KOLEJ YAYASAN PELAJARAN JOHOR

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FINAL EXAMINATION

COURSE NAME	:	**ELECTRONICS 1**
COURSE CODE	:	**DKE 1073**
EXAMINATION	:	**APRIL 2019**
DURATION	:	**2 HOURS 30 MINUTES**

INSTRUCTION TO CANDIDATES

1. This examination paper consists of **FIVE (5)** Questions.

2. Answer **ALL** questions in Answer Booklet.

3. Candidates are not allowed to bring any material to examination room except with the permission from the invigilator.

4. Please check to make sure that this examination pack consist of:
   i. Question Paper
   ii. Answer Booklet

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

This examination paper consists of 6 printed pages including front page

QUESTION 1/ *SOALAN 1*

a. Based on Figure Q1(a), determine I_1, I_2, I_3, V_{01} and V_{02}.

Berdasarkan Rajah Q1(a), tentukan I_1, I_2, I_3, V_{01} dan V_{02}.

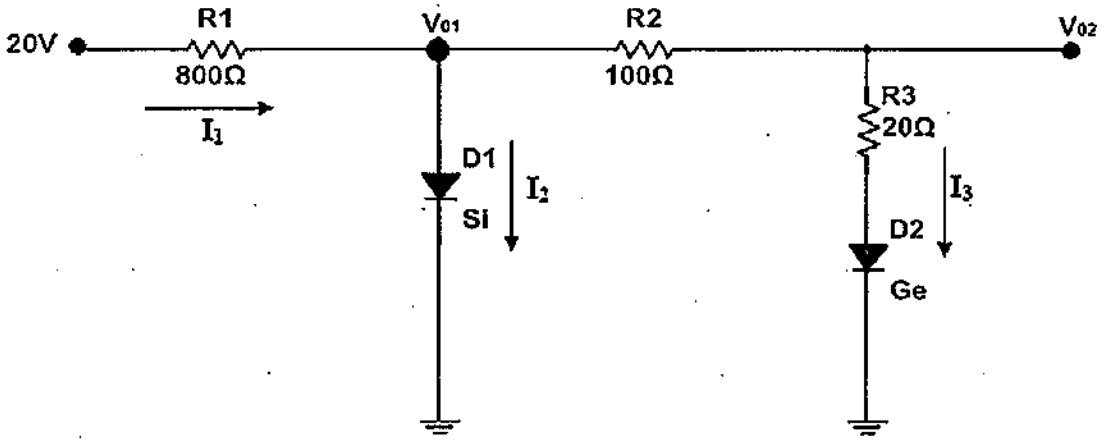

Figure Q1(a)/ *Rajah Q1(a)*

(10 marks/*markah*)

b. Based on Figure Q1(b), sketch and label the output voltage, V_o with reference to the input, V_{in}. Show your analysis.

Berdasarkan Rajah Q1(b), lakar dan labelkan voltan output, V_o merujuk kepada input, V_{in}. Tunjukkan analisa anda.

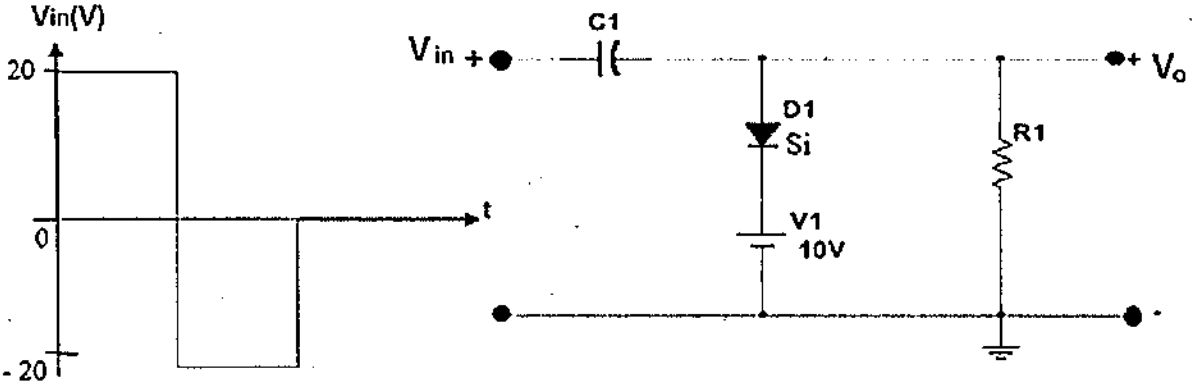

Figure Q1(b)/ *Rajah Q1(b)*

(10 marks/*markah*)

