



KHAN GLOBAL STUDIES

The Most Trusted Learning Platform

SSC CHSL FDN 2024-25

Physics



BY - SUSHANT SIR

The background features a large, faint watermark of the Khan Global Studies logo. It is a circular emblem with a globe in the center, surrounded by the text 'KHAN GLOBAL STUDIES' and 'Most Trusted Learning Platform'. Below the circle is a banner that reads 'KHAN SIR'.

HEAT

ऊष्मा

BY SUSHANT SIR

$$d_{H_2O} = 1.0 \text{ gm/cm}^3$$

$$d_{ice} = 0.92 \text{ gm/cm}^3$$

$$d \uparrow = \frac{m}{V \downarrow}$$

water (H_2O)

$d \uparrow$

$V \downarrow$



Ice

$d \downarrow$

$V \uparrow$

$$\left[d \downarrow = \frac{m}{V \uparrow} \right]$$

> Volume of ice is greater than volume of water.

ਦੱਸੋ ਕਿ ਆਪਣਾ ਜਲ ਦੇ ਆਪਣਾ ਜਾਂ ਆਇਕ
ਮੰਤਾ ਹੈ।

$$\text{Relative density} = \frac{\text{Mass of Substance}}{\text{Volume of Substance}} \div \frac{\text{Mass of water at } 4^{\circ}\text{C}}{\text{Volume of water at } 4^{\circ}\text{C}}$$

(सापेक्ष घनत्व)

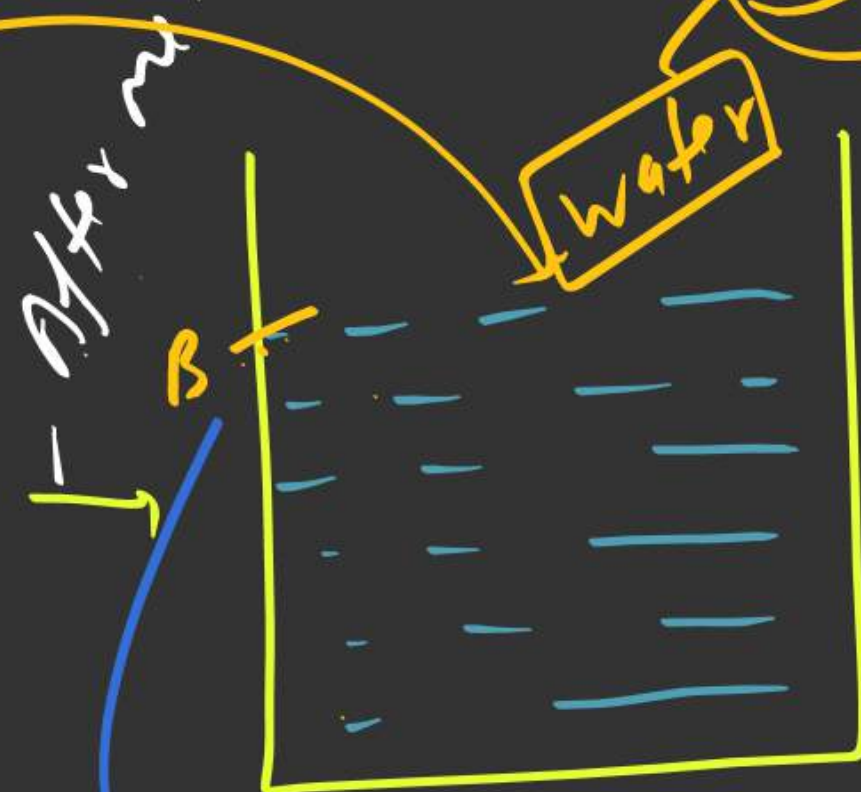
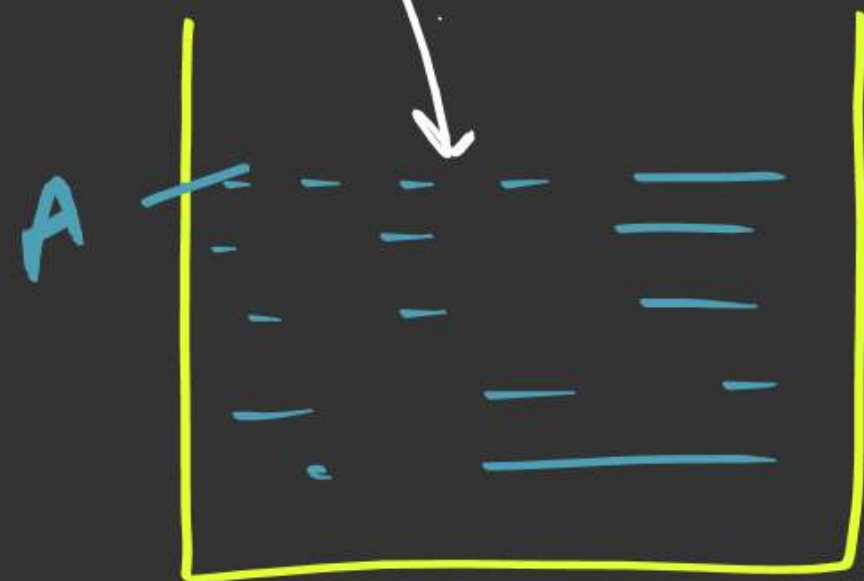
Q) Find the relative density of Ice?
 बर्फ का सापेक्ष घनत्व ज्ञात कीजिए?

