SE | ECS | SEM-III | R-19 | FH-2025- | Date: 04/06/2025

Q.P. Code: 10081031

Paper / Subject Code: 51122 / Electronic Devices

(3 Hours) **[Total Marks: 80]**

N.B.: (1) Question No. 1 is Compulsory.

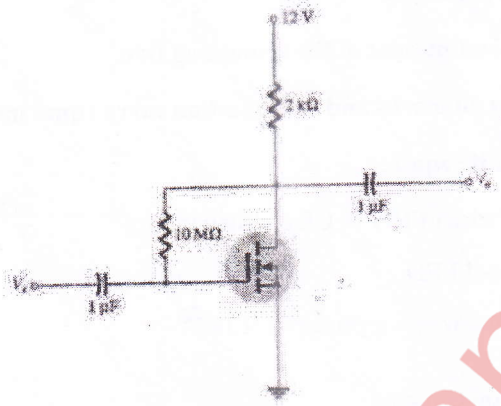
(2) Attempt any three questions out of the remaining five.

(3) Each question carries 20 marks and sub-question carry equal marks.

(4) Assume suitable data if required.

1. (a) Explain V-I characteristics of BJT in CE configuration (5)
   (b) Compare photodiode and LED (5)
   (c) Explain construction and working principle of JFET (5)
   (d) With neat sketch explain C filter (5)
2. (a) Explain characteristics of Zener diode. Discuss Zener diode as voltage regulator. (10)
   (b) Explain formation of pn junction diode. Working of diode under forward bias condition. Discuss diode current equation. (10)
3. (a) With neat sketch explain the concept of DC load line and operating point in BJT. (10)
   (b) Discuss types of BJT biasing circuits in details (10)
4. (a) Draw CS D-MOSFET amplifier. With the help of small signal ac equivalent model derive input resistance (Ri), output resistance (Ro) and voltage gain (Av) (10)

(b) Determine I_{DQ} and V_{DSQ} for a given biasing circuit. $I_{D(ON)} = 6mA$, $V_{GS(ON)} = 8V$, $V_{GS(TH)} = 3V$. (10)



5 (a) With neat circuit diagram explain the operation of centre-tapped full wave rectifier. Derive expression for ripple factor. (10)

(b) A 230 V, 60 Hz voltage is applied to the primary of a 5:1 step down center tapped transformer used in a FWR having a load of 900Ω. If the diode resistance and secondary coil resistance together has a resistance of 100Ω, Determine (a) DC voltage across the load. (b) DC current flowing through the load. (c) DC power delivered to the load and PIV across each diode (d)Ripple voltage and its frequency. (10)

6. Write short note on (any two) (20)

i) Working principle and characteristics of n channel E-MOSFET
ii) Memristor
iii) Explain construction, working principle and applications of varactor diode.

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