

Government General Degree College, Chapra
Physics (General)
6th Semester internal examination, 2020-21

Total marks: 15

Duration: 40 min

Answer any **three** questions:

3X5=15

1. What is the reverse saturation current of a p-n junction diode? How does it depend on temperature? What is its order for Ge and Si diodes? 2+1+2
2. Explain the principle of operation of a LED. Why is Si not used as a LED material? Which type of semiconductor is suitable for manufacturing LED? 3+1+1
3. Draw the output characteristic curves of an n-p-n transistor in CE mode. Discuss about the different operating regions. 2+3
4. Write down the characteristics of an ideal OPAMP. What is the CMRR of an OPAMP? 3+2
5. Explain how an OPAMP may be used as a subtractor. 5
6. Explain the concept of virtual ground in an OPAMP. Is there a virtual ground point in the non-inverting mode of operation of an OPAMP? 3+2
7. What is a rectifier? Draw a neat circuit diagram for a half-wave rectifier. Explain the physical mechanism of a Zener breakdowns in a reverse biased p-n junction. 1+1+3