$$RD_{ice} = \frac{d_{ice}}{d_{H_2O}} = \frac{0.92}{1.0} = 0.92 \text{ or } \left(\frac{9}{10}\right)$$

ice

$\frac{\text{Ice}}{V \uparrow, d \downarrow}$

$\rightleftharpoons$ water
 $V \downarrow, d \uparrow$



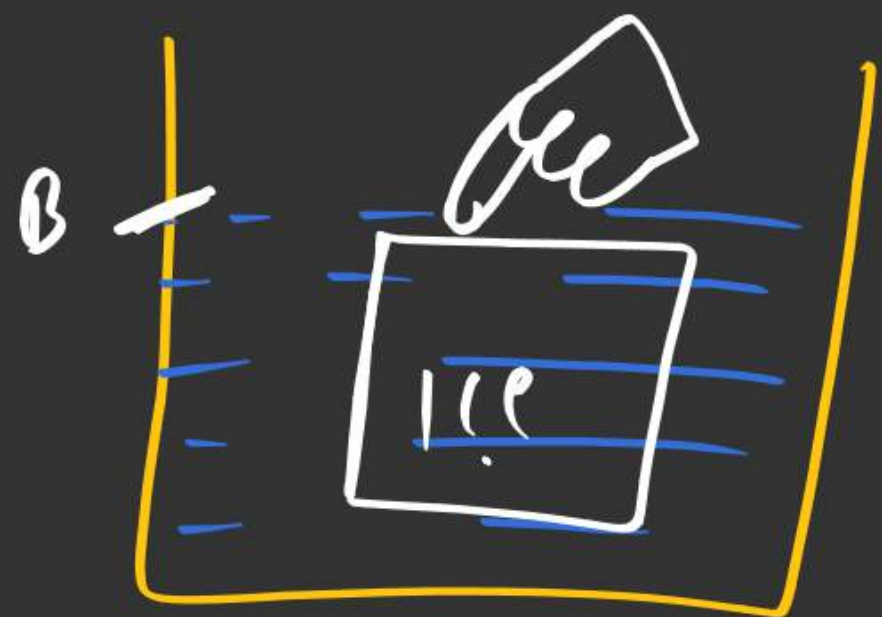
After melting ice

water