QUESTION 2/ *SOALAN 2*

a. Determine V_L, I_L, Iz and I_R for the circuit in Figure Q2(a) if R_L = 180 Ω.

b. Repeat part (a) if R_L = 470 Ω.

   i. Determine the value of R_L that will establish maximum power condition for the Zener Diode.

   ii. Determine the minimum value of R_L to ensure that the Zener Diode is the "ON" state.

a. Tentukan V_L, I_L, Iz dan I_R untuk litar dalam Rajah Q2(a) sekiranya R_L = 180 Ω.

b. Ulang bahagian (a) sekiranya R_L = 470 Ω.

   i. Tentukan nilai R_L yang akan menghasilkan keadaan kuasa maksimum untuk Diod Zener.

   ii. Tentukan nilai minimum R_L untuk memastikan bahawa Diod Zener adalah dalam keadaan "ON".

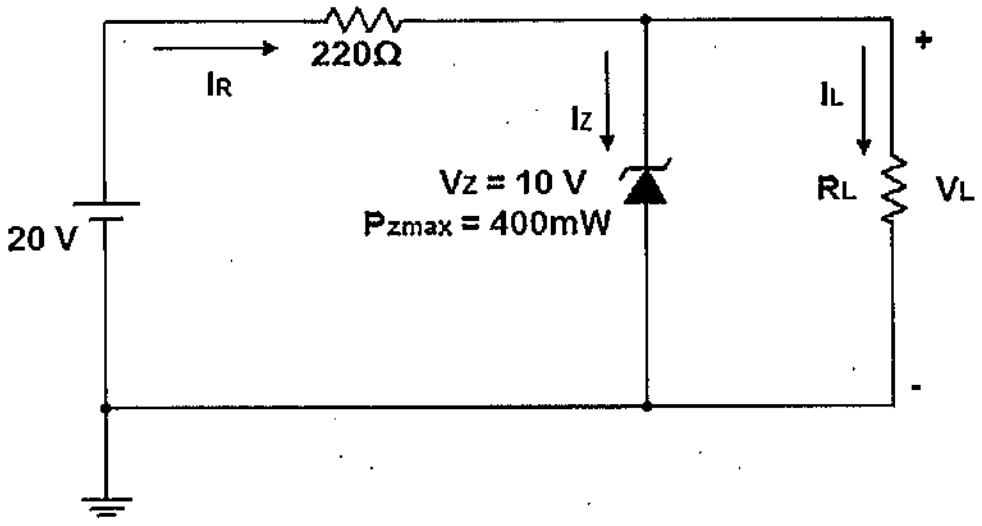

Figure Q2(a)/ *Rajah Q2(a)*

(20marks/*markah*)

QUESTION 3/ *SOALAN 3*

a. Based on the circuit in Figure Q3(a), if β is 80, determine :

Berdasarkan litar di Rajah Q3(a), jika β ialah 80, tentukan :

i. R_C
ii. R_E
iii. R_B
iv. V_{CE}
v. V_B

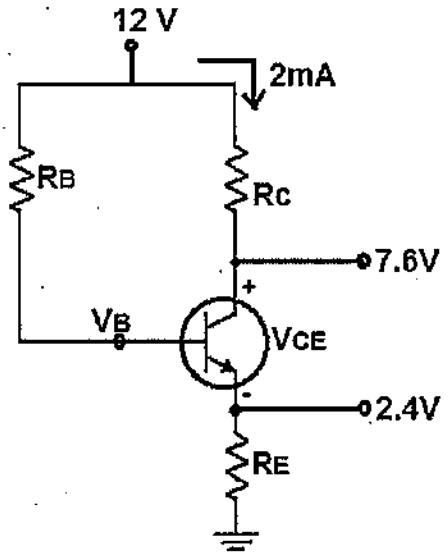

Figure Q3(a)/ *Rajah Q3(a)*

(10marks/*markah*)

b. Based on the circuit in Figure Q3(b), if β is 90, determine :

