Date
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Conceptual Question.

SEM-VI paper-II unit-03.

Q(6) What is ~~Black~~ Blackbody Radiation?

Ans: Blackbody radiation ~~is~~ is the electromagnetic radiation emitted by an ideal body that ~~absorbs~~ absorbs all incident radiation and emits maximum possible radiation at a given temp. The Spectrum depends only on temperature not, on the material of the body.

Q(7.) Why is a cavity with a small hole considered a blackbody?

Ans: When radiation enters the small hole it Undergoes multiple reflection inside the cavity and gets almost completely absorbed. Hence, the hole behaves like a perfect absorber and emitter, approximating an ideal blackbody.

Q(8) What is meant by Ultraviolet catastrophe?

Ans: According to classical Rayleigh-Jeans laws, energy density increases. ~~this~~ without limit as frequency increase. This predicts infinite energy at ultraviolet frequencies, which contradicts experimental result. This failure is called ~~an~~ Ultraviolet catastrophe.

Q(9.) Why did classical physics fail to explain blackbody radiation?

Ans. Classical theory uses equipartition theorem, which assumes each oscillator has average energy KT. This leads to infinite energy at high frequency. However, experiments show that energy decreases at high frequency. Thus classical theory failed.