$V \downarrow + \frac{1}{10}V$

Constant

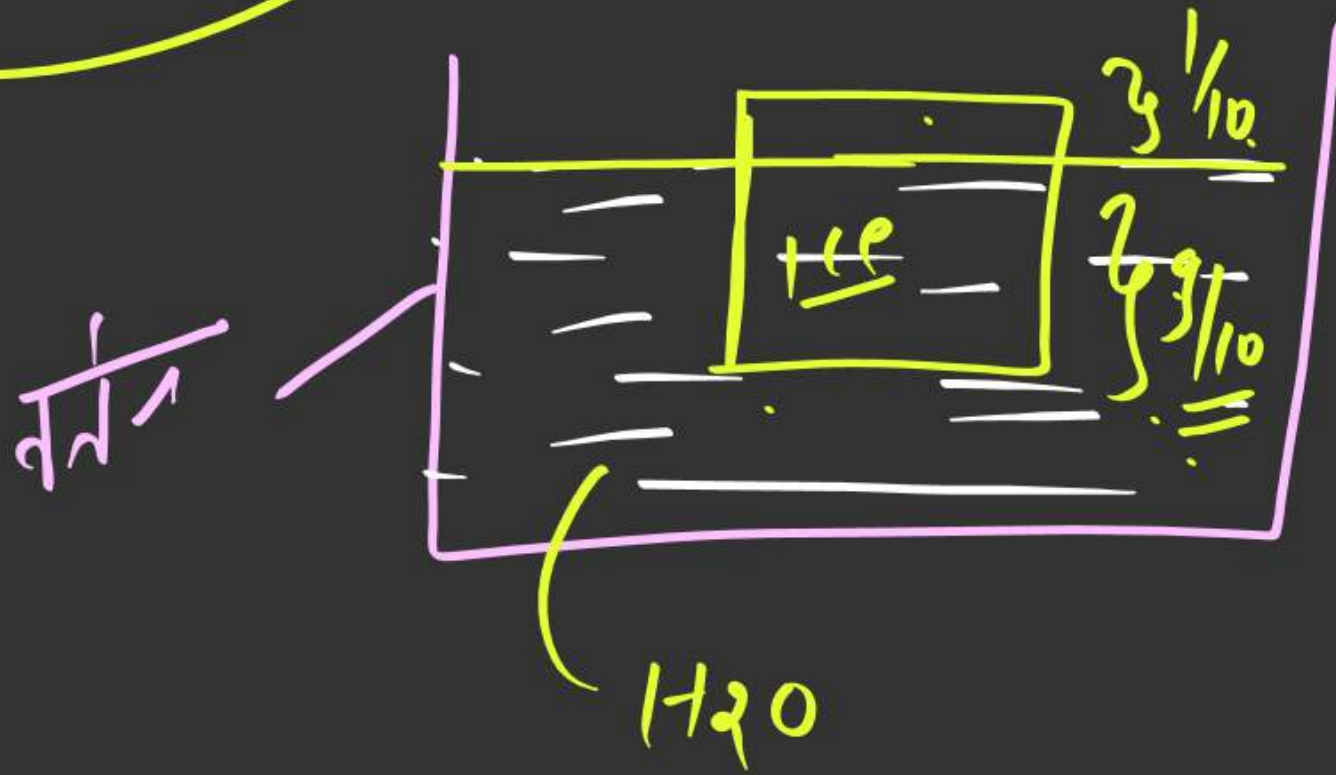
Level remains
unchange



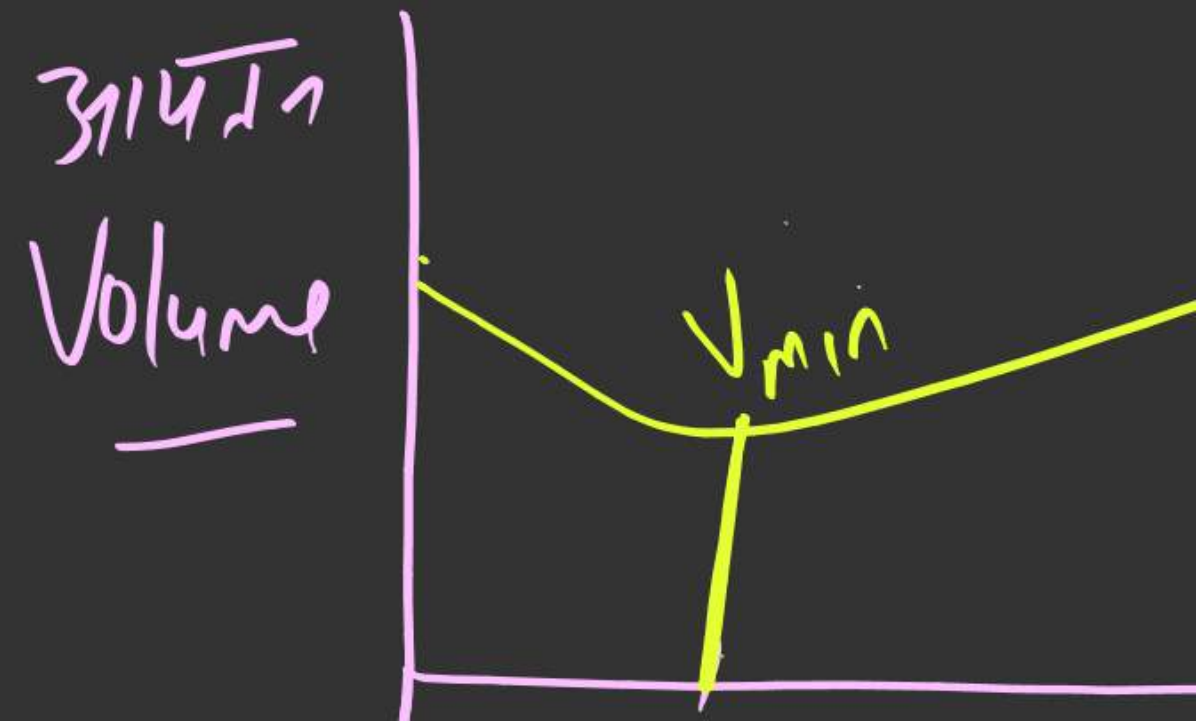
