Government of Karnataka

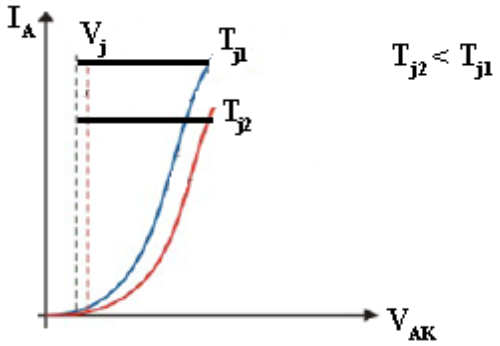
Karnataka School Examination and Assessment Board

II Year PUC Supplementary Examination May/June – 2023

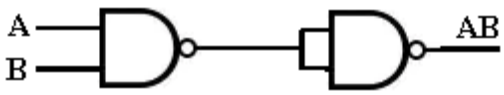
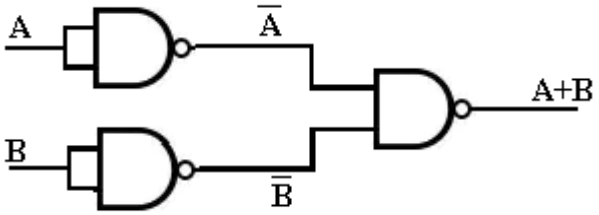
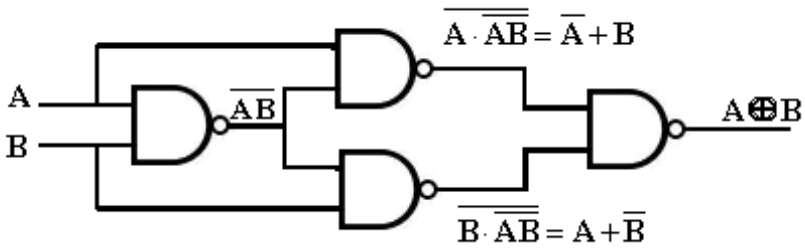
SCHEME OF VALUATION

Subject Code: **40(NS)** Subject: **ELECTRONICS**

I MCQ	PART - A	MARKS **15x1 =15**
1. b)	no unit	**1**
2. c)	saturation region	**1**
3. a)	0^o	**1**
4. b)	increases	**1**
5. d)	all of the above	**1**
6. a)	resistor	**1**
7. d)	$A\beta = 1$	**1**
8. a)	surface waves	**1**
9. b)	2	**1**
10. c)	thyristor	**1**
11. a)	Non-weighted code	**1**
12. a)	$\overline{A+B}$	**1**
13. b)	32	**1**
14. b)	5	**1**
15. a)	6 GHz	**1**
II	**FILL THE BLANKS**	**5x1 = 5**
16. d)	Electrons	**1**
17. c)	Heat sink	**1**
18. e)	Amplifier	**1**
19. b)	radio receiver	**1**
20. a)	arithmetic	**1**

III.	**PART B**	**5x2 = 10**
21.	**Any five of the following** • Provides excellent stability • Q points does not shift	 **1** 1
22.	• Remove all dc source • Short all capacitors	**1** **1**
23.	Zof =Zo/(1+Aβ) =1.66KΩ	**1** **1**
24.	F = 0.065/ Rc 650 HZ	**1** **1**
25.		**2**
26.	Definition Truth table	**1** **1**
27.	Any two comparisons	**1+1**
28.	Arithmatic operator, Relation operator, Logical operator, Assignment operator, Bitwise operator	**$4x^1/_2=2$** **1**
29.	Expansion Application	**1** **1**
IV **30.**	**PART C** **Any five of the following** FET:- Unipolar Voltage controlled Low Noisy BJT :- Bipolar Current controlled More noisy	**5x2 = 10** **1** **1** **1**
31.	• Decrease in noise • Increase in input impedance • Decrease in output impedance	**1** **1** **1**

