JGi	**SRI BHAGAWAN MAHAVEER JAIN COLLEGE** Vishweshwarapuram, Bangalore. **II PUC MOCK QUESTION PAPERS - 2**	**Course:** II PUC
		Subject: **Electronics**
		Max. Marks: 100
		Duration: 3:00 Hrs 15 Mins

Instructions: 1. The question paper has four parts A, B, C and D.
        2. Part - A is compulsory.
        3. Part - D consists of essay type questions and problems together.
        4. Circuit diagrams, timing diagrams and truth tables must be drawn wherever necessary.
        5. Solve the problems with necessary formulas.

PART A

I.   **Select the correct answer from the choices given:**   **15 $\times$ 1 = 15**

1. Name a voltage-controlled device.

   (a) Diode   (b) BJT   (c) FET   (d) None of the above

2. In which transistor region the collector current is almost constant in CE output characteristics

   (a) active region   (b) Cut off region   (c) Saturation region   (d) Ohmic region

3. Which of the following transistor Amplifier has highest voltage gain

   (a) CB Amplifier   (b) CC Amplifier   (c) CE Amplifier   (d) CS Amplifier

4. The type of Feedback used in oscillators

   (a) Positive   (b) Negative   (c) Voltage-series   (d) Current series

5. The phase difference between input and output in an OPAMP Inverting amplifier is

   (a) 0^0 (b) 180^0 (c) 90^0 (d) 270^0

6. The OP-AMP circuit which acts as a high-pass filter

   (a) Differentiator   (b) Integrator   (c) Adder   (d) Subtractor

7. Which of the following is RC Oscillator

   (a) Phase shift oscillator (b) Hartley oscillator (c) Crystal oscillator (d) Colpitt's oscillator

8. Which of the ionosphere persists during both day and night time

   (a) D layer   (b) E layer   (c) F layer   (d) None of the layer

9. For exact modulation in AM valve of modulation Index is

   (a) $m_a > 1$ (b) $m_a < 1$ (c) $m_a = 1$ (d) $m_a = 0$

10. PBJT is expanded as

   (a) Power Bijunction transistor   (b) Polar Bijunction transistor

   (c) Power Bijunction transformer   (d) None of the above

11. Group of 8 adjacent cells in a KMAP is called as

   (a) Quad   (b) Octet   (c) Pair   (d) Hexet

12. The logic gate used for construct binary arithmetic circuits is

   (a) X-OR gate   (b) NOR gate   (c) AND gate   (d) OR gate

13. The addressing mode of the instruction Mov A, # 43

   (a) Indirect   (b) Immediate   (c) Register   (d) Direct

14. The correct C equivalent expression for A=1/2bh

   (a) 0.5 *b*h   (b) A= 0.5*b*h   (c) a = (b*h)/2   (d) both b and c

15. Uplink frequency in satellite communication

    (a) 6 GHz (b) 4 GHz (c) 10 GHz (d) 15 GHz

II. Fill in the blanks by choosing appropriate answer from those given in the bracket: 5 x 1 = 5

[a) universal bias b) SOURCE c) Modulation Index d) Self complimentary e) RC coupled]

16. ………………is the terminal which supplies majority change carries in JFET

17. Voltage divider bias is also called as ……………

18. The multistage amplifier used for AF amplification is …………………

19. The ratio of maximum frequency deviation to the modulating frequency is……………….

20. Excess-3 code is also known as ………...........

PART

III. Answer any FIVE questions: 5 x 2 = 10

21. What are the leakage currents? Mention different type of leakage current.

22. Write the steps involved in drawing AC equivalent circuit of an amplifier.

23. An amplifier with Z_i=1KΩ, has a voltage gain A=100. If negative feedback of β=0.1 is applied to it, calculate the input impendence of the feedback amplifier.

24. A wein bridge oscillation has $R_1 = R_2 = R = 15k\Omega$ and $C_1 = C_2 = 100nF$. Determine the frequency of oscillation.

25. Draw forward and reverse characteristics of power diode.

26. Express y=AB+ABC+BC in canonical form.

27. What is addressing mode? Mention any two types of addressing mode.

28. Write the general syntax for if else statement in C language.

29. Write the block diagram for RADAR.

PART C

IV. Answer any FIVE questions: 5 x 3 = 15

30. Explain the working of n-channel JEET.

31. Derive the expression for voltage gain of a voltage series type negative feedback.

32. Explain piezo electric effect and write the equivalent circuit for a crystal.

33. Determine the frequency of Colpitt's oscillator which uses L=10mH, C_1=0.1 µF and C2=0.1 µF.

34. With help of diagram explain ionospheric layers.

35. What is the need for modulation.

36. Determine V_{dc} and I_{dc} of SCR HWR. Given firing angle is 90^0 and rms voltage of ac input to the rectifier is 220 V and load is 20 Ω.

37. What is half-adder? Write the logic circuit for full adder using 2 Half-Adders.

38. Draw the diagram of explain the function of satellite transponder system.

PART D

V. Answer any FIVE questions: **5 x 5 = 25**

39. Write a neat circuit diagram explain the working of two stage direct coupled amplifier.

40. What is subtractor? Derive the expression for the output voltage of OP-AMP subtractor.

41. With the help of black diagram explain the function of SHR AM radio receiver.

42. Construct AND, OR, NOT and XOR gate using NAND gates.

43. Write an ALP to perform multiplication of two numbers and store the results in registers R_0 and R_1.

44. Write a C-program to check whether the entered two numbers are same or not.

45. Calculate the voltage gain, input impedance and output impedance in the circuit given below.
    Given $\beta = 100$ and re' $=26mV/IE$.

46. Find the output voltage in the op-amp circuit given.

47. The current of an AM transmitter is 8A when only carries are sent, it increases to 8.65 A when the carrier is amplitude modulated. Find the percentage modulation. Determine the antenna current when the depth of modulation is 0.75.

48. Simplify the following expression using K-MAP and the NAND gate equivalent current for the simplified expression $F(ABCD) = \Sigma m\ (0,2,4,6,8,14,15) + \Sigma d\ (10, 12, 13)$.

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