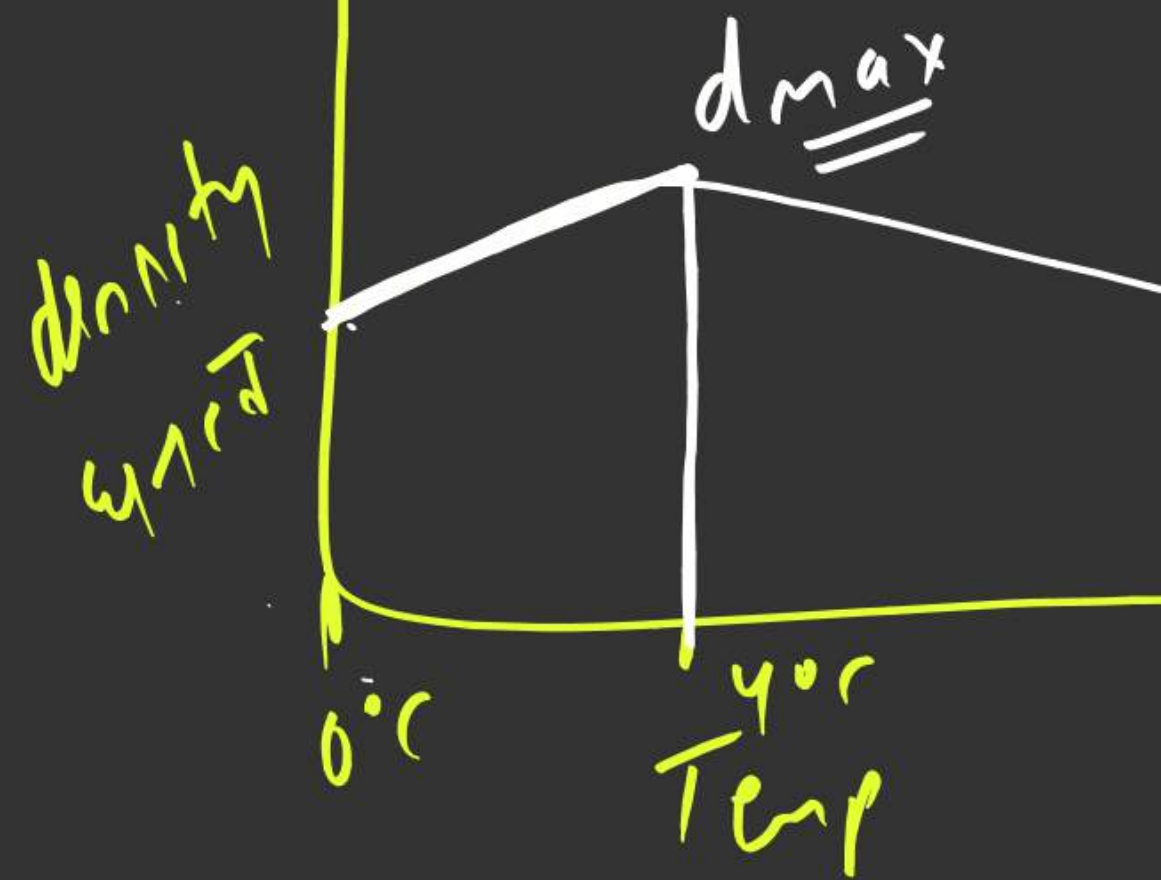
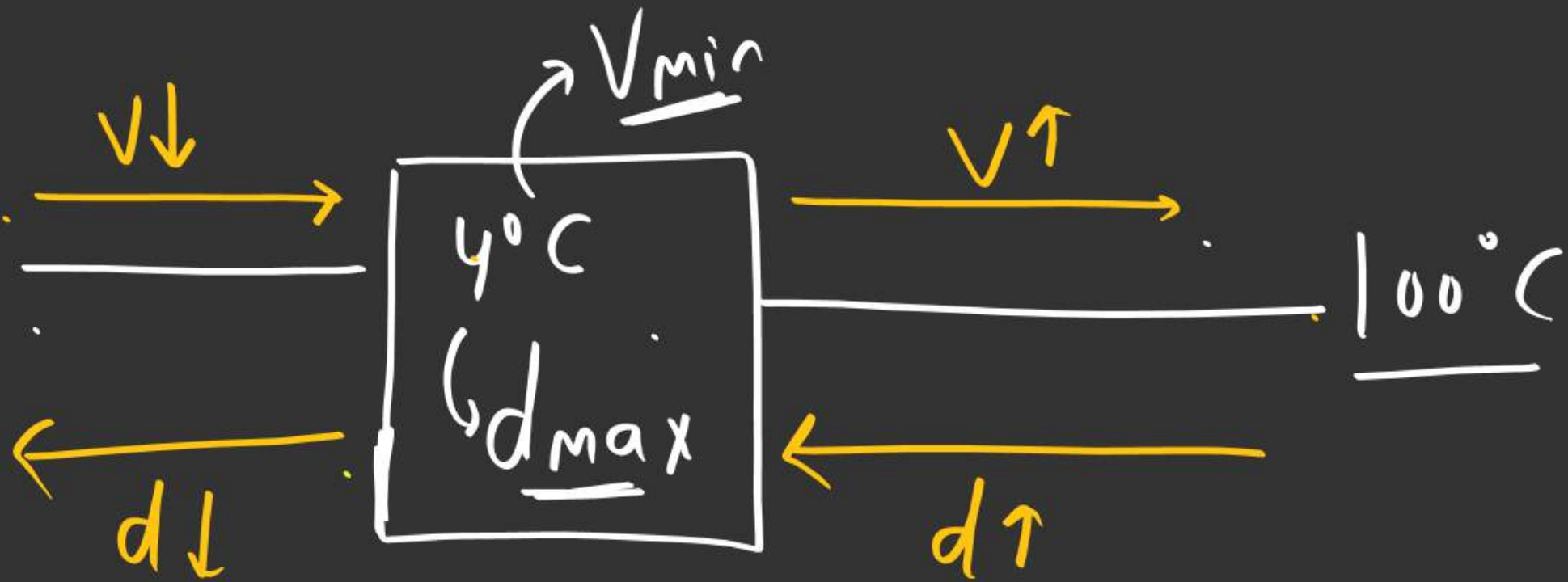
After melting
the ^{ice} level will
decrease



