

Date  
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(Conceptual Question)

SEM-VI paper-11 Unit-03

CLASSMATE  
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Q(1)

Why does classical physics fail at high frequency?

Ans:

Because classical equipartition theorem predicts equal energy  $KT$  for all modes  $\rightarrow$  leads to infinite energy at ultraviolet region.

Q(2)

What solved the Ultraviolet catastrophe?

Ans:

Planck's quantization assumption

$$E = h\nu$$

Q(3)

Why does intensity peak shift with temperature?

Ans:

Because

$$\lambda_{max} T = \text{constant}$$

So Higher temperature  $\rightarrow$  smaller wavelength peak.

Q(4)

What is physical meaning of  $h$ ?

Ans:

Planck's constant represents the fundamental quantum of action  $\rightarrow$  determines scale at which quantum effects appear.

Q(5)

Why is Planck's Law universal?

Ans:

Because it matches experimental data at:

- Low frequency
- High frequency
- All temperature.