Total No. of Questions—4] [Total No. of Printed Pages—2

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S.Y. B.Sc. (Computer Science) (I Sem.) EXAMINATION, 2017

ELECTRONICS

Paper II

ELC-212 : Analog Systems

(2013 PATTERN)

Time : Two Hours **Maximum Marks : 40**

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Neat diagrams must be drawn wherever necessary.

1. Answer the following questions in *one* or *two* sentences each : [10×1=10]

(*a*) Define range of a sensor.

(*b*) What do you mean by order of a filter ?

(*c*) How many comparators are needed for a 8 bit simultaneous type ADC ?

(*d*) Name the temperature sensor IC.

(*e*) What is the role of a Wheatstone's Bridge as signal conditioner ?

(*f*) Define resolution of a DAC.

(*g*) Name any *two* passive transducers.

(*h*) State any *one* application of pH sensor.

(*i*) Draw frequency response of an ideal low pass filter.

(*j*) Draw the circuit diagram for non-inverting amplifier using Opamp.

P.T.O.

2. Attempt any *two* of the following : [2×5=10]

(*a*) Draw the neat block diagram of analog electronic system and explain function of each block.

(*b*) For a 3-bit Binary weighted resistor network (0 = 0 V, 1 = 5 V). Find full scale output and output due to LSB change. What are the disadvantages of Binary weighted resistor network.

(*c*) Draw the circuit diagram of instrumentation amplifier using three opamp. Derive expression for its gain.

3. Attempt any *two* of the following : [2×5=10]

(*a*) State working principle of ultrasonic sensor. State any *two* applications of ultrasonic sensor.

(*b*) Draw the circuit diagram of first order active high pass filter and explain its frequency response.

(*c*) Draw and explain Water Level Indicator System.

4. Attempt any *one* of the following : [1×10=10]

(A) (*i*) Explain Dual Slope ADC with the help of neat diagram.

(*ii*) Differentiate between active and passive filter.

Or

(B) (*i*) Explain working principle of capacitive type touch sensors. State any *two* applications where capacitive type touch sensors can be used.

(*ii*) With neat block diagram explain Intruder Detector system using PIR sensor.