



Shri Guru Gobind Singhji Institute of Engineering And Technology

Vishnupuri Nanded. Summer Term Examination 2019

Date: 21/06/19

Sub: Engineering Physics
(revised)Code: UES101/ ES 106

Time: 11:00 to
14:00 hrs.

Total marks:80

Note: 1) Attempt All Questions.

Que./no.		Ma rks	CO' s	BT' s
Que.1 a)	Define Following Terms; Stopping potential, Displacement current, work function, photon, drift, and Heisenberg uncertainty principle.	6	CO3	BT1
b)	Draw a neat label diagram of Michelson interferometer. Determine the resolution of spectral lines by using Michelson interferometer.	4	CO1	BT5
Que.2 a)	Describe Compton effect with necessary equation. OR Describe photo electric effect with necessary diagram.	6	CO3	BT1
b)	Define elliptically polarized light, circularly polarized light, thin film and dispersion.	4	CO1	BT5
Que.3 a)	Write down four Maxwell's equation with their physical significance.	6	CO3	BT1
b)	Photon recoils back after striking an electron at rest .what is the change in the wavelength of the photon.	4	CO2	BT5
Que.4 a)	What do you mean by operators ?Derive the Schroedinger time independent equation for matter waves	6	CO4	BT2
b)	An electron has a speed of 400m/s with an accuracy of 0.025%. Calculate the certainty with which we can locate the position of the electron.	4	CO3	BT5
Que.5 a)	Describe Hall effect with necessary Equation.	6	CO5	BT2
b)	A shift of 200 circular fringes is observed when the movable mirror of the Michelson interferometer is shifted by 0.395 mm. Calculate the wavelength of light.	4	CO1	BT1
Que.6 a)	Determine the Schrödinger time dependent wave equation.	6	CO4	BT5
b)	Find the temperature at which there is 2% probability that a state with energy 0.6eV is above Fermi energy	4	CO3	BT2

Que.7 a)	Why are circular fringes obtained in Newton's rings arrangement? Prove that in reflected light, the diameter of the dark rigs is proportional to the square roots of natural numbers.	6	CO2	BT3
b)	Light of wavelength 2000 \AA falls on an aluminum surface with work function 4.2 eV . Calculate i) Threshold wavelength ii) Stopping potential	4	CO3	BT5
Que.8 a)	Distinguish between direct band gap and indirect band gap of semiconductor.	6	CO5	BT2
b)	Calculate the thickness of quarter wave plate and half wave plate. given that $\mu_0=1.533$, $\mu_e=1.444$ and $\lambda=6000 \text{ \AA}$.	4	CO2	BT5

-----The End-----

Course Outcome:-

CO1 - Analyze the difference among interference ,diffraction and polarization and their applications
 CO-2 Evaluate wavelength of light by using Michelson's Interferometer, Newton's rings and diffraction grating

CO-3 Apply Compton theory and Photoelectric effect to solve engineering Applications

CO-4 Distinguished between microscopic world and macroscopic world.

CO-5 Recognize the four Maxwell equations and apply types of semiconductor materials in engineering applications.

Bloom's Taxonomy (BT)

BT1- Remember, BT2- Understand, BT3- Apply, BT4- Analyze, BT5- Evaluate, BT6- Create