Total No. of Printed Pages:1

SUBJECT CODE NO:- H-263
FACULTY OF ENGINEERING AND TECHNOLOGY
F. E. (All)
Engineering Physics
(OLD)

[Time: TWO Hours] **[Max.Marks:40]**

Please check whether you have got the right question paper.

N.B 1) Q. No. 1 is compulsory.
2) Solve any two questions from the remaining questions.
3) Figure to the right indicate full marks.

Section A

Q.1 Attempt any five questions from the following 10

a) What is electron refraction? State Bethe's law
b) Describe four applications of CRO
c) What is continuous and characteristics X-ray spectra.
d) What is diffraction? What are its types?
e) What is Photoelasticity?
f) Define the terms critical magnetic field and zero resistivity.
g) What is nuclear chain reaction ? Hence define neutron multiplication factor.
h) What are SQUIDS ? Explain their importance.

Q.2 (a) With a neat diagram, discuss Thomson's parabolic method to determine q/m of positive rays, where q & m are charge and mass of positive ions respectively. 07
(b) Discuss the origin of X-rays and hence describe continuous and characteristic X-ray spectra. 04
(c) Draw a block diagram of CRO and explain the functions of various parts. 04

Q.3 (a) Describe the theory of appearance of Newton's rings in reflected light and hence obtain an expression for the diameters of n^{th} dark and bright ring. 06
(b) Explain the construction and working of Quarter wave plate and Half wave plate. 05
(c) What should be the minimum number of lines in a gravity which will just resolve in the 2^{nd} order lines whose wavelength are 5890A° and 5896 A°. 04

Q.4 (a) Discuss Type I and Type II superconductors in detail. 05
(b) With a neat diagram, describe the construction and working of nuclear reactor. 05
(c) Give the assumptions of BCS theory to explain the phenomenon of superconductivity. 05

Q.5 Write short note on 15

(i) Bainbridge mass spectrograph.
(ii) Michelson's interferometer
(iii) Betatron.