



12. (a) Illustrate the working principle of single phase energy meter with a neat sketch and derive its torque equation.

Or

- (b) Describe the step by process involved in determination of B-H curve and hysteresis loop.

13. (a) Draw a neat bridge circuit for measurement of resistance and derive the necessary equations to find the medium resistance.

Or

- (b) Derive the expression for measurement of unknown inductance using Hays bridge with a neat circuit.

14. (a) Explain in detail about the any one type of digital plotter and printer.

Or

- (b) Elaborate the working principle of CRT display and its use in digital CRO.

15. (a) Elaborate the types of digital transducers.

Or

- (b) Elucidate the element of data acquisition system.

PART C — (1 × 15 = 15 marks)

16. (a) Discuss about the electrostatic and electromagnetic interference the exist in the measuring bridge circuits and suggest the methods of screening required to overcome them.

Or

- (b) (i) A Schering bridge is applied to measure the capacitance and loss angle of a H.V. bushing. At balance, the observations were the value of the standard condenser,  $C_1 = 100 \text{ pF}$ ,  $R_3 = 3180 \text{ ohm}$ ,  $C_3 = 0.00125 \text{ microF}$ ,  $C_4 = 500 \text{ pF}$  and  $R_4 = 636 \text{ ohm}$ . Determine the value of capacitance of the bushing.

- (ii) Prove that Schering bridge equation as stated below :

$$R_1 = \frac{R_3 C_4}{C_2}$$

$$C_1 = \frac{R_4 C_2}{R_3}$$