Jain College, Jayanagar
II PUC Mock Paper - II
Subject: Electronics

Duration: 3.15 minutes **Max.Marks: 100**

PART – A

Answer all questions **1 X 10 = 10**

1) What is the function of drain in FET?
2) What is an active filter?
3) Define Signal to Noise ratio.
4) Expand SSB-SC
5) Which type of antenna is used in small electronic devices?
6) Name the circuit which converts fixed DC to variable DC.
7) $10010111_{(BCD)}$=_____$_{(10)}$
8) Define combinational logic circuit.
9) Write an instruction to add content of R1 to the accumulator.
10) What are Identifiers?

Part B

Answer any Five questions **2 X 5 = 10**

11) Write any two characteristics of CC Amplifier
12) An amplifier has Z_i = 5kΩ and open loop voltage gain equal to 100, β=0.05. Find the output impedance after the application of negative feedback.
13) Sketch the output of an oscillator for
    a. Aβ=1
    b. Aβ > 1
14) A pn junction diode has a reverse saturation current rating of 50nA at 32°C. What should be the value of forward current for a forward voltage drop of 0.5V?
15) Sketch the input and output waveform of SCR-Half wave rectifier.
16) Mention any two addressing modes in microcontroller.
17) int a=5, b=25, c, d;
    a. What is the value of b after the execution of b=++a?
    b. What is the value of C after the execution of c = b%a
18) Give any two advantages of wifi over Bluetooth.

Part C

Answer any FIVE questions **3 X 5 = 15**

19) Write any three difference between BJT and FET.

20) Explain the steps to obtain DC load line of voltage divider bias circuit.

21) Show how negative feedback affects bandwidth of an amplifier.

22) Write a note on sky wave propagation.

23) Explain

a. Selectivity

b. Sensitivity

c. Fidelity

24) Derive an expression for load voltage V_{dc} of an RC triggered SCR full wave rectifier.

25) What is a half subtractor? Draw the logic circuit using NAND gates. Mention the Boolean expression for outputs.

26) Explain the working of a transponder in satellite communication system with a neat block diagram.

Part D

Answer any three questions: **5 X 3 = 15**

27) For the CE amplifer circuit using silicon transistor given below, find

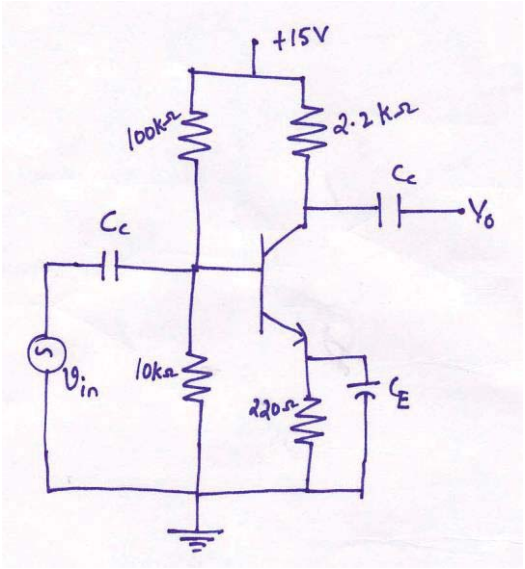
i. A_v

ii. Ap

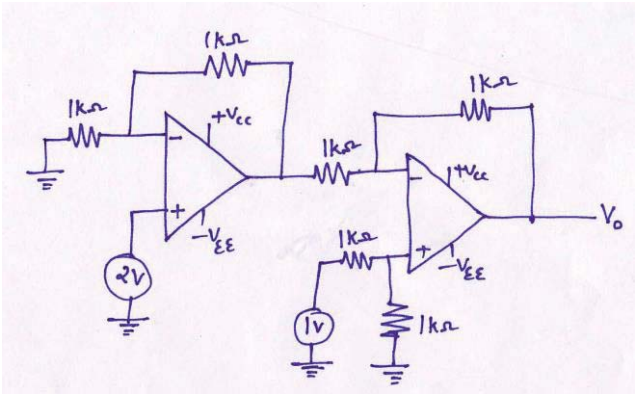
iii. Zin

iv. Zo

Given, I_E = 3.41mA and β = 100.



28) Find the output voltage of the following circuit.



29) The frequency of a phase shift oscillator is 125KHz. If the value of capacitor used is 0.22μF, calculate the value of resistance used. What will be the value of resistance if the capacitor is replaced by another capacitor of capacitance 0.1μF.

30) A modulating signal $10\text{Sin}2\pi10^3t$ is used to amplitude modulate a carrier signal $20\text{Sin}2\pi10^6t$. Find,
   a. m_a
   b. Percentage of modulation
   c. Frequencies of side bands.
   d. Bandwidth

31) Simplify $y=\sum m(0, 1, 4, 12, 15) + \sum d(2, 5, 7)$ using K-Map. Draw the logic diagram for the simplified expression using only NAND gates.

Part E

Answer any FOUR of the following: **5 X 4 = 20**

32) With neat diagram, explain the working of class-B push-pull amplifier.

33) Derive an expression for the output of an OPAMP integrator. Draw the output wave for sine wave input.

34) Explain the working of an FM transmitter using block diagram.

35) With neat logic diagram, explain the working of a master-slave JK flip flop. Write its Truth-table and draw timing diagram.

36) Write 8051 ALP for adding 9Ah and 6Ch. Save the result in register R7. Verify the content of R7 and the status of carry flag after the execution of program.

37) Write a C-program to find the sum of first n positive integers.

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