# Dual nature of matter and radiation

## Test Paper-II

**MAX MARKS: 30** **TIME: 90Mts**

| Sl. No. | QUESTION | ANSWER PAGE | MARKS |
|---|---|---|---|
| 1 | What is dual nature of light? | Page:398 | 1 |
| 2 | Name the Physical phenomenon which shows the wave nature of light. | Page:398 | 1 |
| 3 | Name the physical phenomenon which shows the participle nature of light? | Page:398 | 1 |
| 4 | Give the relation that connects the wave and particle nature of light. What do you call the relation | Page:398 | 1+1 |
| 5 | Calculate the de-Broglie wavelength of a ball of mass 0.12kg moving with a speed of $20ms^{-1.}$ . | Page:399 | 2 |
| 6 | Name the device which is called an electric eye. Also give the principle on which its works. | Page:399 | 2 |
| 7 | Give any three applications of photo cell. | Page:399 | 3 |
| 8 | Explain how a photo cell can be used as a door opener. | Page:399 | 2 |
| 9 | Explain how photo cell helps in the detection of traffic law defaulters. | Page:399 | 2 |
| 10 | Derive an expression to find the de-Broglie wavelength of an electron | Page:400 | 2 |
| 11 | Give the experimental arrangement of Davisson and Germer Experiment. | Page:402 | 2 |
| 12 | What is the de-Broglie wavelength associated with an electron, accelerated through a potential difference of 100 Volts? | Page:402 | 2 |
| 13 | Find the value of de-Broglie wavelength associated with an electron accelerated through a potential difference of 54Volts. | Page:404 | 2 |
| 14 | The wavelength of light in the visible region is about 390nm for violet colour, about 550 nm for yellow-green colour and about 760 nm for red colour. What are the energies of photons in (eV) at the<br>i. violet end<br>ii. Average wavelength, yellow-green colour, and<br>iii. Red end of the visible spectrum?<br>(Take h= 6.63 X $10^{-34}$ Js and 1eV = 1.6 X $10^{-19J)}$ | Page: 397 | 3 |

15 The work function of cesium is 2.14 eV. Find(a) the threshold frequency for cesium, and (b) the wavelength of the light if the photocurrent is brought to zero by a stopping potential of 0.60 V 3

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