Roll No. ....

Total No. of Questions : 6]

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B.E. IInd Semester (CGPA) Mech. Engg.

Examination, 2019

Engg. Physics

Paper - M - 201

Time : 3 Hours]   [Maximum Marks : 60

Note :- Attempt all questions. All questions carry equal marks.

1. Choose the correct answer :

   (i)   Momentum of a photon of frequency v in given by 10

   (a) h/v

   (b) h/ev

   (c) $\dfrac{hv}{C}$

   (d) hev

(1)   P.T.O.

(ii)   When light wave suffers reflection at the interface between air and glass the change of phase of the reflected wave is equal to

   (a)   0

   (b) $\pi/2$

   (c) π

   (d)   None of these

(iii)   The energy corresponding to 1 a.m.u. is

   (a)   931 ev

   (b)   931 kev

   (c)   931 Mev

   (d)   931 J

(iv)   The conductivity of a superconducter is

   (a)   infinite

   (b)   zero

   (c)   finite

   (d)   None of these

(v)   Which particle can not be accelerated by cyclotron ?

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(a) Neutron

(b) Proton

(c) Electron

(d) α - particle

2. Attempt any two : -   10

   (a) In Newton's using experiment the diameter of nth and $(n+14)^{th}$ rings are 4.2 mm and 7.00 mm respectively. Radius of curvature of plano - convex lens is 1m. calculate wavelength of light.

   (b) Explain the difference between interference and diffraction.

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

   (d) Give the Rayleigh criterion of resolving power. How it is calculate for grating ?

3. What is compton effect. Derive an expression for comstom shift.

OR

Explain three and four level pumping schemes used in laser

action. Which one in better and why ?

4. Explain theory and working of eyclotron ? What is the resonance condition in cyclotron ? What are its drawbacks.

OR

Discuss liquid drop and nuclear shell model.

5. Describe construction and working of Ramsden's eye-piece and clearly indicate the positions of its cordinal points.

OR

Deduce Newton's formula for the combination and prove that focal length F of combination can be given by the formula.

$$\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2} - \frac{d}{f_1 f_2}$$

6. Write short notes on any two -

   (a) Meissner effect

   (b) Ingen-Hausz experiment

   (c) Joule-Thomsom effect

   (d) Forbes method.

✦✦✦