

Government College of Engineering, Aurangabad
(An Autonomous Institute of Government of Maharashtra)

F. E. Examination
End semester Examination
GE 142: Engineering Physics

Time: Three Hours

~~13.0. NOV 2016~~

Max. Marks: 60

“Verify the Course Code and check whether you have got the correct question paper”

N.B:-1. All questions are compulsory

2. Figures to the right indicate full marks

3. Assume suitable data if necessary and state it clearly

4. Use of non-programmable calculator is allowed

Q.1 Attempt any two of the following: (10)

- (i) Discuss J.J. Thomson’s method for determination of specific charge on electron. (CO4)
- (ii) Show that an electron moving with uniform velocity follows a parabolic path in a transverse uniform electric field. (CO4)
- (iii) A glass clad fiber is made with core glass of R.I =1.5 & cladding is doped to give a fractional change in the refractive index 0.0005. Find the cladding index & N.A. (CO1)

Q.2 Attempt any two of the following: (10)

- (i) Explain the formation of Newton’s ring & show that the red-eye of bright rings are proportional to the square root of the odd natural numbers. (CO4)
- (ii) Discuss the theory of Diffraction grating. Find the expression for resolving power of grating (CO4)
- (iii) What is the highest order spectrum which may be seen with monochromatic light of wavelength 5000 \AA by means of diffraction grating with 5000 lines/cm. (CO6)

Q.3 Attempt any two of the following: (10)

- (i) Derive an expression of superposition of e-ray & o-ray to produce circularly & elliptically polarized light. (CO4)
- (ii) Right Short notes on: a) Pumping b) Population inversion c) Stimulated Emission (CO3)
- (iii) Explain in detail, construction & working of He-Ne gas laser. (CO3)

Q.4 Attempt any two of the following: (10)

- (i) Explain the formation of energy bands in solids.(CO2)
- (ii) Explain the working of p-n junction on the basis of energy diagram when it is not biased. (CO2)
- (iii) State & explain Hall Effect; derive an expression for Hall co-efficient. (CO2)

Q.5 Attempt any two of the following: (10)

- (i) Describe in detail features of diamagnetic materials. (CO5)
- (ii) Explain in brief various application of dielectric materials. (CO5)
- (iii) What is Ferromagnetism? Explain Ferromagnetism on the basis of domain theory. (CO5)

Q.6 Attempt any two of the following: (10)

- (i) Explain the terms Echo & Reverberation. (CO8)
- (ii) What is Ultrasonic? Explain the piezoelectric method of producing Ultrasonic Energy. (CO9)
- (iii) A hall has a volume of 7500 cu.m. It is required to have a reverberation time of 1.2 sec. What should be total absorption in the hall? (CO6)