Berdasarkan litar di Rajah Q3(b), jika β ialah 90, tentukan :

i. I_B
ii. I_C
iii. V_{CE}
iv. V_C
v. V_B

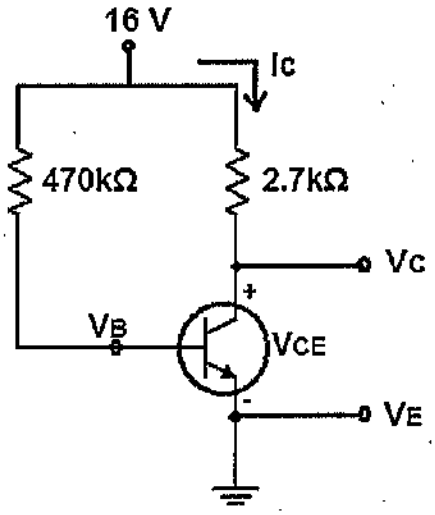

Figure Q3(b)/ *Rajah Q3(b)*

(10marks/*markah*)

QUESTION 4/ *SOALAN 4*

Based on Figure Q4.

a. Sketch ac equivalent circuit using r_e model. Assume $r_o = \infty$.

b. Determine Z_i.

c. Determine Z_o.

d. Determine A_{VNL}.

e. Determine A_{VL} and A_I using direct approach.

Berdasarkan Rajah Q4.

a. Lakarkan litar setara arus ulang alik dengan menggunakan model r_e. Anggap $r_o=\infty$.

b. Tentukan nilai Z_i.

c. Tentukan Z_o.

d. Tentukan A_{VNL}.

e. Tentukan A_{VL} dan A_I dengan menggunakan kaedah pendekatan terus.

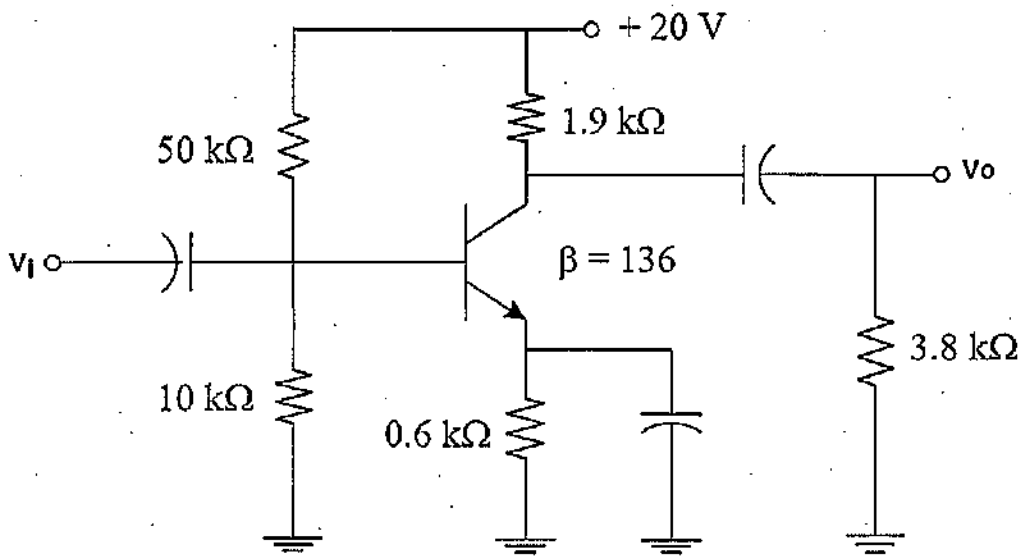

Figure Q4/ *Rajah Q4*

(20marks/*markah*)

QUESTION 5/ *SOALAN 5*

Sketch simple circuits of LED, Photo Diode, Zener Diode and Schottky Diode. Then, explain their operational principles for each circuit by using your own word.

Lakarkan litar mudah bagi peranti LED, Diod Foto, Diod Zener dan Diod Schottky. Kemudian, terangkan prinsip pengoperasian bagi setiap litar tersebut dengan menggunakan perkataan anda sendiri.

(20marks/*markah*)

END OF QUESTION PAPER/ *KERTAS SOALAN TAMAT*