

3221

B. Tech. 5th Semester (ECE) (Elective-I)
Examination – December, 2022

NANO ELECTRONICS

Paper : PEC-ECE-311-G

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Section. Question number 1 is compulsory.

1. Define the following : 2.5 × 6 = 15
- (a) Graphene
 - (b) Pauli Exclusion Principle
 - (c) Wave Particle Duality
 - (d) MOSFET
 - (e) AFM
 - (f) TEM

SECTION – A

2. (a) Describe Band Theory of solids. 8
(b) Define Nano-Electronics and discuss its application. 7
3. State and Prove various Schrodinger's equations. 15

SECTION – B

4. Discuss CMOS scaling and its advantages in detail. 15
5. Discuss the system integration limits in detail. 15

SECTION – C

6. Classify the nanostructure material. Discuss their properties and application. 15
7. Discuss SEM and TEM in detail. 15

SECTION – D

8. Discuss resonant tunnelling diode and single electron transistor. 15
9. Define and discuss 2D semiconductors and electronic devices. 15