Code No: R161204 **R16** SET - 1

I B. Tech II Semester Supplementary Examinations, Nov/Dec - 2017
ENGINEERING PHYSICS
(Com. to CE, ME, CHEM, AE, BIO, AME, Min. E, PE, PCE, MET)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) How does interference occur in thin films? (2M)
   b) Define resolving power of a grating. (2M)
   c) What are ordinary and extra-ordinary rays in a uni-axial crystal? (2M)
   d) What is piezo-electric effect? (2M)
   e) Explain B-H curve of a ferromagnetic material. (2M)
   f) What is the binding energy of the $^{39}_{19}K$ nucleus? What is the binding energy per nucleon? (2M)
   g) Define polarization of dielectric medium. (2M)

PART -B

2. a) What is a thin film? Derive the conditions for constructive and destructive interference for the reflected system in a thin film of uniform thickness. (10M)
   b) A 0.4μm thick soap film is viewed at an angle of 45^0. If the refractive index of the film is 1.33, calculate the wavelength of the light which will be absent when viewed under reflection in the visible spectrum. (4M)

3. a) Discuss Fraunhofer diffraction of light at a circular aperture. (10M)
   b) What are the differences between interference and diffraction of light? (4M)

4. a) Define Specific rotation. Describe the construction and working of a Laurent's half shade polarimeter. (10M)
   b) How does polarized light differ from ordinary light? (4M)

5. a) What is non-destructive testing? Explain with principle how flaw in a solid can be detected by non-destructive method using ultrasonics. (10M)
   b) Explain clearly what causes reverberation in a hall and how it can be minimized. (4M)

6. a) Describe the FCC crystal structure and discuss its unit cell characteristics. (10M)
   b) What is meant by a fast breeder reactor? Why is liquid sodium used as a coolant in Fast breeder reactors? (4M)

7. a) Discuss the different types of polarizations in dielectric materials. (10M)
   b) Distinguish between ferromagnetic and anti-ferromagnetic materials. (4M)
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