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3836 (M) P

Reg. No. :

Name :

VII Semester B.Tech. Degree Examination, May/June 2009

Branch : Mechanical (M)

Lab : THERMAL ENGINEERING LAB (M)

Time : 3 Hours

Max. Marks : 100

1. Determine the Convective heat transfer coefficient of the given vertical cylinder losing heat to surroundings by free convection. Compare the value obtained with the theoretical value for the steady state conditions. Plot the variation of local heat transfer coefficient against vertical height of the tube.
2. Determine average heat transfer coefficient for a pipe losing heat by forced convection to air flowing through it. Compare the value obtained with the theoretical value under the steady state conditions.
3. Find the Emissivity of the given metal test plate in relation to the black body in the emissivity apparatus.
4. Determine the thermal conductivity of insulating powder. Compare the experimental result with the actual value. Comment on your results.
5. Determine the thermal conductivity of the given composite wall materials. Compare the value obtained with the theoretical value under the steady state conditions.
6. Conduct the performance test on reciprocating air compressor and plot the following curves.
 - a) Isothermal efficiency vs. Delivery pressure
 - b) Input power vs. Delivery pressure
 - c) Volumetric efficiency vs. Delivery pressure
7. Find the overall heat transfer coefficient and effectiveness of a concentric tube parallel flow and counter flow heat exchanger.

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8. Find the thermal conductivity of insulation of the given composite cylinders in Lagged pipe apparatus.
9. Conduct a performance test on the air blower and plot the following graphs :
 - (i) a) Static head vs. Discharge
 - b) Dynamic head vs. Discharge
 - c) Overall efficiency vs. Discharge
10. Find out the COP of the given vapour compression refrigeration system using thermostatic expansion valve at maximum flow rate. Compare the results.
11. Calibrate the given pressure gauge using the given dead weights and plot the variation of true and indicated pressure.
12. Conduct the performance test on two stage rotary air compressor and plot the following characteristic curves :
 - a) Isothermal efficiency vs. Delivery pressure
 - b) Input power vs. Delivery pressure
 - c) Volumetric efficiency vs. Delivery pressure
13. Determine the value of Stefan Boltzman's constant and comment on your result.
14. Conduct a performance test on the air blower and plot the following graphs :
 - a) Input power vs. Discharge
 - b) Dynamic head vs. Discharge
 - c) Plot velocity profile across the diameter of the discharge pipe corresponding to the half discharge.
15. Find out the COP of the given vapour compression refrigeration system using capillary tube at maximum flow rate.



16. Determine the total resistance of the given composite wall materials. Plot the temperature vs. thickness graph.
 17. Conduct the performance test on reciprocating air compressor and plot the following curves :
 - a) Adiabatic efficiency vs. Delivery pressure
 - b) Input power vs. Delivery pressure
 - c) Volumetric efficiency vs. Delivery pressure
 18. Find the overall heat transfer coefficient and effectiveness of a cross flow heat exchanger.
 19. Calibrate the given thermocouple and draw the experimental diagram.
 20. Conduct the performance test on two stage rotary air compressor and plot the following characteristic curves :
 - a) Isothermal efficiency vs. Delivery pressure
 - b) Adiabatic efficiency vs. Delivery pressure
 - c) Volumetric efficiency vs. Delivery pressure
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