

University of Jordan
 Computer engineering department
 Digital Electronics
 Quiz #1

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Name: *محمد علي محمد العبدون*

number: 060729

Assume the following:

V_{BE} at the edge between OFF and active = 0.7 V

V_{BE} at the edge between active and saturation = 0.8 V

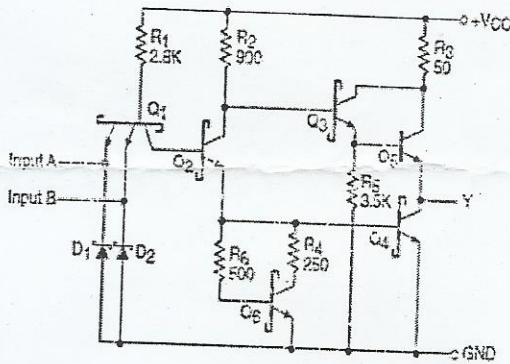
V_{CE} at the edge between active and saturation is = 0.4 V

V_{CE} in comfortable saturation is = 0.2

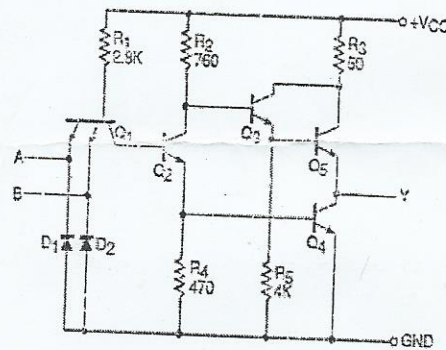
β of the transistor = 200

$V_{CC} = 5$ V

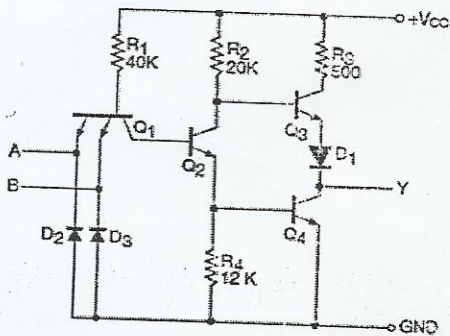
Given 4 diagrams for TTL gates.



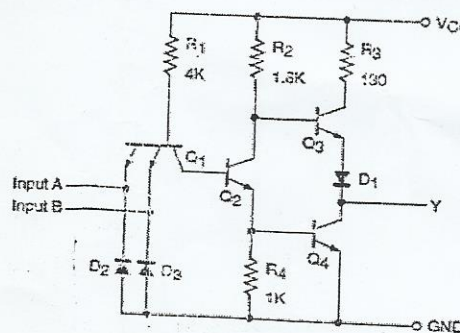
(a)



(b)



(c)



(d)

<p>The gate that has a passive pull-down is:</p> <p>(a) All (b) A and b (c) C and d (d) None</p> <p style="text-align: right;">✓ D</p>	<p>The slowest gate is:</p> <p>1. A 2. B ✓ 3. C 4. D D</p>
<p>The gate with the most power dissipation is:</p> <p>A. A B. B C. C D. D</p> <p style="text-align: right;">✓</p>	<p>The gate with an active pull-down is:</p> <p>1. A 2. B 3. C ✓ 4. D D</p>
<p>When all inputs are Low transistor Q1 is in:</p> <p>i. OFF mode ii. Forward Active mode iii. Inverse active mode ✓ iv. Saturation mode D</p>	<p>Gates with totem pole are:</p> <p>a. ALL ✓ b. None c. A and B. d. C and D D</p>
<p>If a specifications reads that $I_{IL} = -1.4$ mA then it is for:</p> <p>1) A 2) B 3) C ✓ 4) D 5) A or B D</p>	<p>The transistor that will never saturate is:</p> <p>1. Q1 2. Q2 ✓ 3. Q3 4. Q4 5. Q5 6. Q6</p>
<p>The gate with the best shape I/O characteristic:</p> <p>i. A ii. B ✓ iii. C iv. D D</p>	<p>Fan out of these gates is calculated when:</p> <p>A. Input is Low B. Input is High ✓ C. Output is Low D. Output is High D</p>