AQ–2873

Faculty of Engineering & Technology

M.E. Electrical & Elect. Engg. Semester-II (New-CGS) Examination

DIGITAL INSTRUMENTATION

Paper—2 EEEME 1

Time—Three Hours] [Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

(1) All questions carry marks as indicated.

(2) Due credit will be given to neatness and adequate dimensions.

(3) Assume suitable data wherever necessary.

(4) Illustrate your answers wherever necessary with the help of neat sketches.

(5) Use pen of Blue/Black ink/refill only for writing the answer book.

1. (a) What is measurement error ? Explain the various concepts used in statistical analysis of measurements. 7

(b) Explain the architecture of FPGA with the help of neat diagram. 7

OR

2. (a) Compare various electrically erasable memory techniques. Also explain flash memory. 7

(b) Categorise the semiconductor components and explain them. Give examples of each. 7

3. (a) Describe the basic SHA operation with the help of its four mode specifications. 7

(b) Describe the various blocks and their functions in pipelined ADC architecture. 6

OR

4. (a) Discuss DAC architectures based on resistor ladders. 7

(b) Write a short note on ADC-Amplifier Interface. 6

(Contd.)

5. Explain the basic operation of an oscilloscope with necessary diagram for each section in detail. 13

OR

6. (a) Explain the basic dual slope ADC technique used in digital multimeters with its diagram and measurement cycle. 7

(b) Write short notes on :

(i) Phosphor characteristics,

(ii) Liquid crystal displays. 6

7. (a) Explain frequency domain synthesis. Which techniques fall into the category of frequency domain synthesis ? 7

(b) Enlist the different modes of operation of electronic counters and explain any two modes in detail. 7

OR

8. (a) Explain the working of AWG based on direct digital synthesis. 6

(b) Explain frequency measurement and frequency ratio measurement with reference to electronic counters. 8

9. (a) Explain the various controls employed in modern spectrum analysers. 6

(b) Explain the three common techniques used to make frequency domain measurements. 7

OR

10. (a) List the types of analysis with reference to logic analyser. Explain timing and state analysis in detail. 7

(b) Explain in brief different types of spectrum analysers. 6

11. (a) Describe VME bus extension for instrumentation. 6

(b) Explain implementation of any ATE application using GPIB. 7

OR

12. (a) What is SCPI instrument model ? Explain. 6

(b) Write a short note on ADSL standard. 7