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No. of Printed Pages : 4

BIELE-006

DIPLOMA – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)

Term-End Examination

December, 2015

BIELE-006 : ELECTRONIC PRODUCT DESIGN

Time : 2 hours *Maximum Marks : 70*

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

1. Choose the correct answer : *7×2=14*

(a) The device that is typically used as a stable reference voltage in a linear voltage regulator is

(i) SCR

(ii) Junction diode

(iii) Varactor diode

(iv) Zener diode

(b) The information in ROM is stored

(i) By the user using electrical signal

(ii) By the manufacturer during fabrication of the device

(iii) By the user using ultraviolet light

(iv) By the user once and only once

(c) The dynamic regulation of a power supply is improved by increasing the value of

(i) the choke
(ii) the input capacitor
(iii) the output capacitor
(iv) the bleeder resistor

(d) The device which changes from parallel data to serial is

(i) Counter
(ii) Multiplexer
(iii) De-multiplexer
(iv) Flip-flop

(e) The number of control lines for 32 to 1 multiplexer is

(i) 4
(ii) 5
(iii) 16
(iv) 6

(f) A decoder is a

(i) Sequential device
(ii) Combinational device
(iii) ALU
(iv) All of the above

(g) The process of entering data into a ROM is called

(i) Burning
(ii) Programming
(iii) Writing
(iv) Charging

2. What is the function of a voltage regulator ? Draw and explain the block diagram of regulated DC power supply. *14*

3. (a) What do you mean by overcurrent ? How is overcurrent protection provided in the regulated power supply ? *7*

   (b) Differentiate between Moore and Mealy machines with necessary block diagrams. *7*

4. (a) Realize the following Boolean function $F(A, B, C) = \sum(0, 1, 3, 5, 7)$ using : *7*

   (i) 8 : 1 MUX

   (ii) 4 : 1 MUX

   (b) Design Binary to Gray code converter using ROM. *7*

5. (a) Design a second order unity gain high pass filter with f_0 of 7·2 kHz and Q of 0·5. *7*

   (b) Explain various realization techniques of KRC filters. *7*

6. (a) On what factors does the damping coefficient of a filter depend ? Explain why cascading of filters is done for higher order filter design. *7*

   (b) Draw and explain the output interfacing of a DAC with PWM for analogue output using microcontroller. *7*

7. (a) Write down the applications of microcontroller based data acquisition systems. 7

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

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

(a) Thermal considerations

(b) FSM-sequence generator

(c) Frequency response simulation using software like P-SPICE etc.