Code No: 153AC

R18

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year I Semester Examinations, March - 2022
ANALOG ELECTRONICS
(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
- -

1.a) How does the reverse saturation current of a diode and voltage varies with temperature? Explain.
b) Derive the expressions for the following parameters of the half wave rectifier circuit: i) Average DC current ii) RMS value of current iii) Rectifier efficiency. [6+9]

2.a) Discuss the self bias circuit and derive the expression for S?
b) Explain the drain characteristics of depletion MOSFET. [7+8]

3.a) Explain the small signal model of CS MOSFET amplifier. Also derive the expression for amplification factor.
b) Write short note on MOSFET as a resistor. [10+5]

4.a) Explain the working of common emitter direct coupled amplifier.
b) Prove that class B push pull amplifier efficiency is 78.5%. [7+8]

5.a) Derive the voltage gain for unbalanced output differential amplifier.
b) Explain the operation direct coupled class-A power amplifier. [7+8]

6.a) Draw the circuit of current series feedback amplifier and derive the expressions for input and output resistances.
b) Why are RC oscillators preferred for the generation of low frequencies? [10+5]

7.a) Calculate the gain, input impedance and output impedance of voltage series feedback amplifier having A = -300, R_i =50KΩ and $\propto$ = -1/20.
b) Explain non inverting op-amp circuit. [7+8]

8.a) Construct an op-amp integrator circuit to and explain.
b) Explain differential amplifier using one op-amp. [8+7]

---ooOoo---