D 23429-A   (Pages : 2)   Name......................

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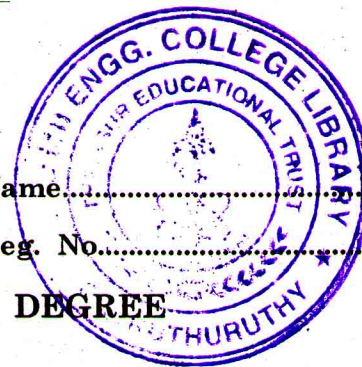
FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2011

EC 04 505—ELECTRONIC INSTRUMENTATION

(2004 admissions)

Time : Three Hours   Maximum : 100 Marks

Answer **all** *questions.*

Part A

I. (a) Distinguish between Primary transducers and Secondary transducers.

(b) State Seebeck effect and Peltier effect.

(c) List out the advantages of Transistor voltmeters.

(d) What is meant by gating error ?

(e) Mention the drawbacks of Wheatstone bridge.

(f) What are the requirements for a pulse generator ?

(g) Mention applications of wave analyzer.

(h) What would a true RMS reading voltmeter indicate if a pulse waveform of 5V peak and a duty cycle of 25 % is applied to it ?

(8 × 5 = 40 marks)

Part B

Module I

II. (a) (i) Explain various classifications of error with suitable examples.   (10 marks)

(ii) Define limiting error and derive an expression for relative limiting error.   (5 marks)

Or

(b) Explain the principle of operation of a strain gauge and derive the strain resistivity relation.

Module II

III. (a) Explain the working principle of a ramp type digital voltmeter.

Or

(b) Draw and explain the circuit of a digital frequency meter.

Module III

IV. (a) (i) Explain the functioning of a basic strip chart recorder with a neat block diagram.

(9 marks)

(ii) Mention the applications of X-Y recorders.   (6 marks)

Or

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(b) (i) Explain Maxwells bridge to measure unknown inductance.   (8 marks)

(ii) Derive bridge balance equation for an a.c. bridge.   (7 marks)

Module IV

V. (a) (i) Draw and explain the working principle of a superheterodyne type spectrum analyzer with a neat block diagram.

(10 marks)

(ii) List out applications of spectrum analyzer.   (5 marks)

Or

(b) Sketch the basic system block diagram of a digital storage oscilloscope and explain its working.

$[4 \times 15 = 60 \text{ marks}]$