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NEET THERMODYNAMICS (PHYSICS) — CARNOT ENGINE — PYQS

Max. Marks: 40 **Questions:** 10

Section A (MCQ) — 10 questions

Q.1 A Carnot engine has an efficiency of 50% when its source is at a temperature 327°C. The temperature of the sink is :- [NEET (UG) 2023]

(1) 15°C (2) 100°C (3) 200°C (4) 27°C

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Q.2 The efficiency of an ideal heat engine working between the freezing point and boiling point of water, is [NEET 2018]

(1) 26.8% (2) 20% (3) 6.25% (4) 12.5%

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Q.3 Two Carnot engines A and B are operated in series. The engine A receives heat from the source at temperature T_1 and rejects the heat to the sink at temperature T. The second engine B receives the heat at temperature T and rejects to its sink at temperature T_2. For what values of T the efficiencies of the two engines are equal [NEET 2013 (Karnataka)]

(1) $\frac{T_1 - T_2}{2}$ (2) T_1T_2

(3) $\sqrt{T_1T_2}$ (4) $\frac{T_1 + T_2}{2}$

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Q.4 An engine has an efficiency of 1/6. When the temperature of sink is reduced by 62°C, its efficiency is doubled. Temperatures of the source is [AIPMT 2007]

(1) 37°C (2) 62°C (3) 99°C (4) 124°C

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Q.5 A Carnot engine whose sink is at 300 K has an efficiency of 40%. By how much should the temperature of source be increased so as to increase its efficiency by 50% of original efficiency? [AIPMT 2006]

(1) 380 K (2) 275 K (3) 325 K (4) 250 K

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Q.6 An ideal gas heat engine operates in Carnot cycle between 227°C and 127°C. It absorbs 6×10^4 cal of heat at higher temperature. Amount of heat converted to work is [AIPMT 2005]

(1) 4.8×10^4 cal (2) 6×10^4 cal

(3) 2.4×10^4 cal (4) 1.2×10^4 cal

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Q.7 An ideal gas heat engine operates in a Carnot cycle between 227°C and 127°C. It absorbs 6 kcal at the higher temperature. The amount of heat (in kcal) converted into work is equal to [AIPMT 2003]

(1) 4.8 (2) 3.5 (3) 1.6 (4) 1.2

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Q.8 The efficiency of Carnot engine is 50% and temperature of sink is 500 K. If temperature of source is kept constant and its efficiency raised to 60%, then the required temperature of sink will be [AIPMT 2002]

(1) 100 K (2) 600 K (3) 400 K (4) 500 K

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Q.9 A scientist says that the efficiency of his heat engine which works at source temperature 127°C and sink temperature 27°C is 26%, then [AIPMT 2001]

(1) it is impossible

(2) it is possible but less probable

(3) it is quite probable

(4) data are incomplete.

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Q.10 The (W/Q) of a Carnot engine is $\frac{1}{6}$, now the temperature of sink is reduced by 62°C, then this ratio becomes twice, therefore the initial temperature of the sink and source are respectively [AIPMT 2000]

(1) 33°C, 67°C (2) 37°C, 99°C

(3) 67°C, 33°C (4) 97 K, 37 K

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	
Ans.	**4**	**1**	**3**	**3**	**4**	**4**	**4**	**3**	**1**	**2**	