

# Jashore University of Science and Technology

Bachelor of Science with Honours in Physics

Second semester of Second year

Course code: PHY 2207

Course title: Semiconductor Physics

Quiz no.: 03

Date: October 30, 2023

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1. Draw the common-base-configuration of a  $npn$  transistor. Explain how base current controls the operation of the transistor. [6]

2. In an  $npn$  transistor, explain why most of the emitter-injected electrons pass through the base region and on to the collector. [4]

3. Why are JFETs called normally ON devices? [4]

4. A JFET is characterized with  $I_{DSS} = 12$  mA and  $V_P = -4$  V. Draw the (i) transfer characteristics and (ii) drain characteristics for the JFET. [6]