MS – 366

VI Semester B.Sc. Examination, May 2016
(Semester Scheme) (NS) (F + R)
(2013-14 and Onwards)
ELECTRONICS – VIII
Instrumentation and Verilog

Time : 3 Hours Max. Marks : 70

Instruction : *Answer* ***any five*** *questions from Part –* ***A,*** ***any four*** *questions from Part –* ***B*** *and* ***any five*** *sub-questions from Part –* ***C.***

PART – A

Answer **any five** questions. **Each** question carries **8** marks : **(5×8=40)**

1. a) Differentiate between static and dynamic characteristics of measuring instruments. Define speed of response, fidelity, lag and dynamic error.
   b) Explain the principle of ultrasonic temperature transducer. **(6+2)**

2. a) Explain the construction and working of a thermistor. Mention an application.
   b) Explain the working principle of a photodiode and mention an application. **(6+2)**

3. Write a note on origin of bioelectric signals. **8**

4. With a block diagram, explain the function of an ECG system. **8**

5. a) Distinguish between wand and tri nets with their syntax and truth tables.
   b) Distinguish between scalar and vector nets with examples. **(4+4)**

6. Explain equality and logical operators in Verilog with examples for each. **8**

7. Describe dataflow style of Verilog. With the help of a circuit diagram, write a Verilog code for 4 : 2 encoder in dataflow style. **8**

8. Explain initial and always statements in Verilog. Give an example for each. **8**

PART – B

Answer **any four** questions. **Each** question carries **5** marks : **(4×5=20)**

9. The expected and measured value of the current through a resistor is 45 mA and 44 mA respectively. Calculate (i) absolute error (ii) percentage error (iii) relative accuracy (iv) percentage accuracy.

P.T.O.

10. What is a carrier amplifier ? Explain its operation with a block diagram.

11. With a block diagram explain the function of EEG system.

12. With the help of a circuit diagram, write a Verilog code to implement 8 :1 multiplexer.

13. Write a Verilog code to implement 4-bit binary to gray code converter and vice-versa.

14. Write a Verilog code to implement 3-bit ripple counter.

PART – C

15. Answer **any five** sub-questions. **Each** question carries **2** marks : **(5×2=10)**

a) Is photo transistor an active or a passive transducer ? Justify.

b) When a metallic wire of 100 Ω is stretched by 1 mm, its resistance increases by 0.1 Ω. If its original length is 2 m, what is its gauge factor ?

c) Mention an advantage and an application of LVDT.

d) Match the following :

1) Photoelectric effect	i) Microphone
2) Photo emissive effect	ii) Light energy into electrical
3) Potentiometer	iii) Generation of emf under stress
4) Pressure transducer	iv) Displacement
	v) Change in color

e) Write the bit-pattern for the number 8'ox5 in Verilog.

f) What is the bit pattern of the vector net *bus* after the following two instructions are executed ?
wire [7:0] bus;
assign bus [3:0] = 4'h5;

g) In a module if an undeclared net is to be wand net type, what should be the compiler directive ?