



قائمة الاسئلة

الالكترونيات 1- كلية الهندسة - قسم الطبية الحيوية والميكاترونكس والكهرباء- المستوى الثاني - 3 ساعات - درجة هذا الاختبار (50)

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1) Temperature can have a marked effect on the diode voltage V_d as follows:

Variable	a	b	c
V_d	Decreases by increases in temperature	Decreases by decreases in temperature	Increases by decreases in temperature

1) + a

2) - b

3) - c

2) Temperature can have a marked effect on the diode reverse saturation current I_{DS} as follows:

Variable	a	b	c
I_{DS}	Doubled with $10^{\circ}C$ decreases in temperature	Doubled with $1^{\circ}C$ increases in temperature	Doubled with $10^{\circ}C$ increases in temperature

1) - a

2) - b

3) + c

3) A silicon diode with $V_d = 0.7$ V (at $25^{\circ}C$). The V_d at ($85^{\circ}C$) will be equal to:

Variable	a	b	c
V_d	0.6 V	0.65 V	0.58 V

1) - a

2) - b

3) + c

4) A germanium diode with $I_{dS} = 10 \mu A$ (at $25^{\circ}C$). The I_{dS} at $75^{\circ}C$ will be equal to:

Variable	a	b	c
I_{dS}	$320 \mu A$	$3.2 \mu A$	$640 \mu A$

1) + a

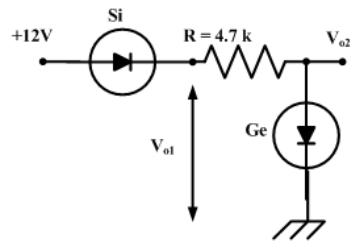
2) - b

3) - c

5)



For the diode circuit bellow, determine the value4s of V_{O1} and V_{O2}



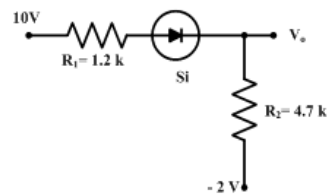
Variable	a	b	c
V_{O1}	12.7 V	11.3 V	12.7 V
V_{O2}	2.34 V	0.3 V	11.7 V

1) - a

2) ☒ b

3) - c

6) For the diode circuit bellow, the value of the output voltage (V_o) will be equal to:



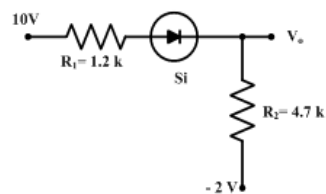
Variable	a	b	c
V_o	8.2 V	7.0 V	6.4 V

1) - a

2) ☒ b

3) - c

7) For the diode circuit bellow, the value of ($V_{D_{MAX}}$) and ($I_{D_{MAX}}$) will be equal to:



Variable	a	b	c
$V_{D_{MAX}}$	8.3 V	11.3 v	12 V
$I_{D_{MAX}}$	2.19 mA	1.92 mA	2 mA

1) - a

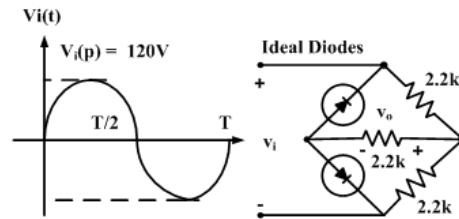
2) - b

3) ☒ c

8)



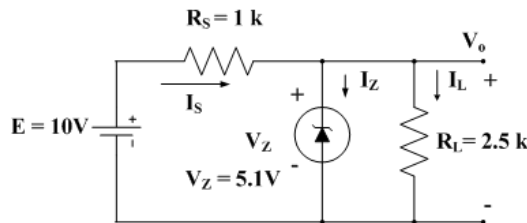
For the full-wave bridge rectifier circuit bellow:



Variable	a	b	c
$V_o(p)$	30V(p)	40V(p)	60 V(p)
$V_o(DC)$	19.08 V(DC)	25.44 V (DC)	38.16 V(DC)

