

**Second Semester Internal Examination, February 2026**  
**Major Course in Physics**  
**ELECTRONICS - I**  
**PHY2CJ101**

Time: 1 Hr

Max Marks: 35

Name:	Marks Scored	Section A		Total Marks
Class:		Section B		
Roll No.:		Section C		

Section A

(Each question carries 3 marks, Max marks for section – 7)

1. Differentiate between intrinsic and extrinsic semiconductors?
2. Explain the working of an npn transistor.
3. In a transistor circuit, collector load is  $4\text{ k}\Omega$  whereas quiescent current is  $1\text{ mA}$ .
  - (1) What is the operating point if  $V_{cc}=10\text{ V}$  ?
  - (2) What will be the operating point if  $R_c= 5\text{ k}\Omega$  ?

Section B

(Each question carries 6 marks, Max marks for section – 18)

4. Briefly explain the working of a PN junction in forward biasing.
5. Write short notes on the following: (i) Breakdown voltage (ii) Knee voltage (iii) Limitations in the operating conditions of PN junction
6. Derive the relation between  $\alpha$  and  $\beta$ . Also derive an expression for collector current in common base connection
7. Briefly explain the input and output characteristics of common emitter connection

Section C

(Answer any one question, Each question carries 10 marks)

8. Describe the theory, advantages and applications (any two) of LED. What is multicolour LED?
9. Explain principle, operation, characteristics and applications (any two) of photodiode.