21-04
## Quest on 415
0.43-65%

An 8.0-MW electric power plant has an efficiency of 30 %. It loses its waste heat to the environment. How much heat is lost to the environment per second?

(a)    23  MJ
(b)    5.6 MJ
(c)    2.4 MJ
(d)    19  MJ
(e)    8.0 MJ

21-04
## Qu estion 416
0.34-67%

A heat engine has a thermal efficiency of 20%. It runs 2 revolutions per second and delivers 80 W. For each cycle find the heat discharged to the cold reservoir.

(a)    40   W.
(b)    61   W.
(c)    200  W.
(d)    121  W.
(e)    160  W.

21-04
## Question 417
0.45-24%

A car engine delivers 8.6 kJ of work per cycle. If its efficiency is 30%, find the energy lost by the engine per cycle.

(a)    24  kJ.
(b)    20  kJ.
(c)    8.6 kJ.
(d)    26  kJ.
(e)    14  kJ.

## 21-5    Entropy In the Real World: Refrigerators

21-05
## Question 418
0.49-53%

Wh ch one of the following statements is WRONG?

(a)    A refrigerator is a heat engine working in reverse.
(b)    The most efficient cyclic process is the Carnot cycle.
(c)    The total entropy decreases for any system that undergoes an irreversible process.
(d)    Entropy is a quantity used to measure the degree of disorder in a system.
(e)    It is impossible to construct a heat engine which does work without rejecting some heat to a cold reservoir.

21-05
## Question 419

Wh:ch one of the following statements is WRONG?

(a)    No heat engine has higher efficiency than Carnot efficiency.
(b)    Thermal energy cannot be transferred spontaneously from a cold object to a hot object.
(c)    After a system has gone through a reversible cyclic process, its total entropy does not change.
(d)    A heat pump works like a heat engine in reverse.
(e)    The total entropy of a system increases only if it absorbs heat.

21-05

Question 420     ).34-39%

An ideal freezer has a coefficient of performance (COP) of 5. If the temperature inside the freezer is - 20 degrees-C, what is the temperature at which heat is rejected?

(a)     -20  degrees-C
(b)     31  degrees-C
(c)     -45  degrees-C
(d)     20  degrees-C
(e)     36  degrees-C

21-05

Question 421

What is the coefficient of performance of a refrigerator that absorbs 40 cal/cycle at low temperature and expels 51 cal/cycle at high temperature?

(a)     4.6.
(b)     0.22.
(c)     2.3.
(d)     3.6.
(e)     0.28.

21-05

Question 422     0.50-53%

An ideal refrigerator has a coefficient of performance of 5. If the temperature inside the refrigerator is -20 degrees Celsius, what is the temperature at which it rejects heat?

(a)     - 5 degrees Celsius.
(b)     31 degrees Celsius.
(c)     20 degrees Celsius.
(d)     27 degrees Celsius.
(e)     42 degrees Celsius.

21-05

Question 423

Which one of the following statements is WRONG?

(a)     No heat engine has higher efficiency than Carnot efficiency.
(b)     A refrigerator works like a heat engine in reverse.
(c)     Thermal energy cannot be transferred spontaneously from a cold object to a hot object.
(d)     The total entropy of a system increases only if it absorbs heat.
(e)     After a system has gone through a reversible cyclic process, its total entropy does not change.

21-05

Question 424

A Carnot refrigerator has a coefficient of performance equal to 6. If the refrigerator expels 80 J of heat to a hot reservoir in each cycle, find the heat absorbed from the cold reservoir.

(a)     21 J.
(b)     15 J.
(c)     30 J.
(d)     5 J.
(e)     69 J.

21-05
## Question 425
0.43-39%
A Carnot refrigerator has a coefficient of performance equal to 5. The refrigerator absorbs 120 J of heat from a cold reservoir in each cycle. How much heat is expelled to the hot reservoir ?
(a)    720 J
(b)    480 J
(c)    600 J
(d)    144 J
(e)    125 J

21-05
## Question 426
0.32-67%
What mass of water at 0 degrees-C can a freezer make into ice cubes in one hour, if the coefficient of performance of the refrigerator is 3.0 and the power input is 0.2 Kilowatt?
(a)    0.4 kg.
(b)    1.9 kg.
(c)    3.0 kg.
(d)    9.2 kg.
(e)    6.5 kg.

21-05
## Question 427
0.40-63%
What is the coefficient of performance of an ideal refrigerator if the temperatures of the two reservoirs are 10 degrees Celsius and 27 degrees Celsius.
(a)    7.1
(b)    1.5
(c)    0.5
(d)    8.0
(e)    6.5

21-05
## Question 428
0.38-34%
During one cycle, a Carnot refrigerator does 200 J of work to remove 600 J from its cold compartment. How much energy per cycle is exhausted to the kitchen as heat?
(a)    800 J.
(b)    200 J.
(c)    225 J.
(d)    600 J.
(e)    450 J.