19U509S (Pages: 2) Name: ……

Reg. No: ……

FIFTH SEMESTER B.Sc. DEGREE EXAMONATION, NOVEMBER 2021

(CUCBCSS-UG)

CC15U PH5 B09 - ELECRONICS (ANALOG &DIGITAL)

(Physics – Core Course)

(2015 to 2018 Admissions – Supplementary/Improvement)

Time: Three Hours Maximum: 80 Marks

SECTION A

Answer ***all*** questions. Each question carries 1 mark.

1. The ripple factor of a full wave rectifier is ……..
2. A Zener diode is in ……. bias for voltage regulation
3. State De-Morgan`s theorems.
4. What is the point of intersection of d c and a c load lines?
5. $(F2.C4)_{16} = (\ )_8 = (\ )_2$

True or False:

6. In an A M, majority of power is in side bands.
7. All binary numbers cannot be converted to decimal numbers.
8. Octal is not a positional number system.
9. The electrical equivalent of mass is capacitance.
10. A transistor is a current operated device.

(10 × 1 = 10 Marks)

SECTION B

Answer ***all*** questions. Each question carries 2 marks.

11. What is the need of modulation?
12. Explain the terms, decibel power gain and frequency response.
13. Convert the decimal 54 to binary.
14. Explain the working of a voltage doubler.
15. Draw the circuit diagram of common base configuration.
16. What is Faithfull amplification? How can we achieve it?
17. What are the main differences between A M and F M?

(7 × 2 = 14 Marks)

SECTION C

Answer any ***five*** questions. Each question carries 4 marks.

18. Explain the working of a full wave rectifier.
19. What is thermal runaway? Write a short note on stabilization of operating point of transistor amplifier.

20. Discuss the function of transformer in a transformer coupled amplifier.
21. explain the working of J K flipflop.
22. Explain the working of MOSFET.
23. Draw the circuit diagram of a Hartley oscillator.
24. Mention the truth tables of half adder and full adder.

(5 × 4 = 20 Marks)

SECTION D

Answer any ***four*** questions. Each question carries 4 marks.

25. A 6 V Zener diode is connected with a voltage sourceof10 V and a resistance R. The current through the load resistance R_L varies from 10 to 100 mA. Find the value of series resistance R for maintaining a voltage of 7 V across R_L . The minimum Zener current is 8 mA.
26. Subtract 9 from 15 using 2`s compliment method in 8 bit format.
27. A JFET has I_{DSS} = 9 mA, $V_{GS\,(off)}$ = -6 V. Find the value of drain current when V_{GS} = -3 V.
28. Explain, with truth tables, the logic gates NOR, NAND and XOR. Why NAND and NOR gates are called universal gates?
29. Obtain the simplified SOP forms of the function F(A,B,C,D)= Σ (0,1,2,5,8,9,10) using K-MAP
30. Draw the d c load line for CE configuration having V_{CC} = 10V, R_C = 5kΩ. What will be the Q Point if zero signal base current is 15μA?
31. After amplitude modulation, the r.m.s value of carrier wave changes from 80V to 65V. sssCalculate the modulation index.

(4 × 4 = 16 Marks)

SECTION E

Answer any ***two*** questions. Each question carries 10 marks.

32. What are the advantages of OP-AMP? Explain the working of OP-AMP as 1) summing amplifier 2) integrator and 3) differentiator.
33. What are the essentials of a transistor oscillator? Discuss the working of 1) Hartley oscillator 2) crystal oscillator.
34. With a neat diagram, explain the working of a two stage RC coupled amplifier.
35. Explain with neat diagram the working of a full wave rectifier. Derive an expression for its efficiency

(2 × 10 = 20 Marks)

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