

ALTERNATIVE ENERGY QUIZ

A house used daily electrical requirement for the following electrical appliances:

- 6 lamps of 10 W each used for 4 hours.
- 4 outside lamps of 15 W used for 12 hours.
- 1 television of 30 W used for 3 hours.
- 1 freezer of 60 W used for the whole day.

This house used 12V solar system for supply. The average daily output of one module at a site is expected to be 150 Wh/day at 12V. The average charging efficiency of the batteries typically is 80%. The batteries as storage selected for the system each has a capacity of 180Ah. They are lead-acid batteries intended for deep-cycle operation and can be discharged to a depth of 70%. 5 days are required for a period of storage.

1. Determine total load sizing.
2. How many modules are needed to generate for the whole house?
3. What is the smallest number of batteries that can be used?

[10 Marks]