S.E. ECS NEP ~~Nov~~ June 2026.

(5)

Time: 2 Hours

Max. Marks: 60

06/06/26.

N.B. (1) Question No. 1 is compulsory.
(2) Attempt any three questions from remaining five questions.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

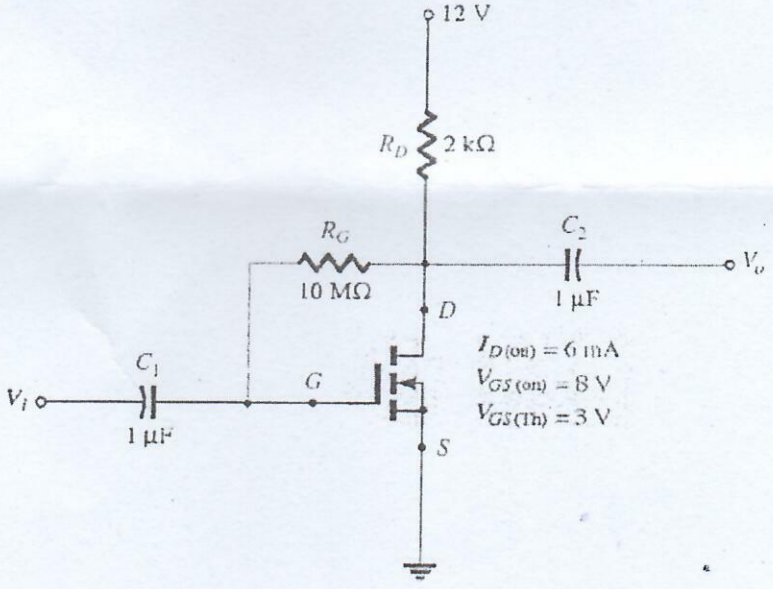
Q1. Attempt any FIVE. 15

a. What is biasing? Name all biasing techniques for BJT.
b. What is IGBT? Give its applications.
c. Compare the center-tapped and bridge full-wave rectifiers.
d. What is power amplifier? Give its classification.
e. Draw circuit diagram of LC filter.
f. List and explain the applications of power electronic devices.
g. What is rectifier? Give its types.

Q2. a) Explain construction and working of SCR with its characteristics. **07**

b) What is clipper? Give its classification and explain one in detail. **08**

Q3. a) Find I_{DQ} and V_{GSQ} for the enhancement type of MOSFET. **08**



b) Explain the analysis of a voltage divider bias circuit for a MOSFET. How does this biasing method improve stability? **07**

Q4. a) A MOSFET in a common-source configuration is connected with a drain supply V_{DD}=12V and a drain resistor R_D=1kΩ. Calculate and plot the DC load line. Find the drain current I_D when V_{DS}=6V. **08**

b) Discuss Class AB power amplifiers. Explain how Class AB combines the advantages of Class A and Class B amplifiers and state its efficiency and distortion characteristics. **07**

Q5. a) Describe the construction, working, and characteristics of a power MOSFET. 07

b) Explain construction, working and characteristics of GTO. 08

Q6. a) Explain hybrid-π models of BJT and use them for amplifier analysis. 07

b) Explain step-by-step design procedure for CE amplifier including biasing, coupling, bypass and load resistors. 08