- 1) - a
- 2) + b
- 3) - c

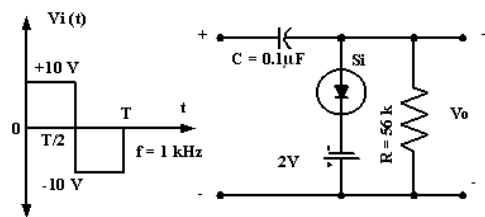
9) For the Zener Diode bellow, the values of I_Z and I_L are as follows:



Variable	a	b	c
I_Z	2.86 mA	2.04 mA	2.34 mA
I_L	2.04 mA	2.86 mA	2.98 mA

- 1) + a
- 2) - b
- 3) - c

10) For the clamper circuit bellow:



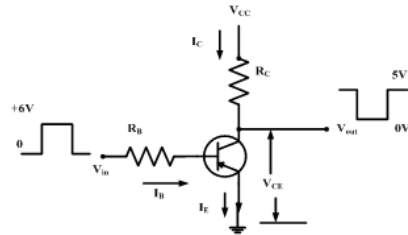
Variable	a	b	c
Capacitor Charge V_C	- 11.3 V	12.3 V	11.3 V
Output voltage V_o	+ 21.3 V	- 11.3 V	- 21.3 V

- 1) - a
- 2) - b
- 3) + c

11)



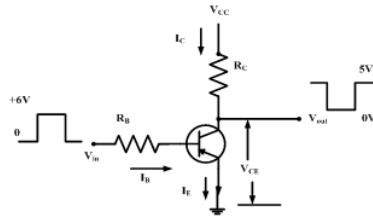
For a BJT inverter below with $I_C = 10 \text{ mA}$ when saturated (ON) and $V_{CE} = 5 \text{ V}$ when cut-off (OFF). Assume $V_{IN} = 6 \text{ V}$ and $\beta = 80$.



Variable	a	b	c
R_C	500 k Ω	500 Ω	5.5 k Ω

- 1) - a
- 2) ☒ b
- 3) - c

12) For a BJT inverter below with $I_C = 10 \text{ mA}$ when saturated (ON) and $V_{CE} = 5 \text{ V}$ when cut-off (OFF). Assume $V_{IN} = 6 \text{ V}$ and $\beta = 80$.



Variable	a	b	c
$R_B \text{ (SAT)}$	42.4 k Ω	24.3 k Ω	48.6 k Ω
$R_B \text{ (MAX)}$	21.2 k Ω	48.6 k Ω	24.3 k Ω

- 1) ☒ a
- 2) - b
- 3) - c

13) The Light Emitting Diode (LED) is fabricated using:

Variable	a	b	c
LED	Silicon and Germanium Semiconductors	Semiconductors different from Silicon and Germanium	Materials such as Arsenic, Antimony, Phosphorus

- 1) - a
- 2) ☒ b
- 3) - c

14) The BJT Transistor is:

Variable	a	b	c
BJT	A voltage – controlled current source	A current – controlled voltage source	A current -controlled current source

- 1) - a
- 2) - b



3) ☒ a

15) The BJT Transistor is:

Variable	a	b	c
BJT	Bipolar device	Unipolar device	Semi - polar device

1) ☒ a

2) ☐ b

3) ☐ c

16) The output characteristics of BJT is:

Variable	a	b	c
Output Characteristics	The relation between output voltage and output current for different values of input current	The relation between output voltage and output current for different values of input voltage	The relation between input voltage and output current for different values of input current

1) ☒ a

2) ☐ b

3) ☐ c

17) The basic relationships between α and β are introduced as:

Variable	a	b	c
α	$\alpha = \frac{\beta + 1}{\beta}$	$\alpha = \frac{\beta}{\beta - 1}$	$\alpha = \frac{\beta}{\beta + 1}$
β	$\beta = \frac{1 - \alpha}{\alpha}$	$\beta = \frac{\alpha}{1 + \alpha}$	$\beta = \frac{\alpha}{1 - \alpha}$