$$RD_{ice} = \frac{9}{10}$$



51 ଅନୁସନ୍ଧାନ ଯନ୍ତ୍ର ।



Q)

When we heated the water from 0°C to 10°C
then its density ?

ਜਦੋਂ ਜਲ 0°C ਤੋਂ 10°C ਤਕ ਗਰਮ ਕੀਤਾ

ਜਾਂਦਾ ਹੈ ਤਾਂ ਘਣਤਾ ਬਦਲਦੀ ?

(a) increase

(b) decrease

(c) first decrease then increase

☒ (d) first increase then decrease

Q)

When we heated the water from 0°C to 4°C
then its density ?

ਜਦੋਂ ਪਾਣੀ ਨੂੰ 0°C ਤੋਂ 4°C ਤੱਕ ਗਰਮ ਕੀਤਾ

ਜਾਂਦਾ ਹੈ ਤਾਂ ਘਣਤਾ ਕਿਵੇਂ ਬਦਲਦੀ ਹੈ ?

(a) increase

(b) decrease

(c) first decrease then increase

(d) first increase then decrease

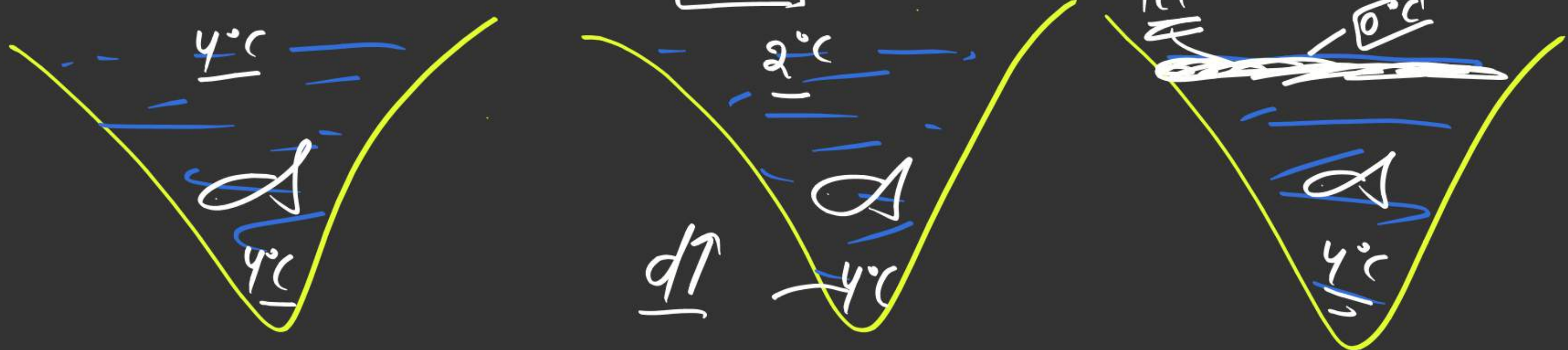
Q) Anomalous expansion of water is beneficial for aquatic life, Explain?

पानी का असंगत प्रसार, जलीय जीवन पर लाभकारी प्रभाव डालता है - चारों ओर की व्याख्या ?

Atm temp 4°C

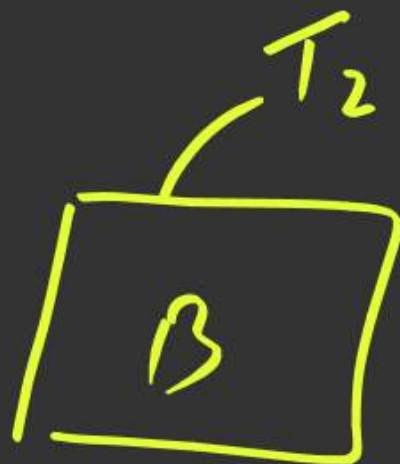
2°C

0°C

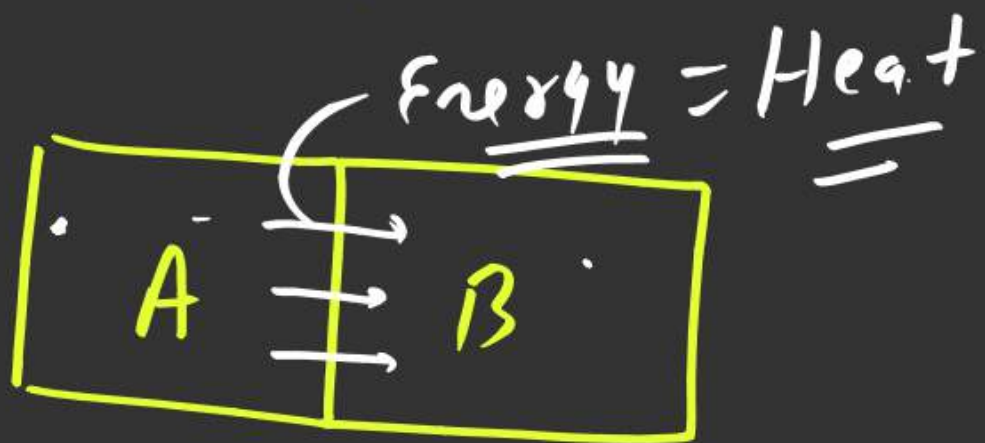


Heat

3651



$(T_1 > T_2)$



- Heat is energy transition which flows from high temperature to low temperature when two body brought in contact.

