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NPTEL

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Courses » Design for internet of things

Announcements Course Ask a Question Progress Mentor

Unit 4 - Designing with LDO's, Switching Regulators and Case Studies

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

● Designing with LDO's, Switching Regulators and Case Studies - I

● Designing with LDO's, Switching Regulators and Case Studies - II

● Designing with LDO's, Switching Regulators and Case Studies - III

● Designing with LDO's, Switching Regulators and Case Studies - IV

○ Quiz : Week3 Assesment

○ Solutions for Assignment 3

Power Conditioning

Week3 Assesment

The due date for submitting this assignment has passed. **Due on 2017-08-16, 23:59 IST.**

Submitted assignment

1) In an LDO, the sensitivity is too high because of ? 1 point

- Forward gain
- Loop gain
- Noise factor
- All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Loop gain

2) Loop gain can be of what value in an LDO ? 1 point

- 0
- 1
- Finite
- Infinite

No, the answer is incorrect.

Score: 0

Accepted Answers:

Finite

3) Why is Cout very critical in an LDO ? 1 point

- Increases the noise factor of the LDO
- Increases the stability of the LDO
- Decreases the output voltage of the LDO
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Increases the stability of the LDO

4) Which among these is not a simulation software ? 1 point

- PSpice
- WEBench
- LTSpice

with Energy Harvesters

Battery less power supply and battery life calculation for embedded devices

IoT Protocols

IoT LAN and WAN Connectivities

IoT Case Studies

IAR Workbench

No, the answer is incorrect.

Score: 0

Accepted Answers:

IAR Workbench

5) What is the right sequence in prototyping a hardware module ? A. Simulate B. Test C. Deploy
D. Build **1 point**

ABCD

DCBA

ADBC

BCAD

No, the answer is incorrect.

Score: 0

Accepted Answers:

ADBC

6) The ripple suppression of the LDO is decided by which factor ? **1 point**

CMRR (Common Mode Rejection Ratio)

PSRR (Power Supply Rejection Ratio)

ESR (Equivalent Series Resistance)

None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

PSRR (Power Supply Rejection Ratio)

7) Enable pin on the LDO is used to ? **1 point**

Drive the output load from the LDO

Drive the input to the harvester

Drive the output load to the LDO

All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Drive the output load to the LDO

8) Buck converter can also be used for which of the following ? **1 point**

Decrease the battery life of a system

Improve the battery life of a system

Improve the efficiency of the system

Both (b) and (c)

No, the answer is incorrect.

Score: 0

Accepted Answers:

Both (b) and (c)

9) What are the advantages of using a buck converter over an LDO ? **1 point**

High efficiency (90%)

Sustainability of the battery

Both (a) and (b)

None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:*Both (a) and (b)*

10)How was the LDO stabilized in the case of Joule Jotter ?

1 point

- Right choice of Cin value (220uF Tantalum Capacitor)
- Right choice of Cout value (47uF Capacitor)
- Change in LDO
- Both (a) and (b)
- (a) ,(b) and (c)

No, the answer is incorrect.**Score: 0****Accepted Answers:***Both (a) and (b)*

11)What was the problem faced due to the instability of the LDO in Joule Jotter ?

1 point

- Sensors did not communicate to the microcontroller
- Radio communication was unsuccessful
- Microcontroller did not perform energy calculations
- Data was not written to the SD card

No, the answer is incorrect.**Score: 0****Accepted Answers:***Radio communication was unsuccessful*

12)What is the value of PSRR when LDO is operating in its bandwidth ?

1 point

- Lower value
- Higher value
- Indepent of bandwidth
- None of the above

No, the answer is incorrect.**Score: 0****Accepted Answers:***Lower value*

13)How is loop gain related to PSRR ?

1 point

- Directly proportional
- Inversely proportional
- Equal
- Not related

No, the answer is incorrect.**Score: 0****Accepted Answers:***Directly proportional*

14)Temperature of an LDO is a measure of which of the following selection criteria ?

1 point

- Tolerance
- Bandwidth
- Loop gain
- Accuracy

No, the answer is incorrect.**Score: 0****Accepted Answers:***Accuracy*

15)Tolerance of an LDO mainly depends on which factor ?

1 point

- Vin (input voltage)
- Vout (output voltage)
- Vref (reference voltage)
- Cout (ouput capacitor)

No, the answer is incorrect.

Score: 0

Accepted Answers:

Vref (reference voltage)

16)What does shut down mode in an LDO refer to ?

1 point

- No sufficient Vin
- It is not enabled
- Vref is not equal to Vfb
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

It is not enabled

17)When a radio of a micro-controller is in idle listening mode, What is the effect?

1 point

- Energy is preserved
- Energy is wasted
- Not related to the energy
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

Energy is wasted

18)Which of the following statement is true with respect to a TelosB mote ?

1 point

- Wake up time is the time taken by the microcontroller to boot up
- Wake up time is the time taken by the radio to initialize and stabilize
- Wake up time does not contribute for energy consumption
- Both (a) and (b)

No, the answer is incorrect.

Score: 0

Accepted Answers:

Wake up time is the time taken by the radio to initialize and stabilize

19)What was the reason behind building TelosB over MICA ?

1 point

- High quiescent current
- Wake up time of 4ms
- Radio communication and I/O not robust for temperature fluctuations
- All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

All of the above

20)Which parts of the microcontroller can be used to build a charge pump ?

1 point

- Timer and GPIO
- Timer and ADC
- Flash memory and timer
- ADC and SPI

No, the answer is incorrect.

Score: 0

Accepted Answers:

Timer and GPIO

21)When is a battery required along with an energy harvesting IC ?

1 point

- When the energy is more than sufficient
- When the energy from the battery is insufficient
- When the energy from the energy harvesting IC is not available always
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

When the energy from the energy harvesting IC is not available always

22)Energy demands of the load does not get exposed to the input system (harvesting)" implies what ? **1 point**

- Self start
- Loop gain
- Isolation
- Efficiency

No, the answer is incorrect.

Score: 0

Accepted Answers:

Isolation

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