QP CODE: 20101160

20101160

Reg No : .....

Name : .....

B.Sc. DEGREE (CBCS) EXAMINATION, NOVEMBER 2020

Second Semester

B.Sc Physics Model II Applied Electronics

Vocational Course - AE2VOT03 - BASICS OF POWER ELECTRONICS

2017 ADMISSION ONWARDS

E099E399

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

Each question carries 2 marks.

1. What will happen to the drain characteristics if the gate to source voltage is increased?
2. With typical value explain any one specification ratings of JFET.
3. List the JFET parameters.
4. Draw the basic structure of an N channel Depletion type MOSFET.
5. Draw and explain the circuit symbol of an N channel depletion type MOSFET.
6. Sketch the transfer characteristics of an enhancement type MOSFET.
7. Draw and explain the circuit symbol of an N channel enhancement type MOSFET.
8. Name any two precautions that must be taken while handling a MOSFET.
9. What do you mean by biasing? Explain the need for biasing a JFET.
10. What are the different steps in setting a Q point?
11. Draw the circuit of a current source biased JFET.
12. Explain how phase inversion occurs in a common source amplifier.

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. With a neat sketch explain the structure of an N channel and a P channel JFET.

14. The data sheet of certain JFET indicates that I_{DSS} equals to 15 mA and $V_{GS\ (off)}$ equal to -5 V. Determine the drain current for V_{GS} equal to 0, -1 and -4 V.

15. State the advantages and disadvantages of FET over BJT.

16. Compare Depletion mode and Enhancement mode of a MOSFET.

17. Draw the transfer characteristics of a Depletion type MOSFET. Write down the equation for drain current along the transfer characteristics for the depletion type MOSFET.

18. Discuss the construction and principle of working of enhancement type MOSFET.

19. With neat diagram explain self-biasing for JFET.

20. Explain the effect of AC load on voltage gain and output resistance of a common source amplifier.

21. Obtain the expression for voltage gain and output voltage of a common drain amplifier.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. With neat sketches explain the formation of depletion layer in a JFET and hence discuss the operation of JFET.

23. With necessary circuit diagram, explain transconductance curve. Derive the mathematical expression for transconductance.

24. With necessary circuit diagrams explain how a MOSEFT can be used as a resistor. Describe the advantages of N channel MOSFET's over P channel MOSFET's.

25. With necessary circuit diagram explain the biasing circuits of the Enhancement type MOSFETs and Depletion type MOSFETs.

(2×15=30)