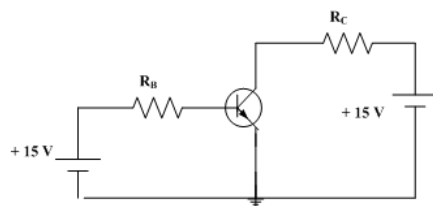
1) ☐ a

2) ☐ b

3) ☒ c

18) An npn BJT with $\alpha = 0.995$ and a base current of $I_B = 25 \mu A$ and $V_{CE} = 4 V$

Then, the values of R_B and R_C are equals to:



Variable	a	b	c
R_B	600 k Ω	572 k Ω	580 k Ω
R_C	3.01 k Ω	2.21 k Ω	3.4 k Ω

1) ☐ a

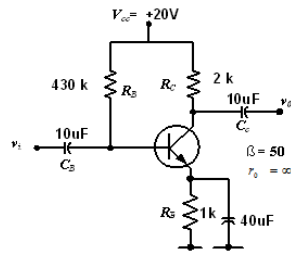
2) ☒ b

3) ☐ c

19)



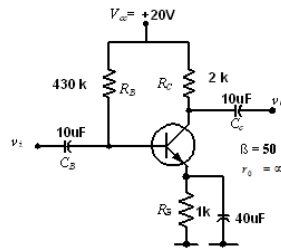
For the BJT below:



Variable	a	b	c
A_{VNL}	- 157.7	- 170.5	- 178.4
A_{NL}	50	99	150

- 1) ☒ a
- 2) ☐ b
- 3) ☐ c

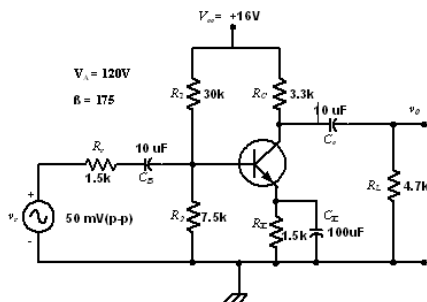
20) For the BJT below:



Variable	a	b	c
$V_{CE(BR)}$	19.3 V	13.33 V	20 V
$I_{C(Sat)}$	5.5 mA	4.3 mA	6.67 mA

- 1) ☐ a
- 2) ☐ b
- 3) ☒ c

21) For the BJT circuit below, the value of collector current (I_C) will equal to:



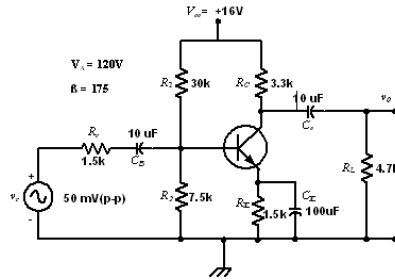
Variable	a	b	c
I_C	2.3 mA	1.62 mA	3.6 mA

- 1) ☐ a
- 2) ☒ b
- 3) ☐ c

22)



For the BJT circuit below, the value of the hybrid parameter (h_{ie}) and (h_{oe}) will equal to:



Variable	a	b	c
h_{ie}	1.8 k Ω	3.26 k Ω	2.79 k Ω
h_{oe}	13.5 mS	10.4 mS	13.5 μ S

- 1) - a
- 2) - b
- 3) ☒ c

23) The Field Effect Transistor (FET) is:

Variable	a	b	c
FET	A voltage - controlled current source	A current - controlled current source	A current - controlled voltage source

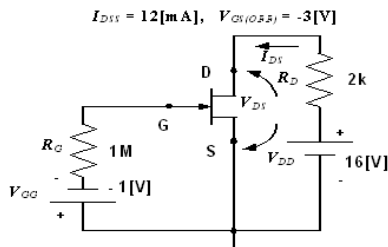
- 1) - a
- 2) - b
- 3) ☒ c

24) The transfer characteristic of JFET is:

Variable	a	b	c
Transfer characteristic	The relation between output voltage and input controlled voltage	The relation between output voltage and input controlled current	The relation between output current and input controlled voltage

- 1) - a
- 2) - b
- 3) ☒ c

25) For the JFET, circuit below. What are the correct values of the variables in the table:



Variable	a	b	c
I_{DS}	3.5 mA	5.3 mA	2.8 mA
V_{DS}	8.4 V	5.4 V	3.6 V

- 1) - a
- 2) ☒ b



3) - c