## JAIN COLLEGE, v v puram

### For Reduced Syllabus

| Test / Exam: | MOCK 1 | Month & Year: | 2020-21 |
|---|---|---|---|
| Class: | II PUC | Subject: | Electronics |
| Duration: | 3:15 | Max. Marks: | 70 |

**Instruction:**
1. The question paper has four parts: A, B, C and D.
2. Part-A compulsory.
3. Part-D contains two sub parts (I) Numerical problems
   (II) Essay type questions.
4. Read the instructions given foe each part.

### PART-A

**I.    Answer all the following questions: -                                    10×1=10**

1. Expand MOSFET.
2. What is load line?
3. Write the relation of $I_{CBO}$ and $I_{CEO}$.
4. Which amplifier is also called as current buffer?
5. What is the theoretical efficiency of class c power amplifier?
6. What is the practical value of slew rate of IC 741?
7. What is inverse piezoelectric effect?
8. What is noise ratio in communication system?
9. What is transmission efficiency of an AM wave if $m_a = 0.5$
10. Which non weighted code is used in shaft position encoders?

### PART-B

**II.    Answer any five of the following: -                                    $5 \times 2$=10**

11. Write the construction of p channel JFET
12. Draw the AC equivalent circuit of a CE amplifier.
13. What is input and output offset voltage in OP-AMP.
14. Draw the graph of first order high pass filter.
15. Write the classification of oscillator.
16. Write a note on sky wave propagation.
17. Draw FULL ADDER circuit using 3 input XOR gate and basic gates.
18. $(69)_{10}$ exhibit the self-complementing property using XS- 3code.

**PART-C**

III. **Answer any five of the following: -** 5×3=15

    19. Define:

- Pinch – off voltage
- AC drain resistance
- Transconductance.

20. Write a note on need for biasing.
21. Draw and discuss about frequency response of multistage CE amplifier at different frequencies.
22. Classify the amplifier based on frequency ranges.
23. Draw the block of voltage shunt, current series and current shunt feedback amplifier.
24. Explain virtual ground concept in OP –AMP.
25. Write a note on ionosphere.
26. Explain the working of D flip flop with logic circuit diagram and truth table.

**PART-D**

IV. **Answer any three of the following: -** 3×5=15

27. CE amplifier circuit using germanium transistor having the values, R1=47KΩ, R2=12KΩ, RE=1KΩ, Rc =10KΩ, $V_{cc}$ =18v,β=150,$r_e$=52mv/$I_E$, where input voltage is 50mv. Calculate a)$V_2$, b)$I_E$, c) $r_e$, d)Av, e)$V_{CE}$.
28. Calculate the output voltage.
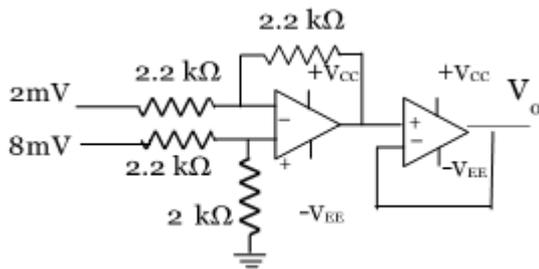


29. A Colpitts oscillator at 1.13MHz.if the inductor in the feedback network has a value of 20μH and one of the capacitors value is 0.1μF, calculate the value of the other capacitor.
30. A10Kw carrier wave is amplitude modulated at 80% depth of modulation by a sinusoidal modulating signal. Calculate the total power, side band power and transmission efficiency of the AM wave.
31. Simplify Y(ABCD)=$\sum m(0,2,4,8,10) + \sum_d m(12,14)$ using K-map and draw the logic circuit for the simplified expression using NAND gates only.

**PART-E**

V. **Answer any four of the following: -** 4×5=20

32. Explain the working of class B push pull amplifier with neat circuit diagram and wave form
33. Derive the expression for input impedance of a voltage series negative feedback amplifier.
34. With a neat circuit diagram derive an output equation of OP-AMP differentiator.
35. With a circuit diagram explain the working of crystal oscillator.

36. Derive the power and current relations in AM.
37. Explain the operation of J-K master slave flip flop with NAND logic circuit and truth table.

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