

II PUC ELECTRONICS

SCHEME OF VALUATION

(1)

PART-A

I

1. b)

2. a)

3. c)

4. a)

5. a)

6. a)

7. b)

8. c)

9. a)

10. ~~a)~~ a)

11. c)

12. d)

13. a)

14. a)

15. a)

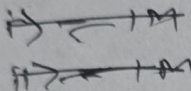
II

16. middle

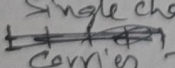
17. unitless

- 18) Unity
 19) 180°
 20) all variables (literals).

PART-B

- 21) 1+1 marks
 22) Drawing - 1 endpoints - 1
 23) ext - 1M
 Label - 1M
 24)  each step - 1 marks.
 25) i) 1 mark
 ii) 1 mark
 26) pin diagram - 2M
 27) $A + \bar{B}C$
 $= A(B + \bar{B})(C + \bar{C}) + (A + \bar{A})\bar{B}C$
 $= (AB + A\bar{B})(C + \bar{C}) + A\bar{B}C + \bar{A}\bar{B}C$ } 1M
 $= ABC + AB\bar{C} + A\bar{B}C + A\bar{B}\bar{C} + \bar{A}\bar{B}C + \bar{A}\bar{B}\bar{C}$
 $= ABC + AB\bar{C} + A\bar{B}C + A\bar{B}\bar{C} + \bar{A}\bar{B}C + \bar{A}\bar{B}\bar{C} - 1M$
 28) NAND-gate circuit - 2M.

PART-C

29.  1M
 N-channel Symbol - 1M
 P-channel Symbol - 1M

- 30) each difference - 1 marks

31) Working - 1M
Ckt - 2M
Waveforms - 1M

32) Any three advantages - 1 - marks each

33) Open loop gain Expression - 1M
Closed " " " - 1M
Derivation - 1M

34) Defn - 1M
Derivation - 2M

35) Block diagram - 1M
Explanation - 2M

36) Logic circuit - 2M
Answer - 1M

Part - D - 5 marks

37) circuit diagram - 2M
Explanation - 3M

38) Each comparison - 1M (1x5 = 5M)

39) defn - 1M
Derivation - 3M
O/p wave form - 1M

40) Pin diagram - 1M
Realization of each gate - 1 marks (1x4)

41) Defn - 1M
Logic circuit - 2
Logic symbol - 1M
Truth table - 1M

PART-D (SECTION-II) 2X5=10 (4)

42) i) $V_2 = 20V \times \frac{5K}{50K} = 2V$ — 1M

ii) $I_E = \frac{V_2 - V_{BE}}{R_E} = \frac{2V - 0.7V}{1K} = 1.3mA$ — 1M

iii) $r_{e1} = \frac{26mV}{I_E} = \frac{26mV}{1.3mA} = 20\Omega$ — 1M

iv) $Z_{in(b)} = \beta r_{e1} = 100 \times 20\Omega = 2K\Omega$ — 1M

v) $Z_o = R_C || R_L = 10K || 10K = 5K\Omega$ — 1M

43) 1) op-amp 1; $V_{o1} = \left(1 + \frac{100K}{5K}\right) 5mV = 21 \times 5mV$ — (2M)
 $= 105mV$
 $= 0.1V$ — (1M)

2) op-amp 2; $V_{o2} = -\frac{5K}{5K} \times 0.1V$
 $= -0.1V$ — (1M)

3) Finally,
 op-amp 3, $V_{o3} = V_o = -\frac{50K}{5K} \times 0.1V$
 $= 1V$ — (1M)

44) 1) $V_{o1} = -\frac{R_f}{R_1} V_i \Rightarrow R_1 = -\frac{R_f}{V_{o1}} \times V_i = -\frac{30K}{3V} \times 10KV$
 $R_1 = 10K\Omega$ — (1M)

2) $V_{o2} = -\frac{R_f}{R_2} V_2 \Rightarrow R_2 = -\frac{R_f}{V_{o2}} \times V_2 = -\frac{30K}{2V} \times 2V$
 $R_2 = 15K\Omega$ — (1M)

3) $V_{o3} = -\frac{R_f}{R_3} V_3 \Rightarrow R_3 = -\frac{R_f}{V_{o3}} \times V_3 = -\frac{30K}{5.5V} \times 6V$
 $= 6K\Omega$ — (1M)

$\therefore R_3 = 6K\Omega$ — (1M)

Diagram — (1M)

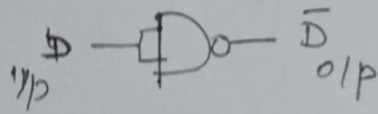
45

	$\bar{E}\bar{D}$	$\bar{E}D$	ED	ED
$\bar{A}\bar{B}$	1	0	0	1
$\bar{A}B$	X	0	0	1
$A\bar{B}$	1	X	0	1
AB	1	X	0	1

Table - (1M)
 Grouping - (1M)
 Entry 1 - (1M)
 expression - (1M)

grp - octate

$$Y = \bar{D}$$



Logic ckt - (1M)