JAIN COLLEGE

463/465, 18th Main Road, SS Royal, 80 Feet Road, Raja Rajeshwari Nagar,
Bangalore - 560 098

SUBJECT: Electronics
II PUC
I MOCK 2019-20

Total Marks: 70

NOTE:

i)Questions paper contains four parts A,B,C and D.

ii) Part A has no choice.

iii) Part D has two parts

   Part I is from problems.

   Part II is of Essay type questions.

iv) Circuit diagram/waveforms/Timing diagram/truth tables are to be drawn wherever necessary.

v) Problems without necessary formula carry no mark.

PART- A

ANSWER ALL THE QUESTIONS: 10 X 1=10

1. Mention an application of SHF amplifiers.
2. What is input offset voltage?
3. Define carrier swing.
4. Draw the equivalent circuit of transmission line.
5. Write the expression for firing angle of full wave rectifier with RC triggering circuit.
6. Define POS?
7. What is a flip flop?
8. How many bits of binary data can a register R hold in a 8051 microcontroller?
9. What are C tokens?
10. What is a piconet?

PART- B

ANSWER ANY FIVE QUESTIONS   5 X 2=10

11. What is I_{DSS}? Write the relation between I_D, I_{DSS}, V_{GS} and V_P.
12. Why does the gain of an amplifier decreases at very low and very high frequencies?
13. When amplifier of 60dB voltage gain, a negative feedback of $\beta=0.005$ is applied. What would be the change in overall gain of the feedback amplifier if the internal amplifier is subjected to a gain reduction of 12%?
14. Draw the circuit diagram of Bistable multivibrator.
15. Mention the characteristics of a good receiver.
16. Explain virtual ground concept with respect to Op-Amp.
17. Distinguish between SJMP and LJMP.
18. Write any two advantages of digital cellphone system.

PART- C

ANSWER ANY FIVE QUESTIONS   5 X 3=15

19. Write a note on the selection of Q-point.
20. Derive an expression for the stability in gain of a voltage series feedback amplifier.
21. What is line of sight? differentiate radio horizon and optical horizon.
22. Explain zero crossing detector with circuit diagram and waveforms.
23. Determine cathode current I_K of SCR, When gate current $I_G=100mA$, $\alpha_1= 0.49$, $\alpha_2= 0.49$ and $(I_{CO}+ I_{CO2}) = 1mA$.

24. Write the truth table and timing diagram of D flip flop. Draw the logic diagram.
25. Explain briefly immediate addressing mode with an example.
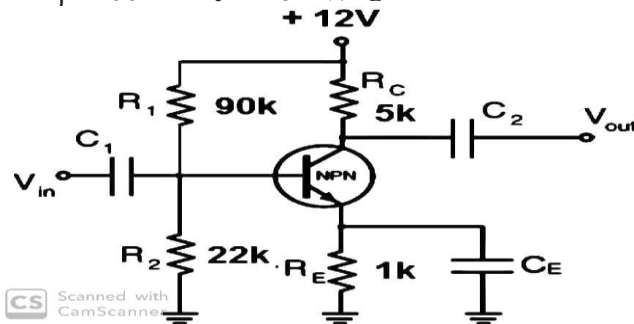26. List the additional features of 3G and 4G cellphone system.

PART- D

I ANSWER ANY THREE QUESTIONS   3 X 5=15

27. Calculate the voltage gain, input impedance and output impedance in the circuit given below.
Given $\beta=100$ and $r_e^I = 26mV/ I_E$

28. Design an Adder using an op-amp to get the output expression as $V_o = (4V_1 + 2V_2 - 5V_3)$ where

$R_f= 10k\Omega$.

29. A colpitt's oscillator oscillates at 1.13MHz. If the inductor in the feedback network has a value of

$20\mu H$ and one of the capacitor value is $0.1\mu F$. Calculate the value of the other resistor.

30. A 10kW carrier wave is amplitude modulated at 80% depth of modulation by a sinusoidal modulating signal. Calculate the total power and sideband power of AM wave.

31. Simplify the Boolean expression $Y= \sum m (0,2,4,8,10) + \sum d (11,12,13,14)$ and then draw the logic diagram using only NAND gates.

II ANSWER ANY FOUR QUESTIONS: 4 X 5= 20

32. With circuit diagram explain the working of CB amplifier.
33. Derive an expression for modulation index in terms of V_{MAX} and V_{MIN}.
34. Explain the construction and working of single-phase SCR half wave rectifier with RC triggering circuit.
35. Explain the working of PISO shift register with relevant diagram.
36. Explain the overview of PIC16F887 microcontroller.
37. Write features of C.

****