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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **17EI2041** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MEASUREMENT AND 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. | With a help of a neat sketch, describe the construction and working  of Moving Iron instrument and list the advantages and limitations. | CO1 | 10 |
| b. | Explain the types of possible errors in instruments. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Explain the working of Hay’s bridge for measurement of inductance. Derive the equation for inductance and quality factor. | CO2 | 10 |
| b. | Discuss the principal of working of Q meter with necessary diagrams. | CO2 | 10 |
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| 3. |  | Illustrate how an unknown capacitance is measured with the help of D’Sauty’s bridge. | CO2 | 20 |
| (OR) | | | | |
| 4. | a. | Classify digital voltmeter and elaborate the operation of ramp type digital voltmeter with neat block diagram. | CO1 | 15 |
| b. | Consider the four arms of a bridge are as follows.  Arm ab: an imperfect capacitor C1 with an equivalent series resistance r1  Arm bc: a non inductive resistance R3  Arm cd: a non inductive resistance R4  Arm da: C2 with an equivalent series resistance of r2 series with a resistance R2.  A supply of 450 Hz is given between terminals a and c and the detector is connected between b and d, At balance R2=4.8 Ω, R3=2000 Ω, R4=2850 Ω, C2=0.5μF and r2=0.4 Ω. Calculate the value of C1, r1 and also the dissipating factor(D). | CO1 | 5 |
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| 5. | a. | Describe in detail the circuit and working of an Monostable multivibrator. | CO5 | 10 |
| b. | Name the different types of distortions. Write the expression to calculate Total Harmonic Distortion. | CO6 | 10 |
| (OR) | | | | |
| 6. | a. | Explain the circuit of RC phase shift oscillators. Describe how Barkhausen criteria are satisfied in this oscillator. | CO5 | 10 |
| b. | Give the block diagram of heterodyne wave analyser and describe its working. | CO6 | 10 |
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| 7. |  | With neat block diagram explain the working principle and measurement of voltage and frequency of a CRO. | CO5 | 20 |
|  | (OR) |  |  |
| 8. | a. | Give an overview of liquid crystal display. | CO6 | 10 |
| b. | Enumerate with a block diagram, the various elements involved in a digital data acquisition system | CO4 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Discuss the principle and working of any two temperature sensors. Sketch their typical characteristics. | CO3 | 12 |
| b. | Enumerate on measurement of pressure using a capacitive transducers. | CO3 | 8 |