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COMMON SECOND MID-TERM TEST - 2019

Standard XII

Reg.No. :

Time: 1.30 hours.

PHYSICS

Marks: 35

Section - I

I. Choose the correct answer: 7 x 1 = 7

1. An air bubble in glass slab of refractive index 1.5 (near normal incidence) is 5 cm deep when viewed from one surface and 3 cm deep when viewed from the opposite face. The thickness of the slab is
   a) 8 cm b) 10 cm c) 12 cm d) 16 cm
2. For light incident from air on a slab of refractive index 2, the maximum possible angle of refraction is
   a) 30° b) 45° c) 60° d) 90°
3. If the wavelength of the light is reduced to one fourth, then the amunt of scattering is
   a) increased by 16 times b) decreased by 16 times
   c) increased by 256 times d) decreased by 256 times
4. A light bulb is placed between two mirrors (plane) inclined at an angle of 60°, find the number of images formed.
   a) 2 b) 4 c) 5 d) 6
5. The threshold wavelength for a metal surface whose photo electric work function is 3.313 eV is
   a) 4125 A° b) 3750 A° c) 6000 A° d) 2062.5 A°
6. The wavelength λ_e of an electron and λ_p of a photon of same energy E are related by
   a) $\lambda_p \alpha \lambda_e$ b) $\lambda_p \alpha \sqrt{\lambda_e}$ d) $\lambda_p \alpha \frac{1}{\sqrt{\lambda_e}}$ d) $\lambda_p \alpha \lambda_e^2$
7. A particle has mass 10^{-27} kg. This is moving with a speed of 10^7 m/s. The wave length associated with the particle is
   a) 5 m b) 6.6×10^{-14} m c) 6.66 A° d) 6 nm

$\lambda = \frac{h}{\sqrt{2mk}}$

Section - II

II. Answer any 3 questions: (Ques.No.11 is compulsory) 3 x 2 = 6

8. Define Power of a lens. What is its unit?
9. Give the principle and working of endoscope.
10. Give the drawbacks of Nicol prism. diff fernel franko
11. A proton and a deutron have the same velocity. What is the ratio of their de Broglie wavelengths? work func unit.
12. What is surface barrier? photo elec eff.

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Section - III

III. Answer any 4 questions: (Ques.No.17 is compulsory) 4 x 3 = 12

13. Two light sources with amplitudes 5 units and 3 units respectively interfere with each other. Calculate the ratio of maximum and minimum intensities.
14. Give the reason for the colourful appearance on the read / writable side of the CD.
15. State the Laws of Refraction. List down the characteristics of refraction.
16. Explain Brewster's law. construct and work of photoemission.
17. Give the Laws of photo electric emission.
18. i) Calculate the cut off wavelength and cut off frequency of x rays from an x-ray tube of accelerating potential 20,000 V.

    ii) Give the Duane-Hunt formula.

Section - IV

IV. Answer all the questions in detail: 2 x 5 = 10

19. a) Derive Lens maker's formula. Mention its significance.

    (or)

    b) Obtain the expression for bandwidth in Young's double slit experiment.
20. a) Obtain Einstein's photo electric equation with necessary explanation.

    (or)

    b) Describe briefly Davisson-Germer experiment which demonstrated the wave nature of electrons.

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