B.Sc Part-III HONOURS EXAMINATION, 2021

PHSA -Paper VIIB

PRACTICAL EXAMINATION

FULL MARKS :50
TIME: 2HRS

Answer any ONE question from the following questions : 1 X 50

Q1. (a) What is a hysteresis loop and what is its significance?

(b) Draw the relevant circuit diagram for drawing a hysteresis loop of an anchor ring.

(c) Give the use of the different components of the circuit.

(d) Write down the relevant theory of the experiment.

(e) Why is the anchor ring demagnetized and how ?

(f) Sketch the B-H loop and state how hysteresis loss is evaluated.

(g) State two important precautions for the experiment.

(5 +5+5+15+ 10+8+2)

Q2. (a) What is measured in Fresnel's Biprisim experiment?

(b) Write the relevant theory of the experiment.

(c)Give a sketch of the apparatus showing the formation of fringes.

(d) Briefly explain the procedure of the experiment.

(e) Give five precautions that are necessary during the experiment.

(5+10+ 5+20+10)

Q3. (a) Write down the theory of Plane Diffraction grating with a relevant sketch.

(b) Describe briefly the adjustment of the grating in the experiment for determining unknown wavelength of the given source and number of rulings of the grating.

(c)What are the most important five precautions for the above experiment.

(d) Write down the relevant theory for determining the separation between sodium D lines. with relevant sketch by a plane diffraction grating.

(15+15 +10+10)

Q4 (a) State Fourier Theorem.

(b)What are Dirichlet conditions?

(c) Write down the relevant theory for determination of the Fourier Spectrum of complex waveforms by using a parallel Resonant circuit.(Square, triangle and half sinusoidal waves)

(d) Sketch the graph of Frequency response of Parallel resonant circuit.

(e) How does the parallel resonant circuit produce pure sine wave output from non sinusoidal input?

(f) State five precautions for the experiment.

(4+6+15+5+10+10)

Q5. (a) What is self inductance of a coil and what is coefficient of coupling of self inductance?

(b)Write down the relevant theory of determining self inductance of coils by Anderson Bridge and thus determination of the coupling constant.(along with relevant circuits).

(c) Sketch the graph of variation of inductance with angle between the two coils.

(d) Write down the five precautions necessary for the experiment.

(e) What is Butterworth's condition?

(f) What is the advantage of Anderson Bridge over other bridges for measuring self induction?

(10+20+5+5+5+5)

Q6.(a) What is polarization of light? What are polaroids ?

(b) Write down the relevant theory for verification of Fresnel's Equation of reflection of electromagnetic waves in case of a dielectric medium with the help of a prism, spectrometer, a pair of polaroids and sodium light.

(c) Briefly describe the experimental Procedure of the above experiment.

(d) State Brewster's Law.

(e) Sketch the nature of graphs obtained from the above experiment.

(f) State five precautions for the experiment.

(10+10+15+5+5+5)

Q7. (a)Write down the relevant Theory for studying the diffraction pattern of a crossed grating with the help of a laser source.

(b) Describe the procedure of the above experiment using an optical detector. Draw a sketch of

the experimental set up.

(c) Write down five important precautions for the above experiment.

(d) What is a crossed grating?

(e) What is laser?

(f) What Type of diffraction is used in this experiment.

(10+15+10+5+5+5)