ऊष्मा एक प्रकार की ऊर्जा है जो, दो वस्तुओं के बीच उनके तापान्तर के कारण एक वस्तु से दूसरी वस्तु में स्थानान्तरित होती है।
जैसे 31°C की सतह पर से तापा जाता है।

- Heat is a type of energy which produces in the sensation of hotness and coldness. ऊष्मा एक प्रकार की ऊर्जा है जो हमें गर्मी या ठंडी का अनुभव दिलाती है।

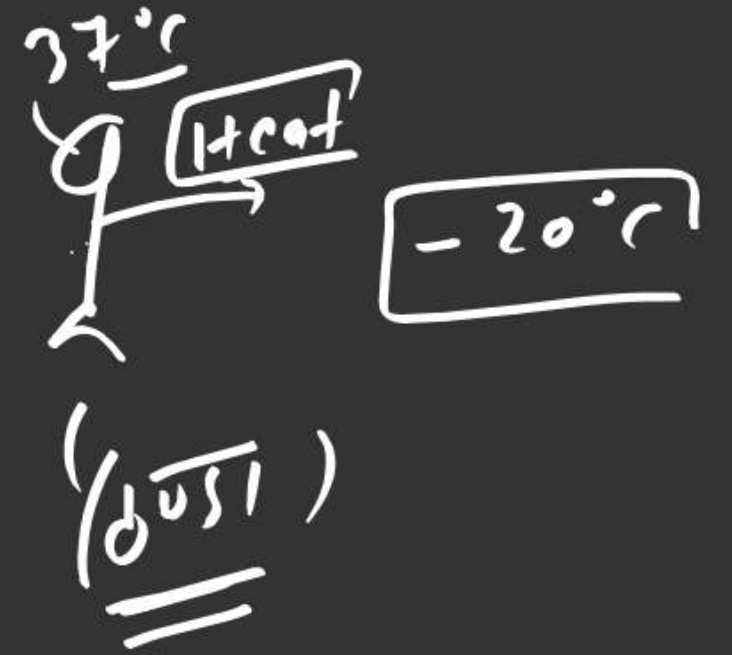
99



-20°C



55°C



- It is scalar quantity (आदिश राशि)
- Unit (इकाई) : Joule (SI), Calorie (CGS), erg, Electron Volt, kwh (किलोवाट घंटा)
- 1 Calorie = 4.2 Joule (or 1 Joule = 0.24 Calorie)
- erg = 10^{-7} J (or 1 Joule = 10^7 erg)
- 1 eV = 1.6×10^{-19} ~~volt~~ volt
- 1 Kilowatt hour (kwh) = 3.6×10^6 Joule

(W)

$$\text{Work done} = \vec{F} \cdot \vec{s}$$

(कार्य) (बल) (विस्थापन)

$$= m \times a \times \underline{s}$$

(m) (a) (s)
 द्रव्यमान (द्रव्य) विस्थापन

$$\frac{\text{कार्य}}{\text{द्रव्यमान}} = \text{kg} \times \frac{\text{m}}{\text{sec}^2} \times \text{m} = \left(\frac{\text{kg m}^2}{\text{sec}^2} \right) = \frac{\text{Joule}}{(\text{वजन})}$$

Q) $\text{Power} \times \text{time} = \text{WD}$
Kwh is the unit of -
 કિલોવાટ ઇન્ટર સાર્વિક -

(II) Power સત્તા

(III) Force વળ

~~(III)~~ Work કાર્ય

(IV) Time સમય

$$\text{Power} = \frac{\text{Work done}}{\text{time (સમય)}}$$

$$\text{Watt} = \frac{\text{Joule (જુલ) }}{\text{Sec (સેકન્ડ)}}$$

$$\text{Watt} \times \text{Sec} = \text{Joule}$$

$$P \times t = W$$

Q) $1 \text{ kWh} = \text{---} \boxed{\text{Joule}}$

Sol $1 \text{ kWh} = \overbrace{1000 \text{ watt}}^{1 \text{ kilowatt}} \times \overbrace{3600 \text{ sec}}^{1 \text{ hour } (60 \times 60)}$

$$= 36 \times 10^6 \text{ Watt} \cdot \text{sec}$$

$$= \underline{3.6 \times 10^6} \text{ Joule}$$

Q)

$$1 \text{ Joule} = \frac{\text{(एन)}}{\text{(अनित)}} \text{ Erg}$$

Sol

$$1 \text{ Joule} = 1 \frac{\text{kg m}^2}{\text{sec}^2} = \frac{1000 \text{ gm} \times (100 \text{ cm})^2}{\text{sec}^2}$$

$$= 10^7 \left(\frac{\text{gm cm}^2}{\text{sec}^2} \right) = \underline{\underline{10^7 \text{ Erg}}}$$