

[3 Hours]

[Total Marks: 80]

Instructions:

1. Question No: 1 is compulsory.
2. Answer any three from the remaining five questions.

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| 1 | <ol style="list-style-type: none"> a) Recall the h-parameter equivalent model of Common Emitter voltage divider bias configuration and define all the h-parameters. b) Interpret the Drain-source characteristics of n-channel depletion type MOSFET with a neat figure for different values of V_{GS}. c) Draw the circuit diagram of op-amp based integrator circuit and write the expression of voltage gain. d) State the application of Opto-isolator with a neat figure. | (5 x 4) |
| 2 | <ol style="list-style-type: none"> a) Discuss the need of biasing in BJT amplifiers. Illustrate the voltage divider biasing technique in detail. b) Draw the h-parameter equivalent model of a voltage divider bias Common emitter BJT amplifier and derive expression of voltage gain. | (10)
(10) |
| 3 | <ol style="list-style-type: none"> a) With a neat figure explain the construction and working principle of n-channel depletion type MOSFET. b) Illustrate the different biasing techniques employed in MOSFET amplifiers. | (10)
(10) |
| 4 | <ol style="list-style-type: none"> a) Explain op-amp as a non-inverting amplifier. Design a non-inverting amplifier for voltage gain of 11. b) Illustrate with neat diagram, the application of Op-amp as adder circuit. Derive the output expression. | (10)
(10) |
| 5 | <ol style="list-style-type: none"> a) Explain the construction and working of Schottky diode. b) Explain the block diagram of op-amp. Draw its frequency response characteristics. | (10)
(10) |
| 6 | <p>Write short notes on ANY TWO</p> <ol style="list-style-type: none"> 1) Astable Multivibrator using IC555 2) Zener diode as clipper 3) LM317 as Adjustable voltage Regulator | (20) |