Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14EI2011** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELECTRONIC INSTRUMENTATION** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No** | **Sub Div.** | **Questions** | **Course**  **Outcome** | Marks |
| 1. | a. | Sketch the complete circuit of an emitter – follower voltmeter using a FET stage and explain the circuit operation. | CO 1 | 10 |
| b. | Draw the basic circuit diagram of a Q meter and explain its operation in detail. | CO 1 | 10 |
| (OR) | | | | |
| 2. | a. | Sketch the block diagram and system waveforms for a DVM using a Dual Slope type analog to digital converter. Explain its operation. | CO 1 | 10 |
| b. | Sketch the block diagram and system waveforms for a DVM using a Ramp generator type analog to digital converter. Explain its operation. | CO 1 | 10 |
| 3. | a. | Discuss the basic circuit of an oscilloscope deflection amplifier together with an input attenuator and explain the operation of the circuit. | CO 3 | 14 |
|  | b. | Sketch an LED seven segment display. Explain common cathode and common anode LED displays. Compare the supply current requirement for LED and LCD displays. | CO 3 | 6 |
| (OR) | | | | |
| 4. | a. | A ±40V,500Hz triangular wave is applied to the vertical deflecting plates of a CRT, and a ±50V, 250 Hz sawtooth wave is applied to the horizontal deflecting plates. The CRT has a 0.1 cm/V vertical deflection sensitivity and a 0.08cm/V horizontal deflection sensitivity. Assuming that the two inputs are synchronized, construct the waveform displayed on the screen. | CO 3 | 14 |
|  | b. | Name four types of displacement transducer and describe one application of each type. | CO 3 | 6 |
| 5. | a. | Explain the basic block diagram of a sampling oscilloscope. Sketch the waveforms throughout the system and explain its operation. | CO 3 | 10 |
|  | b. | Draw a basic block diagram and waveforms for a Digital storage oscilloscope. Sketch the waveforms throughout the system and explain its operation. | CO 3 | 10 |
| (OR) | | | | |
| 6. | a. | Draw the logic diagram for a decade counter, and explain its operation. Prepare a table showing the counter output states for each input pulse. | CO 2 | 10 |
|  | b. | Draw the basic block diagram of a digital frequency meter, sketch the waveforms and explain the instrument operation. | CO 2 | 10 |
| 7. | a. | Draw the Wein’s bridge oscillator circuit diagram. Explain how the circuit operates, and write equations for output frequency and amplifier gain. | CO 2 | 10 |
|  | b. | Draw an op-amp astable multivibrator circuit. Show the waveforms at various points in the circuit and explain its operation. | CO 2 | 10 |
| (OR) | | | | |
| 8. | a. | Explain harmonic distortion wave analyzer and describe its working in detail. | CO 2 | 10 |
|  | b. | Explain the working principle of spectrum analyzer and describe its working in detail. | CO 2 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | With an example explain the concepts in virtual Instrumentation. | CO 2 | 10 |
|  | b. | Explain the stages involved in engineering of products using virtual instrument with a neat schematic diagram. | CO 2 | 10 |

ALL THE BEST