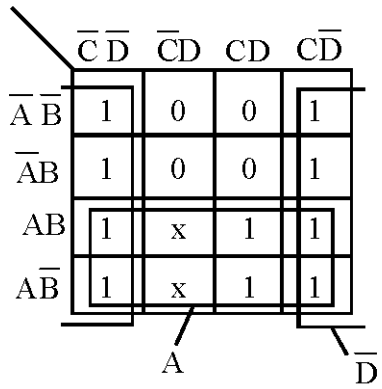
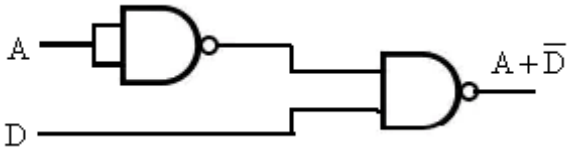
32.	Circuit $F=1/2\pi RC$	**2** **1**
33.	$F=1/2\pi\sqrt{LC}$, $L=L1+L2$ Substitution and result F= 15.9KHz	**1** **2**
34.	Block diagram Explanation of each block	**1** **2**
35.	AM :- Noise level is high Adjacent channel interference is more 2 side bands FM :- Noise level is low Adjacent channel interference is low Infinate of bands	**1** **1** **1**
36.	$V_{dc} = \frac{V_m}{\pi}(1+\cos 90)$ $= \frac{325.2}{3.142}(1+\cos 90)$ $= 103.43$ v $I_{dc} = \frac{V_{dc}}{R} = \frac{103.43}{20} = 5.17A$	**1** **1** **1**
37.	$Y = \overline{A}B + C$ $= \overline{A}B(C+\overline{C}) + (A+\overline{A})C$ $= \overline{A}BC + \overline{A}B\overline{C} + AC + \overline{A}C$ $= \overline{A}BC + \overline{A}B\overline{C} + AC(B+\overline{B}) + \overline{A}C(B+\overline{B})$ $= \overline{A}BC + \overline{A}B\overline{C} + ABC + A\overline{B}C + \overline{A}BC + \overline{A}\,\overline{B}C$ $= m_3 + m_2 + m_7 + m_5 + m_3 + m_1$ $= \sum m(1,\ 2,\ 3,\ 5, 7)$	**1** **1** **1**
38.	a) Color LCD screens b) Digital cameras c) Internet d) GPS etc e) Video conference f) E-mail	**3**
V	**PART D**	**5x5 = 25**
39.	**Any five of the following** Ckt diagram with input and output waveforms Explanation	**2** **3**

40.	**Circuit** Applying KCL at node Rearranging $i = \frac{dq}{dt}$ Replacing q = cv, Integrating on both sides $V_0 = \frac{1}{RC}\int Vi\, dt$	**1** **1** **1** **1** **1**
41.	Block diagram Explanation of each block	**2** **3**
42.	NOT gate from NAND gate  AND gate from NAND gate  OR gate from NAND gate  EX-OR gate from NAND gate  	**1** **1** **1** **2**

43.	CLR C
	MOVA, #4AH
	MOV R_5, #35H
	SUBB A, R_5
	MOV R_5, A
	
	Verification: 4AH 0100 1010
	35H 0011 0101 .....1's 0111 1000
	1
	.....
	1100 1011
	0100 1010
	.....
	1 0001 0101 = 15 positive
		1
		1
		1
		2

44.	# include ,<stdio.h>
	Main ( )
	{
	Int x,y:
	Print f(" enter values for x,y\n"):
	Scan(:%d,%d" &x&y):
	If(x=y)
	Printf("x and y are equal):
	Else
	Printf("x and y are not equal):
	}
		1
		1
		1
		1
		1

45.	$r_e^1 = \frac{26\text{ mV}}{1.3\text{ mA}} = 20\,\Omega$ $A_V = -\frac{R_c \parallel R_L}{r_e^1} = \frac{5K \parallel 5K}{20} = -125$ $A_i = \beta = 100$ $Z_0 = R_c \parallel R_L = 2.5\text{ k}\Omega$ $A_P = A_V .\ A_i = 12500$	**1** **1** **1** **1** **1**
46.	Output of OP-Amp 1 $V_{0\ sub} = V_{01} + V_{02}$: $V_{01} = -\frac{R_f}{R_1} V_1 = -\frac{30k}{10k} \times 1 = -3V$ $V_{02} = \left(1 + \frac{R_f}{R_1}\right) V_B = \left(1 + \frac{30}{10}\right) \times 2 \times \frac{30}{10+30} = 6V$ $V_{0\ sub} = -3 + 6 = 3V$ Output of OP-Amp 2 is $-\frac{R_f}{R_1} \times 3 = -6V$	**1** **2** **1** **1**

47.	$P_t = P_c\left(1+\frac{ma^2}{2}\right)$ $= 20\left(1+\frac{0.7^2}{2}\right) = 24.9$ kW $P_t = P_c + P_{SB}$ $P_{SB} = P_t - P_c = 2.49 - 20 = 4.9$kW Power in each side band = $\frac{P_{SB}}{2} = 2.5$ kW	**1** **1** **1** **1** **1**
48.	$Y = \Sigma m(0, 2, 4, 6, 8, 10, 11, 12, 14, 15) + \Sigma d(9,13)$  Entering - Grouping each loop $Y = A + \overline{D}$  	**1** **2** **1** **1**