PRACTICAL EXAMINATION 2021
SEMESTER-V (HONOURS)
(CC 12)
FULL MARKS -30

ANSWER ANY ONE QUESTION 1 X 30

1. (a) Draw the relevant circuit necessary for drawing the hysteresis loop of a anchor ring of a ferromagnetic material mentioning the components of the circuit. and their purpose. 10
   (b) Write down the relevant theory for the above experiment. 10
   (c) How is the anchor ring demagnetised and why ? 5
   (d) What does the area of the hysteresis loop signify and how is it calculated. (2+3)

2. (a)What are ferroelectric materials and piezoelectric materials ? (5+5)
   (b) What is hysteresis of ferroelectric materials ? Draw and describe a typical PE hysteresis loop in detail. (15)
   (c )Write down the relevant theory of the experimental setup for drawing PE hysteresis loop. (5)
   (d) Draw the necessary circuit diagram for the above experiment. (5)

**3** a) What is Hall voltage? 2
b) What is the relation between the Hall voltage (VH) developed across a Hall probe and applied magnetic induction (B)? 2
c) Write down necessary working formulae for measurement of B for different magnetization currents.(Explain each term). . Draw the nature of this calibration curve (B vs. I curve).Establish a relation between charge developed in the galvanometer circuit and the flux change in the said circuit. 8+2+2
d) In the above case of calibration what physical quantity does the search coil measures? 2
e) Why an auxiliary experiment using standard solenoid is done in above said ‘calibration of the magnet using search coil’? 4
f) In the working formula for this auxiliary experiment using standard solenoid a factor ’2’ appears in the expression of charge circulating in the galvanometer circuit including secondary of the solenoid.How this factor ‘2’ comes? 4
g) How can you measure the proportionality constant ‘K’ of the Hall probe at this stage? 2
h) After completion of all these calibrations how can you determine an unknown magnetic field,measuring Hall voltage using Hall probe? 2