WINTER - 2022

UNIT-1

(7)

0.1 a) Explain the following terms

• ,	7
i)	Ideal diode
ii)	Knee voltage
iii)	Dynamic Resistance or AC resistance
iv)	Reverse saturation
v)	Zoner breakdown
vi)	Avalanche Breakdown
 b) Determine the value of emitter current and collector current of a transistor having α = 0.98 and collector to base leakage current IC_{BO} = 4μA. The current is 50μA. (6) Q.2 a) Discuss the behavior of P-N junction under forward & reverse biasing. (6) b) Name the three possible transistor connection. Explain the operation of transistor as an amplifier. 	
the open	ation of transistor as an amplifier. (7) UNIT-2
Q.3 a) In case of FET, the following readings are obtained V _{GS} -0.1V -0.1V -0.4V V _{DS} 5V 14V 14V I _D 8mA 8.3mA 7.1mA Obtain a) A.C. Drain Resistance b) Transconductance c) Amplification factor. (7)	

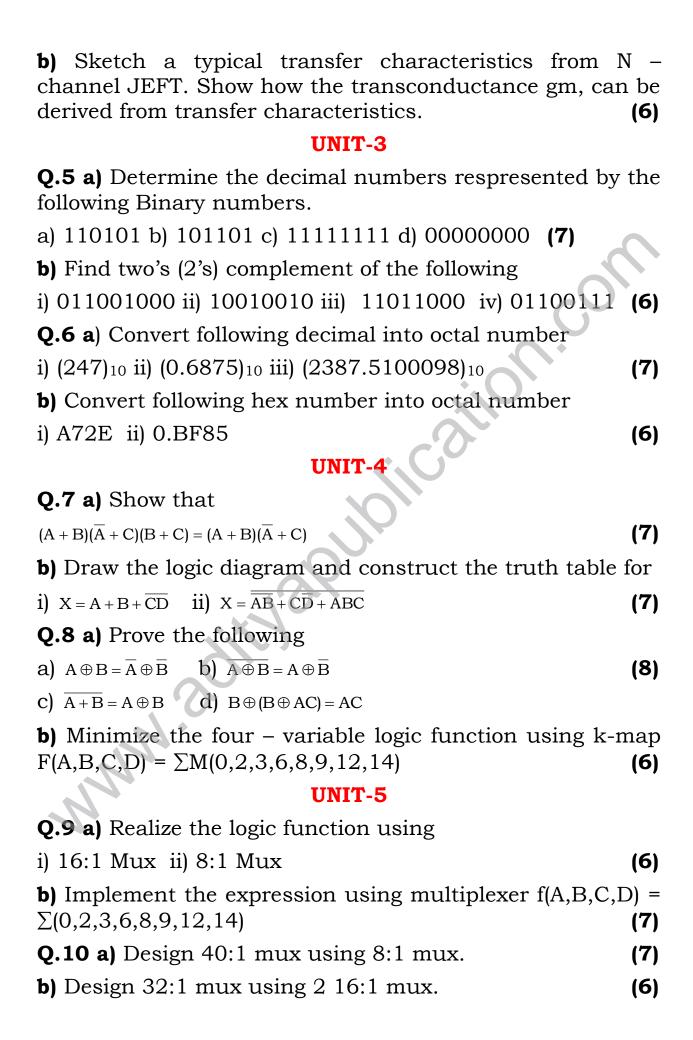
b) Define

a) The pinch-off voltage b) Channel ohmic region

c) Drain Resistance d) transconductance

e) IDSS **(6)**

Q.4 a) Draw static drain characteristics and transfer characteristic curve for N – Channel depletion type MOSFET. (7)



UNIT-6

- **Q.11 a)** Design a 3 bit synchronous counter using j-K flip-flop. (7)
- **b)** Design a 3 bit up/down counter with a direction control M. use j-K flip-flop. (6)
- **Q.12 a)** Explain 3 bit counter using flip-flop with the help of waveforms. (7)
- **b)** Identify Q and \overline{Q} outputs of the clocked J-K flipflop as shown in figure (6)

