X

NPTEL

Courses » **Design for internet of things**

Announcements   **Course**   Ask a Question   Progress   Mentor

Unit 6 - Battery less power supply and battery life calculation for embedded devices

Course outline

How to access the portal

Introduction to IOTs - Improving Quality of Life

System Design and Overview of Power Supply Section

Designing with LDO's, Switching Regulators and Case Studies

Power Conditioning with Energy Harvesters

Battery less power supply and battery life calculation for embedded devices

● Battery less power supply and battery life calculation for embedded devices - I

● Battery less power supply and battery life calculation for embedded devices - II

● Battery less power supply and battery life calculation for

Week5 Assessment

The due date for submitting this assignment has passed. **Due on 2017-08-30, 23:59 IST.**

Submitted assignment

1) For a battery what is the meaning of actual capacity and nominal capacity ?   *1 point*

- ○ Nominal capacity is the discharge from the battery. Actual capacity is as specified in datasheet.
- ○ Actual capacity is the discharge from the battery. Nominal capacity is as specified in datasheet.
- ○ Both are equal and as specified in datasheet
- ○ Both are equal and as measured when battery is used

No, the answer is incorrect.
Score: 0

Accepted Answers:
Actual capacity is the discharge from the battery. Nominal capacity is as specified in datasheet.

2) LORA ,SIGFOX, NB-IOT and LTE-M are types of   *1 point*

- ○ Wireless technologies
- ○ Wired technologies
- ○ Low power wide area networks
- ○ High power wide area networks

No, the answer is incorrect.
Score: 0

Accepted Answers:
Low power wide area networks

3) The minimum lifespan of a battery driven IoT device should be: *1 point*

- ○ ~5 weeks
- ○ ~ 10 years
- ○ Few days
- ○ Few hours

No, the answer is incorrect.
Score: 0

Accepted Answers:
~ 10 years

4) Gateway devices will be generally powered with   *1 point*

- ○ Harvested energy
- ○ Battery

○ Large size batteries or even grid power

○ Potential energy

No, the answer is incorrect.
Score: 0

Accepted Answers:
Large size batteries or even grid power

5) When the battery powered device is in sleep mode   **1 point**

○ The capacity of the battery decreases

○ The capacity of the battery increases

○ The capacity of the battery has no change

○ The battery discharges completely

No, the answer is incorrect.
Score: 0

Accepted Answers:
The capacity of the battery increases

6) To avoid a current consumption of spiky nature directly from the battery, it is advisable to: **1 point**

○ Add an inductor at the output of the battery

○ Add a capacitor at the output of the battery

○ Add a resistor at the output of the battery

○ Any of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Add a capacitor at the output of the battery

7) Low duty cycle in a battery powered device means   **1 point**

☐ Very long battery life

☐ Very high efficiency of the battery

☐ Significant self discharge will occur

☐ The device is predominantly in sleep mode

No, the answer is incorrect.
Score: 0

Accepted Answers:
Significant self discharge will occur
The device is predominantly in sleep mode

8) Dickson charge pump is a   **1 point**

○ Voltage doubler

○ Power doubler

○ Energy boosting circuit

○ All of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Voltage doubler

9) In the vibration harvesting scenario, the power output is high when   **1 point**

○ The 'g' value is 0.

○ The 'g' value is 1.

○ The 'g' value is as high as possible

○ The 'g' value is low

No, the answer is incorrect.
Score: 0

Accepted Answers:
The 'g' value is as high as possible

10) To efficiently harvest from vibration, which of the following is/are a critical factor?   ***1 point***

- ○ Clamping the harvester
- ○ Tip mass
- ○ Placement of the harvester
- ○ All of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
All of the above.

11) What is the importance of tip mass?   ***1 point***

- ○ To tune the beam to resonance
- ○ To diverge the beam away from resonance
- ○ Decrease the 'g' value
- ○ Decrease the sensitivity.

No, the answer is incorrect.
Score: 0

Accepted Answers:
To tune the beam to resonance

12) What is the drawback of using a tip mass on a vibration harvester?   ***1 point***

- ○ Reduces the sensitivity
- ○ Reduces the ability of extract over a range of frequencies.
- ○ Increases the weight of the vibrating device
- ○ None of the above.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Reduces the ability of extract over a range of frequencies.

13) Using the vibration harvester, with the tip mass, the voltage generated on the oscilloscope was: ***1 point***

- ○ 25V dc
- ○ 10V dc
- ○ 0.1V dc
- ○ 40V dc

No, the answer is incorrect.
Score: 0

Accepted Answers:
10V dc

◁ Previous Page   End ▷

A project of

NPTEL National Programme on Technology Enhanced Learning

In association with

NASSCOM®

Funded by

Government of India
Ministry of Human Resource Development

Powered by

Google™