

Electronics Class : I puc

Scheme for Mid-term Exam

PART A

(15x1=15)

I

1. b $1.602 \times 10^{-19} \text{C}$
2. b) Jack Kilby
3. d) all of these
4. b) $V_{rms} = V_P / \sqrt{2}$
5. a) 0.02 Sec
6. b) kilowatt-hour
7. c) —||—
8. b) Henry
9. d) all of these
10. a) Removes portion of $1/p$ signal.
11. b.
12. d trivalent.
13. a) 10000
14. c) 1101
15. a) byte

(5x1=5)

II

16. VLSI
17. Charge
18. Choke
19. Diode
20. Two

Part B

21. Any 2 application ——— 2m

22. loop definition ——— 1m

Node definition ——— 1m

23. $P = I^2 R$ ——— 1m

$$P = (0.1)^2 \times 10 = 0.01 \times 10 = 0.1 \text{ watt} \text{ ——— 1m}$$

24. $L = \frac{L_1 L_2}{L_1 + L_2}$ ——— 1m

$$L = \frac{3 \text{ mH} \times 1 \text{ mH}}{4 \text{ mH}} = \frac{3}{4} \text{ mH. ——— 1m}$$

25. depend on d, A, ϵ . ——— (1)

$$C = \frac{\epsilon A}{d} \text{ ——— (2)}$$

26. Intrinsic Semiconductor ——— 1m

Extrinsic " ——— 1m

27. $10111010 \cdot 0001_{(2)} \text{ ——— (2m)}$

8421

28.
$$\begin{array}{r} 111 \\ \times 110 \\ \hline 000 \\ 111+ \\ 111++ \\ \hline 101010 \end{array}$$
 ——— (1m)

————— (1m)

Part C

29. any 3 role — 3m,
30. any 3 properties — 3m
31. each wave form. — 1m
3 types (3m)
32. any (3) application (3m)
33. principle used is Mutual Inductance (1m)
Step up Transformer Definition — 1m
Step down " " 1m
34. Diagram — 1m,
Explanation — 2m
35. Diagram — 2m,
E Gap mention — 1m
36. $\overline{A+B} + \overline{BC} + \overline{A}$ — 1m
 $\overline{A}\overline{B} + \overline{BC} + \overline{A}$ — 1m
 $\overline{A}\overline{B} + (\overline{B+C})\overline{A}$ — 1m
 $\overline{A}\overline{B} + \overline{A}\overline{B} + \overline{A}\overline{C}$ — 1m
 $\overline{A}\overline{B} + \overline{A}\overline{C}$
 $\overline{A}(\overline{B+C})$

Part D

37. Statement — 1m.
Circuit diagram — 1m.
Formula — 1m
& limitations — 2m

38. Circuit diagram — 1m
 Statement — 2m
 Explanation with example 2m

39. ZFR explanation — 1/2 m
 with diagram — 1m
 MFR explanation 1 1/2
 Diagram 1m

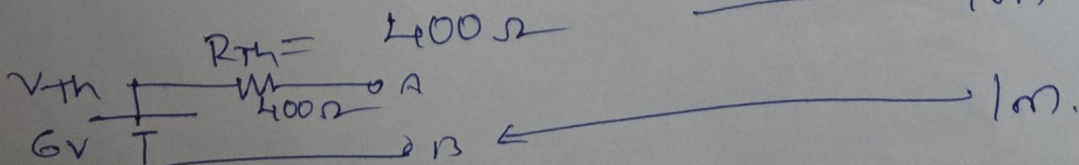
40. Diagram — 1m.
 KVL equation — 1m
 $q = q_1 + q_2$
 $V = V_1 + V_2$ — 1m.
 $\frac{q}{C} = \frac{q}{C_1} + \frac{q}{C_2}$ — 1m.
 $\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2}$ — 1m.

41. Circuit diagram — 1m.
 Graph — 1m.
 explanation — 3m.

Part D

42. $V_{th} = I \times 600 \neq 10V$ — ⑥
 $= \frac{10V}{400+600} \times 600$ — ⑦
 $= 6V$ — ⑧

$R_{th} = \frac{400 \times 600}{1000} + 100 + 60$ — 1m
 $= 240 + 100 + 60$ — 1m



$$43. \quad R_T = (6k \parallel 3k) + 4k \quad \text{--- (1)}$$

$$= \frac{6k \times 3k}{9k} + 4k$$

$$= 6k\Omega \quad \text{--- (1)}$$

$$I_T = \frac{V_T}{R_T} = \frac{6V}{6k\Omega} = 1mA \quad \text{--- (1)}$$

$$I_1 = \frac{I_T \times 3k}{6k + 3k} = \frac{1mA \times 3k}{9k} = \frac{1}{3}mA \quad \text{--- (1mA)}$$

$$I_2 = \frac{I_T \times 6k}{9k} = \frac{1mA \times 6k}{9k} = \frac{2}{3}mA \quad \text{--- (1mA)}$$

44, a) $1k\Omega \pm 5\%$ = Brown, Black, Red, Gold --- (1mA)
 $10k\Omega \pm 5\%$ = Brown, Black, Orange, Gold --- (1mA)

$$b) \quad R_T = (100 + 300) \parallel (100 + 300) + 50 + \frac{100}{1m}$$

$$= 400 \parallel 400 + 150 \quad \text{--- 1mA}$$

$$= 200 + 150 \quad \text{--- 1mA}$$

$$R_T = 350 \quad \text{--- 1mA}$$

$$45. \quad \frac{V_S}{V_P} = \frac{N_S}{N_P} \quad \text{--- 1mA}$$

$$V_S = \frac{500}{2000} \times 100V = \quad \text{--- 1mA}$$

$$= 25 \text{ Volts} \quad \text{--- 1mA}$$

$$i_L = \frac{V_S}{R_L} = \frac{25V}{250\Omega} \quad \text{--- 1mA}$$

$$i_L = 0.1 \text{ AMP} \quad \text{--- 1mA}$$