

Roll No.

[Total No. of Printed Pages : 5]
Total No. of Questions : 6]**EH-199****B.E. Ist Semester (CGPA) CSE****Examination, 2019****Engg. Physics****Paper - CS - 101****Time : 3 Hours]****[Maximum Marks : 60****Note :-** All questions are compulsory and carry equal marks.

Internal choice is given from Q.No.2 to Q.No. 6.

1. (i) The hypothesis regarding dual nature of material particles was proposed by

- (a) Heisenberg
- (b) Davisson
- (c) de - Broglie
- (d) Germer

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- (ii) The Duane - Hunt formula is

(a) $\lambda_{\min} = \frac{1240}{V} \text{ \AA}$

(b) $\frac{1240}{V^2} \text{ \AA} = \lambda_{\min}$

(c) $\lambda_{\min} = \frac{12400}{V} \text{ \AA}$

(d) $\lambda_{\min} = \frac{1240}{\sqrt{V}} \text{ \AA}$

- (iii) The resolving power of a grating having N slits in nth order will be

- (a) n + N
- (b) n - N
- (c) nN
- (d) N/n

- (iv) The energy released per fission of a ${}_{92}\text{U}^{235}$ nucleus is nearly

- (a) 200 ev
- (b) 20 ev
- (c) 200 mev
- (d) 2000 ev

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(v) Which of the following substance is dielectric.

- (a) Aluminium
- (b) Nica
- (c) Silicon
- (d) Brass

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

OR

In a Newton's ring experiment the diameter of the 5th ring was 0.336 cm and the diameter of 15th ring was 0.590 cm. Find the radius of curvature of the plano - convex lens if the wave length of light used is 5890×10^8 cm.

(b) Give the Rayleigheritevion of resolving power. How it is calculated for grating ?

OR

Calculate the least width of plane transission grating Poy-
ing 500 lines/cm which will just resolved in the ser and
order the sodium lines of wavelength 5890\AA and 5894\AA .

3. (a) Obtain the time - dependent schrodings wave equation for particle.

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(3)

OR

An electron is confined to a box of length 100\AA calculate the minimum uncertainty in its velocity.

(b) What are x - ray's ? differentiate between characteristics x - ray spectrum and continuous x - ray spectrum.

OR

Explain working and principle of on atomic gas laser. Write five applications of laser.

4. (a) Discuss betatron condition. How does it help in main-
taining circular orbits ?

OR

A cyclotron oscillator frequency of 1MH_2 is used to ac-
celerate protons. If the radius of the due is 60 cm, find
the magnetic field. <http://www.onlinebu.com>

(b) Explain the liquid drop model of nucleus, bring out the
analogies between small drop of a liquid and a nucleus ?

OR

Calculate the energy of 1 amu in Mev, Joule and Kwh.

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(4)

5. (a) Discuss diamagnetic paramagnetic, ferromagnetic, anti-ferromagnetic and ferrimagnetic substances citing one example of each.

OR

What is superconductivity ? Explain the differences between the type -I and type -II super conductors using Neissner effect.

6. What are polar and non-polar molecules ? Discuss the effect of electric field on polar dielectrics. What is meant by polarisation of dielectric ?

OR

Derive clausius - mosotti relation for non - polar dielectrics.

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