25 Watt used 14 hours per day, a 200 Watt refrigerator used 24 hours per day, and a 125 Watt water pump used 8 hours per day. How much electrical energy used for a month (30 days)? 2. Estimate the total daily energy requirement for the following loads.     Take electricity cost to be Rs. 8 per unit. | | | ES |
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## Question 15 (ES)

| 1. Find the total cost of daily energy consumed for the following loads.     Take electricity cost to be Rs. 10 per unit.  b. Calculate the monthly electricity bill for the following load fitted in an electrical installation.  (a) 12 lamps 60 watts each working 8 hours/ day.  (b) 5 ceiling fans 100 watts each working 8 hours/day.  (c) 4 kw heater working 4 hours/day.  (d) Water pump of 0.5 HP runs for 3 hours per day  Rate of charges for light and fans is 3.5 Rs / unit and heater and motor 4 Rs/unit. | | | ES |
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