QP Code: RA22BTECH402 | Reg. No | | | | | | | | | | | AR 22

# Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
## (GIET University)

B. Tech (Sixth Semester - Regular) Examinations, April 2025

## 22BEEPC36001 – Electrical and Electronics Measurement

(EE/EEE)

Time: 3 hrs | Maximum: 70 Marks

**Answer ALL questions**

**(The figures in the right hand margin indicate marks)**

**PART – A** **(2 x 5 = 10 Marks)**

| | | CO # | Blooms Level |
|---|---|---|---|
| Q.1. | Answer ***ALL*** questions | | |
| a. | State types of Error. | CO1 | K1 |
| b. | Explain benefits of IEEE Measurement standards. | CO1 | K1 |
| c. | Draw the block diagram of Transducer. | CO2 | K2 |
| d. | What is Q- Meter. | CO3 | K2 |
| e. | Write down two advantages of current Transformer. | CO4 | K1 |

**PART – B** **(15 x 4 = 60 Marks)**

| | Answer ***ALL*** questions. | Marks | CO # | Blooms Level |
|---|---|---|---|---|
| 2. a. | A PMMC has an internal moving-coil resistance of 100 Ω and gives full-scale deflection for 3 mA. Calculate the value of shunt resistance required to convert the PMMC meter into a DC ammeter with a range of 0 to 5 amperes. | 8 | CO3 | K2 |
| b. | Briefly explain LVDT with neat diagram. | 7 | CO2 | K2 |
| | (OR) | | | |
| c. | Two wattmeters are connected to measure the input power to a balanced 3-phase load by the two-wattmeter method. If the instrument readings are 8kW and 4kW, determine (i) the load power factor. (ii) Reactive power | 8 | CO2 | K2 |
| d. | Obtain B-H curve of a ring specimen. | 7 | CO2 | K2 |
| 3.a. | Draw the circuit diagram of Wein's Bridge, Derive the condition for balancing the Bridge and finding the unknown parameter. Determine the equivalent parallel resistance and capacitance that causes a Wien bridge to null with the following component values: R1 = 3.1 k Ω, C1 = 5.2 mF, R2 = 25 k Ω, R4 = 100 k Ω and f = 2.5 kHz. | 10 | CO2 | K3 |
| b. | Explain how to measure pressure using capacitive type transducer. | 5 | CO2 | K1 |
| | (OR) | | | |
| c. | Explain the construction of Anderson's bridge. Derive the unknown quantities at balance condition. Also write its advantage and disadvantages. | 10 | CO3 | K2 |
| d. | Determine the insulation resistance of a short length of cable in which voltage falls from 125 to 100V in 25 seconds. The capacity of the condenser is $600x10^{-12}$F | 5 | CO4 | K2 |
| 4.a. | Briefly explain about D' Arsonaval type of galvanometer & Discuss about different galvanometer constants and its response under different damping conditions. | 10 | CO5 | K2 |
| b. | What is the Influence of Resistance on Damping? Explain in detail. | 5 | CO5 | K1 |
| | (OR) | | | |

| | | | | |
|---|---|---|---|---|
| c. | Draw the sketch of Gall Tinsley AC potentiometer and describe how it standardized. | 8 | CO5 | K3 |
| d. | Describe the Construction, Theory and Principle of operation of Vernier potentiometer. | 7 | CO5 | K2 |
| 5.a. | With a block diagram, explain the working of digital CRO | 8 | CO6 | K3 |
| b. | Describe the working of different frequency distortion analysers with the help of block diagram. | 7 | CO4 | K2 |
| | (OR) | | | |
| c. | Explain about the working principle of a CT and solve the following question A 1000/5 A, 50 Hz CT has a secondary load burden comprising of non-inductive impedance of 1.6 ohm. The primary winding has 1 turn, iron loss is 1.5W, m.m.f = 100AT. Calculate the flux in the core and the ratio error. | 10 | CO4 | K2 |
| d. | Give the comparison between CT and PT. | 5 | CO6 | K2 |

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