SECOND LAW OF THERMODYNAMICS||CHAPTER 5||

SAMPLE QUESTIONS||

A. State the second law of thermodynamics.

B. what do you mean by heat engine? How do you define its efficiency?

C. A carnot engine whose high temperature reservoir is at 400 K takes in 100 calories of heat at this temperature in each cycle and gives up 80 cal to the low temperature reservoir. What is the temperature of the latter reservoir? What is the thermal efficiency of the cycle?

A. What are the differences between a petrol engine and diesel engine?

B. What is the maximum efficiency of a heat engine working between an upper temperature of 127ºC and an lower temperature of 27ºC ?

SHORT QUESTIONS AND ANSWERS||SECOND LAW OF THERMODYNAMICS||CHAPTER5||

A. State second law of thermodynamics.

B. What do you mean by heat engine?

C. Mention its parts.

A. What are the types of heat engines? Write down them.

B. Write the expression for efficiency of a heat engine.

A. Define carnot engine.

B. Discuss the working of carnot engine with P-V diagram.

A. What will be the efficiency of the carnot engine?

B. Also, calculate total work done in the carnot cycle.

A. Define petrol engine.

B. Draw a neat P-V diagram for a petrol engine.

C. Mention 4-strokes in a petrol engine.

A. Define diesel engine.

B. Draw a neat P-V diagram for a diesel engine.

C. Write down the 4-strokes included in the diesel engine.

A. Write down the differences between petrol engine and Diesel engine.

B. Define refrigerator.

A. Write down the working of a refrigerator with a neat diagram.

B. Write down the expression for the coefficient of performance of a refrigerator.

A. Define entropy.

B. Is entropy a conserved quantity?

NUMERICALS||SECOND LAW OF THERMODYNAMICS||CHAPTER5||

An ideal gas heat engine operates in a carnot cycle between 227°□ and 127°□. It absorbs 6.0×10^4 calories at higher temperature. How much work per cycle is the engine capable of performing?

In a petrol engine, the rate of combustion of fuel is 5 Kg/h. the calorific value of petrol is 10^6cal/kg. If the efficiency of the engine is 30%. Calculate power of engine.

In a carnot engine, the temperature of source and sink are 500 K and 375 K respectively. If the engine consumes 600×10^3 cal/cycle. Find i)the efficiency of engine ii)work done per cycle iii)heat rejected per cycle.

What will be the thermal efficiency of an engine if it takes 8KJ heat from the source and rejects 6 KJ heat to the sink in one cycle?

A refrigerator has to transfer an average 263 J of heat per second from temperature -10°□ to 25°□. Calculate average power consumed, assuming that no energy losses in the process.