No. of Printed Pages : 3

BIELE-006

DIPLOMA – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)

00636

Term-End Examination

June, 2015

BIELE-006 : ELECTRONIC PRODUCT DESIGN

Time : 2 hours *Maximum Marks : 70*

Note : *Question no. **1** is **compulsory**. Attempt any **five** questions in all. Each question carries equal marks. Use of scientific calculator is permitted.*

1. (a) Why is thermal consideration necessary for the design of linear regulated power supply ? *7×2=14*

(b) What is P-SPICE ?

(c) "ROM is a non-volatile memory." Explain.

(d) Why is cascading of filter required ?

(e) What are the different types of semiconductor memories ? State their uses.

(f) What is the function of Voltage Regulator ?

(g) Write down the various applications of Data Acquisition System.

2. (a) Discuss the limitations of a linear voltage regulator. Explain the indicators for overcurrent and overvoltage in the regulated power supply. 7

(b) Define power dissipation, thermal equations and efficiency in context of linear regulated power supply. 7

3. (a) Explain the functions of EMI filters and MCB. 7

(b) Design a 4-bit sequence detector for detecting '1100' in a input string and explain its working. 7

4. (a) Design a combinational circuit using ROM, which generates the cube of a 2-bit number. 7

(b) Explain the various types of ROM with their applications and internal structure. 7

5. (a) Implement the following function by using PAL : 7

$F_1(A, B, C, D) = \sum m (1, 3, 4, 7, 9, 11, 13)$

$F_2(A, B, C, D) = \sum m (0, 5, 6, 10, 12, 13)$

$F_3(A, B, C, D) = \sum m (2, 5, 8, 14, 15)$

(b) Design a second order Butterworth High pass active filter for a lower cut-off frequency of 2·5 kHz. 7

6. (a) Explain various realization techniques of Sallen-Key unity gain filters. 7

(b) Define Butterworth and Chebyshev filters and compare their response. 7

7. (a) Draw and explain the operation of front end analog signal conditioning circuit in microcontroller based Data Acquisition System. 7

(b) What are the criteria to select suitable Analog to Digital Converter (ADC) for a microcontroller ? 7

8. Write short notes on any ***two*** of the following : *2×7=14*

(a) Moore and Mealy Machine

(b) KRC Filters Realization Techniques

(c) 7-Segment LED Display Device Interfacing