SRI BHAGAWAN MAHAVEER JAIN COLLEGE Vishweshwarapuram, Bangalore. **Mock Question Paper 2 –** January 2020	**Course:** II year PUC **Subject:** Electronics **Max. Marks:** 70 **Duration:** 3.15hrs.

PART-A

I. Answer all questions. **10x1=10**

1. Define trans conductance in JFET.
2. What is biasing of a transistor?
3. Define CMRR
4. What is noise
5. Mention the intermediate frequency of an AM receiver.
6. Amplitudes of carrier voltage and signal voltages are 1V and 0.5V respectively. Determine Vmax.
7. Define Max term.
8. Convert $(1100)_{Gray}$ into binary.
9. How many register banks are present in 8051.
10. If $a=5, b=10$ what is the content of 'a' after the execution of $a+=b;$ in 'C' programming?

PART-B

II. Answer any FIVE questions. **5x2=10**

11. On the output characteristics of a transistor in CE mode, mark DC load line and different regions of transistor operation.
12. An amplifier has $Zo=5k\Omega$, voltage gain $A=100$ and β=0.02. Find the output impedance of the feedback amplifier.
13. Draw pin out diagram of IC555.
14. Mention the four modes of differential amplifier.
15. Draw the circuit diagram of weinbridge ascillator.
16. Write the syntax of "for loop" statement.
17. Expand DPTR, PSW.
18. Draw the diagram of a satellite transponder system.

PART-C

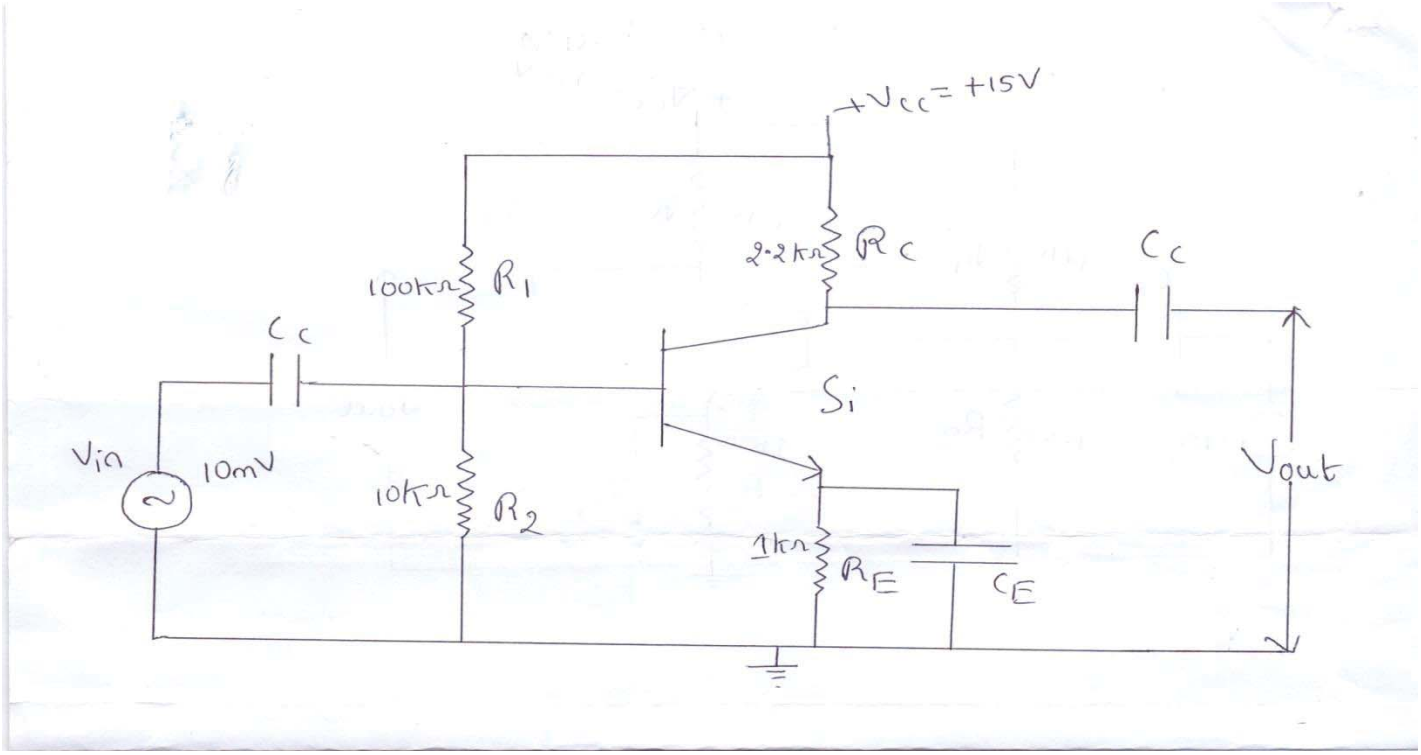
III. Answer any FIVE questions. **5x3=15**

