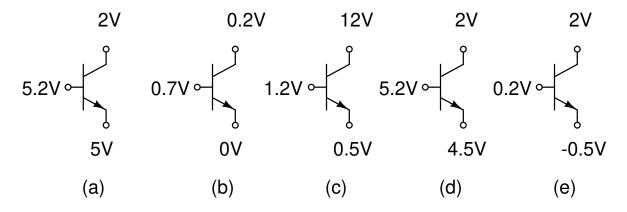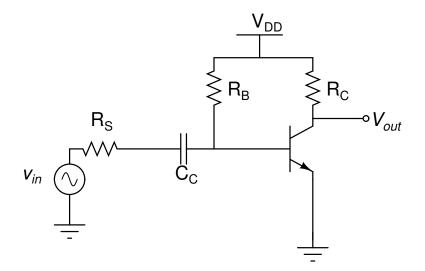**Assignment-2**

1. For the following *npn* BJT, determinte the region of operation: Cut-off, active or saturation. Given: $V_{BE(on)} = 0.7$ V and $V_{CE(sat)} = 0.3$ V.

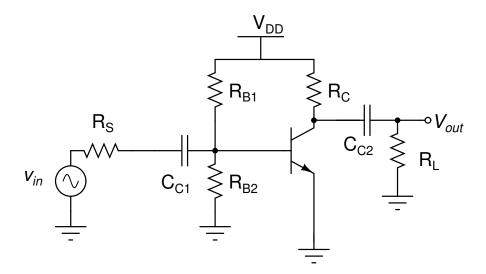| 2V	0.2V	12V	2V	2V
5.2V	0.7V	1.2V	5.2V	0.2V
5V	0V	0.5V	4.5V	-0.5V
(a)	(b)	(c)	(d)	(e)

2. For the following self biased CE amplifier, find the DC operating points (I_B, I_C and V_{CE}). Draw the small signal circuit of it and find the expression of the gain of the amplifier and also calculate its value. Given: R_B =465 kΩ, R_C=2.5 kΩ V_{DD}=10 V, $V_{BE(on)} = 0.7$ V, $\beta = 100$ and $V_{CE(sat)} = 0.3$ V.

V_{DD}

R_B R_C

R_S V_{out}

v_{in} C_C

3. For the following resistive divider based CE amplifier, find the expression of the gain of the amplifier and also calculate its value. Given: R_{B1} =206 kΩ, R_{B2} =20 kΩ, R_C= R_L=R_S=2 kΩ V_{DD}=10 V, $V_{BE(on)} = 0.7$ V, $\beta = 200$ and $V_{CE(sat)} = 0.3$ V.