

SUBJECT CODE NO: E – 409
FACULTY OF ENGINEERING AND TECHNOLOGY
F.E.(All) (CGPA) Examination Nov/Dec 2017
Engineering Physics
(REVISED)

[Time: Three Hours]

[Max.Marks:80]

Please check whether you have got the right question paper.

- N.B
- i. Attempt Q. No.1 from section A and Q. No. 6 from section B are compulsory.
 - ii. Solve any two questions from the remaining question from each section A and B.
 - iii. Figures to the right indicate full marks.
 - iv. Use of non-programmable calculator is allowed.

Section A

- Q.1 Attempt any five questions. 10
- a) Write the important properties of positive rays.
 - b) Define the term specific rotation.
 - c) Write engineering application of X – rays.
 - d) What is the function of velocity selector?
 - e) Write application of magnetic materials.
 - f) Draw blocks diagram of C.R.O.
 - g) Define Half wave plate
 - h) What is mean be magnetic susceptibility.
- Q.2 07
- a) Explain principle, construction, working of Aston’s mass spectrograph.
 - b) Describe Bragg’s X – ray spectrometer. 05
 - c) Electron accelerated by a potential of 250 V enter the electric field at an angle of incidence 50° and get refracted through an angle of 30° . Find the potential difference between two fields. 03
- Q.3 06
- a) Obtain an expression for the radius of nth dark and bright ring.
 - b) Explain resolving power of diffraction grating. 05
 - c) Explain 04
 - i. Photoelasticity
 - ii. Quarter wave plate.
- Q.4 05
- a) Write important points of BCS theory.
 - b) Describe Meissener effect. 05
 - c) Write the properties of 05
 - i. Diamagnetic material
 - ii. Ferromagnetic material
- Q.5 Write a short notes on. 05
- a) Cathode Ray Tube. 05
 - b) Josephson junction 05
 - c) Diffraction of X – rays. 05

Section B

- Q.6 Attempt any five questions 10
- a) Define Hall Effect.
 - b) Write the physical significance of wave function.
 - c) What is mean by Zeeman Effect?
 - d) Write the properties of Laser.
 - e) Write the application of ultrasonic waves.
 - f) Write the properties of nanoparticles.
 - g) Define:
 - i. Spontaneous emission
 - ii. Population inversion.
 - h) Write the factors affect the architectural acoustics.
- Q.7 06
- a) Define energy gap? Obtain an expression for Fermi level in extrinsic semiconductor. 06
 - b) State and explain Zeeman Effect. 05
 - c) Derive Schrodinger time dependent wave equation. 04
- Q.8 06
- a) Explain the construction and working of He –Ne laser. 06
 - b) What is the range of ultra – sonic waves? Explain the production of ultra – sonic waves by magneto striction method. 06
 - c) A cinema hall has a volume of $7500m^3$. It is required the have a reverberation time of 1.5sec. What should be the total absorption in the hall? 03
- Q.9 05
- a) Explain vapour deposition method. 05
 - b) Write the optical properties of nanomaterials. 05
 - c) Explain the use of nanotechnology in medical and cosmetics. 05
- Q.10 Write a short note on 15
- a) Hall effect
 - b) Explain the important application of CNT's
 - c) Write application of fiber optics.