[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 8425 **C** **Roll No.....**

Unique Paper Code : 222506

Name of the Paper : PHHP – VI (Physics Lab – VI)

Name of the Course : B.Sc. (Hons.) Physics, Part III

Semester : V

Duration : 1 Hour

Maximum Marks : 20

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **twenty** questions.
3. **All** questions carry equal marks.

1. Define the role of a coupling capacitor in a circuit. How does it function ?
2. What is the difference between Avalanche breakdown and Zener breakdown ?
3. A centre tap transformer has 200 V primary and secondary rated at 15-0-15 V and is used with a rectifier circuit having a load of 100 ohm. What is the DC output voltage DC load current and PIV rating.
4. What are regulated and unregulated power supplies ?
5. Compare L-filter and PI- filter.
6. What is use of a bleeder resistor in a power supply ?
7. What are the advantages of a centre tap full wave rectifier over a half wave rectifier.
8. Draw a circuit diagram of phase shift oscillator.
9. Explain Voltage divider biasing with the help of a suitable diagram.
10. Draw a circuit diagram for PNP transistor characteristics in CE configuration marking all the currents and voltages.
11. How do you calculate current gain β and input resistance R_{in} with the help of characteristic curves of transistor in CE configuration ?

P.T.O.

12. Draw a Drain characteristics curve with $V_{GS} = 0$ and mark Breakdown, pinch off and ohmic region on it.

13. What advantages and disadvantages of Negative feedback in an amplifier ?

14. Draw a two stage RC coupled amplifier.

15. Give a circuit diagram to find the characteristics curves of a solar cell.

16. What are the applications of a solar cell ?

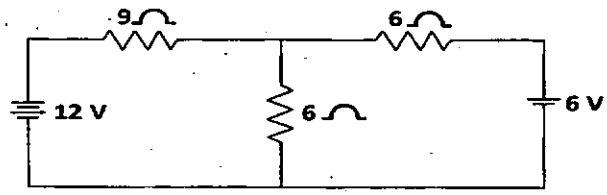
17. What is Piezoelectricity and what are its applications ?

18. What is the difference between a photodiode and a solar cell ?

19. What is a photodiode ? What is its principle of operation ?

20. What is the meaning of Gate terminal and Channel in FET ?

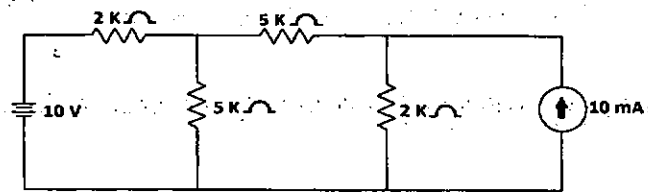
21. Using superposition theorem calculate current in each branch of the following network :



22. Define Maximum Power Transfer Theorem ? What are its uses ?

23. What is Norton's Theorem ? Give various steps to Nortonize a circuit.

24. Using Thevenin's Theorem, calculate the current through 5K resistor in the following circuit :



25. Draw the Π (PI) equivalent of the following network :