

This question paper contains 4 printed pages.

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Your Roll No.

B.Sc. (Hons.) PHYSICS / III Sem. B

Paper PHHP— Physics Lab. III (Lab. Theory)

Time : 1 hour

Maximum Marks : 20

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

*Do any twenty questions.
Each question carries one mark.*

1. How does temperature vary with time under steady state in Lee and Charlton disc experiment?
2. Define coefficient of thermal conductivity and give its cgs units.
3. What are the different modes of heat transfer?
4. Does the thermal conductivity of a material change if we change its shape, size or area of cross-section?
5. Can we use Lee's disc method for determining the thermal conductivity of a good conductor? Give reasons for your answer.
6. Why are the two thermometers placed close to the discs in Lee's disc experiment?

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7. What is the principle of working of mercury thermometer?
8. Why should we wait for the steady state to be reached before taking observations in any experiment?
9. In Lee's disc experiment, if the bad conductor is not placed on the metal slab while cooling it, then what is the correction factor?
10. How does the resistance vary with temperature for a conductor?
11. What precaution should be taken to prevent heating of the platinum spiral while doing the experiment with Platinum Resistance Thermometer?
12. What do you understand by the sensitivity of a Wheatstone Bridge?
13. Can we replace an AC source by a DC source in Callender Barne's experiment? If yes, suggest the changes to be made in the experimental setup.
14. Depict graphically the variation of thermoemf with temperature difference between hot and cold junctions. Show the neutral and inversion temperature on the graph.

15. What happens to the current when the temperature of the hot junction of a thermocouple is continuously increased?
16. What is a Resistance Temperature Device?
17. Which transformer is used in Callender Barne's method, and why?
18. What is Seebeck effect?
19. What is the direction of current at the cold junction of an Antimony Bismuth thermocouple?
20. Give the pin diagram for Op-Amp IC 741.
21. What determines the direction of current in a thermocouple?
22. If the rate of flow of water is doubled in Searle's experiment, what will be the change in value of thermal conductivity K ?
23. Define thermal diffusivity of a substance.
24. When heat starts flowing through copper rod in Searle's apparatus which of the thermometers will not show an increase in temperature, and why?