TOSHKENT KIMYO-TEXNOLOGIYA INSTITUTI

SHAHRISABZ FILIALI

FIZIKA
Fanidan amaliy mashg'ulot

Issiq nurlanish qonunlari. Yorug'likning kvant tabiati.

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Bahromova Anzura

1. 34.1 Qora jismning energetik yorituvchanligi M_e =10k$\frac{Wt}{m^2}$ bo’ladigan harorat aniqlansin.

Berilgan

M_e =10k$\frac{Wt}{m^2}$

G=5,67· 10^{-8} $\frac{Wt}{m^2T^4}$

T-?

Yechilishi

$M_e = GT^4$

$T=\sqrt[4]{\frac{M_e}{G}} = \sqrt[4]{\frac{10\cdot10^4}{5.67\cdot10^{-8}}} = \sqrt[4]{\frac{1\cdot10^{12}}{5.67}} = 0.647\cdot 10^3$=647K

2. 34.2. Eritish pechi ko’rish tuynugidan sochilayotgan energiya oqimi Φ = 34 Wt. Agar tuynuk yuzasi S= 6 sm^2 bo’lsa pech harorati T aniqlansin.

Berilgan

Φ = 34Wt

S = 6 sm^2=$6 \cdot 10^{-4} m^2$

T - ?

Yechilishi

$M_e = GT^4$; G=$5.67 \cdot 10^{-6} \frac{Wt}{m^2K^4}$

T=$\sqrt[4]{\frac{M_e}{G}}$; Φ = $M_e \cdot S$; $M_e = \frac{\Phi}{S}$

T=$\sqrt[4]{\frac{\Phi}{G \cdot S}}$=$\sqrt[4]{\frac{34}{5{,}67 \cdot 10^{-8} \cdot 6 \cdot 10^{-4}}}$ = 1000 K

3. 34.3. Agar pechning harorati T=1,2 kK bo’lsa, yuzasi S=8sm^2 bo’lgan eritish pechining tuynugidan t=1min vaqtda sochiladi W energiya aniqlansin.

Berilgan

t = 1min = 60 s

S = 8 $sm^2 = 8 \cdot 10^{-4} m^2$

T = 1,2 kK = 1,2$\cdot 10^3$ K

W - ?

Yechilishi

W = $M_e \cdot$ S $\cdot$ t

$M_e = GT^4$

W = G$\cdot$ T^4 S$\cdot$t

W = 5,6710^{-8} $\cdot$ (1,2 $\cdot$ 10^3)$^4\cdot$8 $\cdot$ 10^{-4} $\cdot$60=5,64 $\cdot$ 10$^3 J =$

= 5,64 kJ

Topshiriq

1. Qora jism energetik yorituvchanligi M_e= **n** k$\frac{Wt}{m^2}$ bo’ladi. Harorat aniqlansin.

2. Sirius yulduzi yuqori qatamlaridagi harorat T= 10 kK. Shu yulduzning S= **n** km^2 yuzali sirtidan sochilayotgan energiya oqimi hisoblansin.

3. Qora jism energetik yorituvchanligi M_e= **n** marta o’sishi uchun uning termodinamik haroratini necha marta ortirish kerak?

Izoh**:** **n** sonining o’rniga har bir talaba o’zining jurnaldagi nomerini masalaga qo’yib ishlaydi.