19. Draw the drain characteristics of JFET. Explain different regions of drain characteristics.
20. Derive an expression for negative feedback in amplifier.
21. Mention different layers of Ionosphere with their approximate height from the earth.
22. What are primary constants of transmission lines? Write the equivalent circuit of transmission line to show primary constants.
23. Draw the frequency spectrum of a AM wave.
24. A silicon power diode has V_j of $0.4V, R_{oN}=0.002\Omega$ determine V_{AK} if (a) $I_F=75A$ (b) $I_F=100A$.
25. Draw the logic circuit of clocked RS Flip-Flop using NAND gates, write it's truth-table.
26. Explain the format of URL.

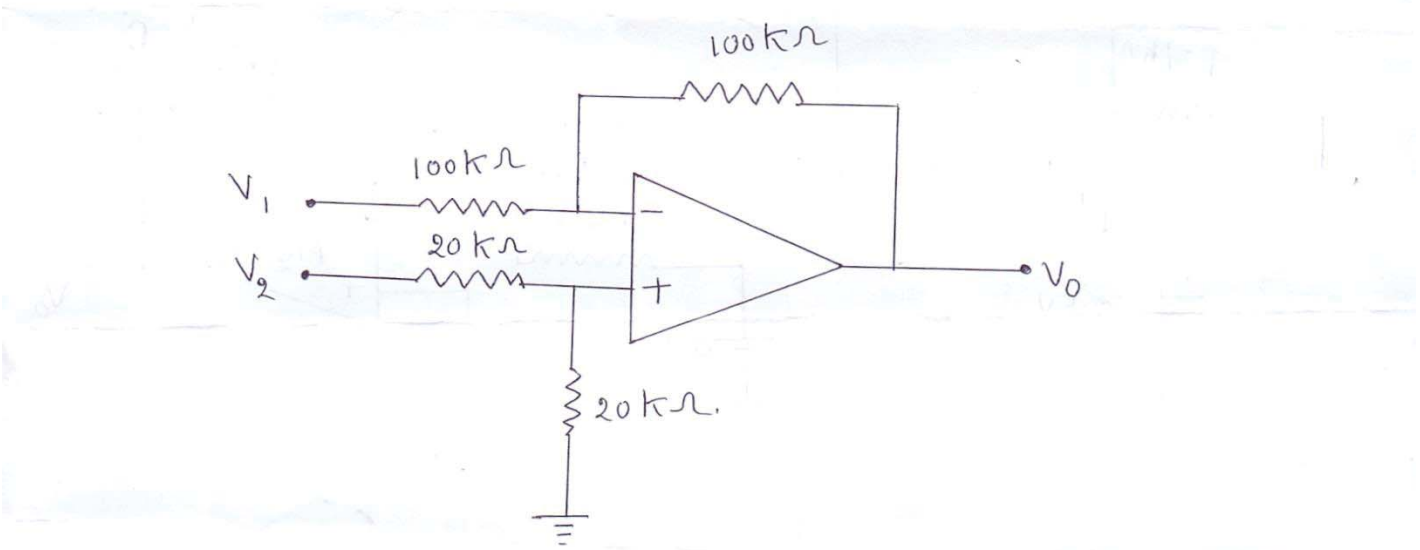
PART-D

IV. Answer any three questions. **3x5=15**

27. CE amplifier circuit using germanium transistor is shown in figure given below calculate (1) V_2 (2) V_0 (3) r_e^1, (4) A_v (5) A_i given $r_e^1=\frac{52mV}{I_E}, \beta=150$



28. Calculate the output voltage for the circuit shown below, $V_1 = -V_2 = 1V$



29. The time period of wien-bridge oscillator is 1ms, calculate the value of resistance when $C = 0.01\mu F$ (consider $R_1 = R_2 = R \& C_1 = C_2 = C$) also calculate frequency.
30. The output of a transmitter is given by $400[1+0.4\sin(6280)t]\sin(3.14\times10^7 t)$. This voltage is fed to an antenna of resistance 500Ω determine
    1) Carrier frequency (2) Modulating frequency
    3) Carrier power (4) Mean power output
31. Simplify the given equation using K-map and draw the logic symbol for the simplified expression.

PART-E

V. Answer any FOUR questions. 4x5=15

32. With a circuit diagram explain the working of CC amplifier, also draw the input and output wave forms.
33. What is an OP-amp differentiator? Obtain an expression for op-amp differentiator circuit.
34. Derive an expression for total power carried by an AM wave.

35. Explain with an example, the working of SISO shift register and also draw the timing diagram.
36. In the pin diagram of 8051, name I/O pins of all 4 ports.
37. What is an identifier? Explain rules of declaring the identifier.

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