



JAIN COLLEGE, v v puram
For Reduced Syllabus

Test / Exam:	MOCK 2	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 for each part.

PART-A

- I. Answer all the following questions: -** **10×1=10**
1. What is the function of drain?
 2. In which region of characteristics a transistor behaves as a closed switch?
 3. Define stability factor.
 4. Write the function of Bypass capacitor in amplifier.
 5. What is a power amplifier?
 6. Define slew rate of an OP-AMP.
 7. Define feedback.
 8. Which layer is called as Kennley Heaviside layer?
 9. Mention the expression for modulation index in terms V_{max} and V_{min} .
 10. Write XS-3 code for a decimal number 178.

PART-B

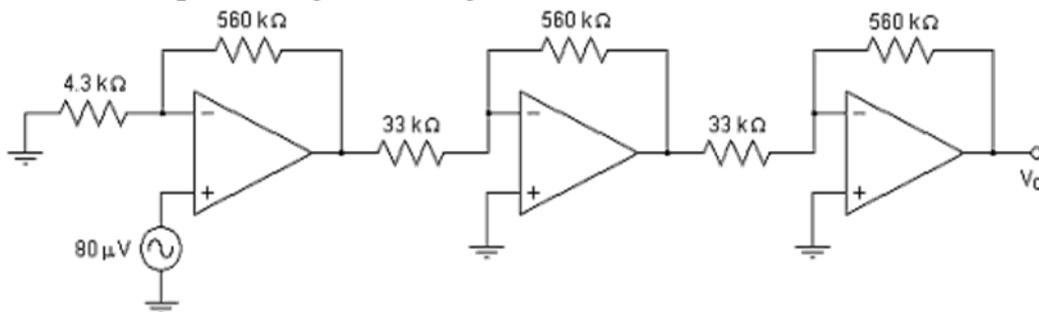
- II. Answer any five of the following: -** **5 × 2=10**
11. Derive the relationship between μ , r_d and g_m .
 12. Write the important steps to draw the DC equivalent circuit.
 13. Draw the pin configuration of OP-AMP IC-741.
 14. Draw the circuit and graph of first order low pass filter.
 15. Mention the Barkhausen criterion condition for sustained oscillation.
 16. Explain ground wave and space wave propagation.
 17. Realize XNOR gate using only NOR gates.
 18. Differentiate between weighted code and non-weighted code.

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

19. Give the comparison between BJT and FET.
20. With circuit diagram and graph describe to draw dc load line for a transistor.
21. Classify the amplifier based on input and output.
22. Write the block diagrams for the different types of transistor coupled amplifier.
23. An amplifier has gain of 600 with feedback ratio 0.05. Calculate the gain and output impedance with negative feedback. Given the output impedance without feedback is 200Ω .
24. Draw the circuit diagram OP –AMP inverting amplifier and derive its output voltage.
25. Define skip zone, single hop distance and noise figure in communication.
26. Draw FULL ADDER circuit using 2 half adder and OR gate. And also write its truth table.

PART-D**I. Answer any three of the following: -****3×5=15**

27. A three stage amplifier has voltage gain of 100, 200 and 400 respectively. If the input voltage given at first stage is $10\mu\text{V}$, calculate the output voltage at each stage. Also find total voltage gain in dB
28. Calculate the output voltage for the given circuit.



29. A transistor Hartley oscillator has tank circuit consisting of $L_1=20\text{mH}$, $L_2=10\text{mH}$ and $C=0.1\mu\text{F}$. Determine the frequency of oscillation and feedback factor.
30. The current of a transmitter is 8A when the carrier is sent, it increases to 8.65A when the carrier is modulated. Find the percentage of modulation. Also calculate the antenna current when the depth of modulation is 0.75.
31. Simplify $Y(ABCD)=\sum m(0,2,4,5,8,10,12,14) + \sum_d m(6,11,13)$ using K-map and draw the logic circuit for the simplified expression using NAND gates only.

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

32. Explain the working of C-E amplifier with neat circuit diagram and wave form.
33. Discuss the effect of bandwidth with and without feedback amplifier with neat curve.
34. With a neat circuit diagram derive an output equation of OP-AMP adder.
35. With a circuit diagram explain the working of Colpitts oscillator.
36. Derive the expression of modulation index in terms of V_{max} and V_{min} of AM. Also derive transmission efficiency of AM.
37. Realize NOT, AND, OR and XOR GATE using only NAND gates.
