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EH-246

B.E. IInd Semester (CGPA) Inform. Tech. Examination, 2019

Engg. Physics

Paper - IT - 202

Time : 3 Hours] **[Maximum Marks : 60**

Note :- All questions are compulsory and carry equal marks. internal choice in given form Q.2 to Q.6.

1. Choose the correct answer :

(i) Newtons aimg illustrates the phenomenom of -

(a) Diffraction

(b) Polarization

(c) Interferance

(d) None of these

(ii) Active centre in Ruby laser is

(a) Al

(b) Cr^{+3}

(c) O_2

(d) Alzo3

(iii) Pure diclectric medium is a

(a) Conductor

(b) Insulator

(c) Semiconductor

(d) None of these

(iv) Which particle cannot be accelerated. by cyclotron ?

(a) Neutron

(b) Proton

(c) Deciteron

(d) α - particle

(v) Comptom wavelength is given by

(a) $\frac{h}{moc}$

(b) $\frac{h}{mo^2c}$

(c) $\frac{h^2}{moc^2}$

(d) $\frac{h}{2moc}$

2. Attempt any two of the following.

(a) Give the construction and working of fresnel's biprism with the help of a neat diagram.

(b) In a Newton's ring experiemnt the diameter of 15th ring was found to be 0.59 cm and that of the 5th ring was 0.336 cm. If the radius of the plano - convex lens is 100 cm. calculate the wavelength of light used.

(c) Obtain an expression for maxima ancl mimima due to diffraction of light by a single slit.

(d) How many orders will be visible in a grating spectrum if the wavelength of incident light is 5890 Å and number of times per inch on the grating is 15000 ?

3. Attempt any **two** of the following -

(a) Establish the relation between group veocity, phase velocity and particle velocity.

(b) Deduce an expression for compton shift.

(c) How are continuous and characteristics x - rays produced ?

(d) What is Ncl : YAG laser ? explain the construction and working in detail.

4. Describe the construction and action of a cyclotron. Disucss its limitations.

OR

Give the principle and working of a betatron. what is betatron condition ?

5. Discuss diamagnetic, paramagnetic and ferromagnetic materials. Mention any two properties of each type of materials.

OR

What is superconductivity ? Explain the properties of super conductors. mention its user.

6. Attempt any **two** : -

(a) Give the relationship between $\vec{E}, \vec{D}$ *and* $\vec{P}$ vectors.

(b) What is dielectric loss ? Discuss dielectric loss.

(c) What is meant by polarisation of dielectric ? Explain polar and non - polar dielectrics.

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