Fourth Semester FYUGP Degree (Reg) Examination April 2026

KU4DSCPHY204 - ELECTRONICS I

2024 Admission onwards

Time : 1.5 hours Maximum Marks : 50

Section A

Answer any 6 questions. Each carry 2 marks.

1. What is a hole in a semiconductor?
2. What is meant by an n-type semiconductor?
3. Covert 0.347 to binary using repeated multiplication by 2.
4. Convert 0.0981 to binary using sum of weights method.
5. What is the β_{DC} of a transistor if $I_C = 20.3\,\text{mA}$ and $I_E = 20.5\,\text{mA}$?
6. Differentiate between E-MOSFET and D-MOSFET.
7. Write the truth table and Boolean expression for a 2-input NAND gate.
8. Simplify $Y = ABC + AB\overline{C} + A\overline{B}C$

قل رب زدني علما
SIR SYED COLLEGE
CENTRAL LIBRARY

Section B

Answer any 4 questions. Each carry 6 marks.

9. Draw a voltage divider circuit. Explain the loading effects in voltage-divider bias
10. A fixed bias transistor has $V_{CC} = 10\,\text{V}$ and $R_C = 1\,\text{k}\Omega$. If $V_{CE} = 4\,\text{V}$, find the I_C.
11. Discuss breakdown in a JFET.
12. Apply De Morgan's theorem to the expression and simplify
    (a) $\overline{AB\,\overline{B}(C + \overline{D})}$
    (b) $\overline{AB(CD + EF)}$
13. Implement the Boolean function $Y = \overline{A} + B$ using only NAND gates
14. Design a circuit to implement the Boolean expression $Y = \overline{AB + CD}$ using only NAND gates

Section C

Answer any 1 questions. Each carry 14 marks.

15. Explain with neat diagram the V-I characteristics of forward and reverse characteristics of a pn juction diode. Also explain the non linear property of the diode.

16. What is Binary Coded Decimal?Explain with suitable example the steps involved in adding two BCD numbers.

قل ربّ زدني علما
SIR SYED COLLEGE
CENTRAL LIBRARY