# UNIVERSITI TUN HUSSEIN ONN MALAYSIA

## PEPERIKSAAN AKHIR
## SEMESTER III
## SESI 2012/2013

| | | |
|---|---|---|
| NAMA KURSUS | : | ELECTRICAL TECHNOLOGY AND MICRO PROCESSING |
| KOD KURSUS | : | DAJ 32302 |
| PROGRAM | : | DAJ |
| TARIKH PEPERIKSAAN | : | MEI 2013 |
| JANGKA MASA | : | 2 JAM |
| ARAHAN | : | JAWAB **LIMA (4)** SOALAN DARIPADA **ENAM (6)** SOALAN |

KERTAS SOALAN INI MENGANDUNGI TUJUH (7) MUKA SURAT BERCETAK

**SOALAN DI DALAM BAHASA MELAYU**

**Q1** (a) Berikan perbezaan di antara semikonduktor jenis-P dan jenis-N, termasuk gambaran struktur atom.

(10 markah)

(b) Lukis dan terangkan rektifikasi gelombang penuh menggunakan kapasitor pelicinkan dengan beban rintangan dan mencari satu ungkapan untuk faktor riak merentasi beban.

(10 markah)

**Q2** (a) Andaikan diod adalah diod-kuasa rendah dengan nilai rintangan hadapan 6 ohm seperti yang ditunjukkan dalam **Rajah S1**. Potensi voltan halangan masih: $V_\phi = 0.45\ volt$ (khas untuk diod germanium) Tentukan nilai $I_D$ jika $V_A = 6\ volt$.

(15 markah)

(b) Senaraikan tiga jenis diod dan kegunaannya dalam litar elektronik.

(5 markah)

**Q3** (a) Lukis rekabentuk untuk pemandu motor dc menggunakan empat transistor NPN. Jelaskan aliran arus pemandu dan arah motor.

(20 markah)

**Q4** (a) Terangkan perbezaan besar antara mikropemproses dan mikropengawal, termasuk ciri-ciri tipikal mikropengawal.

(15 markah)

(b) Terangkan faedah utama dan had menggunakan mikropengawal.

(5 markah)

**Q5** (a) Jelaskan organisasi asas memori data PIC.

(10 markah)

(b) Jelaskan organisasi asas timbunan PIC.

(10 markah)

**Q6** (a) Merujuk kepada litar dalam **Rajah Q2**, apakah tujuan litar RC yang disambungkan ke input RESET mikropengawal.

(5 markah)

(b) Apakah kesan melaksanakan arahan berikut

```
movlw   b'11110000'
movwf   trisb
```

(10 markah)

(c) Menganggap bahawa kod berikut baru sahaja dilaksanakan. Apa kandungan biner daftar kerja.

```
movlw   2f
addlw   55
```

(5 markah)

**SOALAN DI DALAM BAHASA INGGERIS**

**Q1** (a) Give the differences between P-type and N-type semiconductors. Include atomic structure illustration.

(10 marks)

(b) Draw and explain full wave rectifier using a smoothing capacitor with a resistance load and find an expression for ripple factor across load.

(10 marks)

**Q2** (a) Assume the diode is a low-power diode with a forward resistance value of 6 ohms as shown in **FIGURE Q1**. The barrier potential voltage is still: $V_\phi = 0.45$ volts (typical for a germanium diode) Determine the value of $I_D$ if $V_A = 6$ *volts*.

(15 marks)

(b) List down the three types of diodes and their uses in electronic circuit.

(5 marks)

**Q3** (a) Draw the design for dc driver motor using four NPN transistors. Describe the driver current flow and motor direction.

(20 marks)

**Q4** (a) Explain the major differences between a microprocessor and a microcontroller, including the typical features of a microcontroller.

(15 marks)

(b) Explain the major benefits and limitations of using a microcontroller.

(5 marks)

Q5 (a) Explain the basic organization of the PIC data memory.

(10 marks)

(b) Explain the basic organization of the PIC stack.

(10 marks)

Q6 (a) For the following circuit in **FIGURE Q2**, what is the purpose of RC circuit that is connected to the RESET input of the microcontroller.

(5 marks)

(b) What is the effect of executing the following instructions?

```
movlw   b'11110000'
movwf   trisb
```

(10 marks)

(c) Assume that the following code has just been executed. What the binary content of the working register.

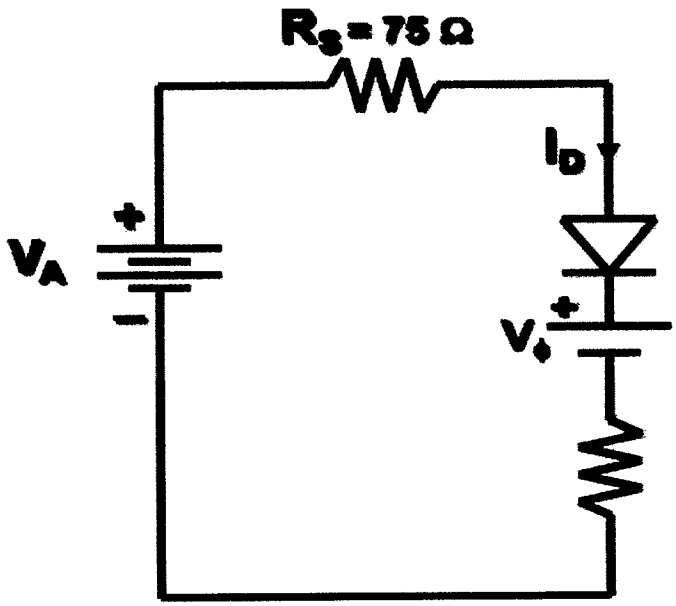
```
movlw   2f
addlw   55
```

(5 marks)

**- END OF QUESTION -**

**PEPERIKSAAN AKHIR**
***FINAL EXAMINATION***

**SEMESTER / SESI** : **SEM III / 2012/2013** **PROGRAM** : **1 DAJ**
*SEMESTER / SESSION* *PROGRAMME*
**KURSUS** : **ELECTRICAL TECHNOLOGY**
*COURSE* **& MICRO C** **KOD KURSUS** : **DAJ32302**
*COURSE CODE*




**RAJAH S1 / FIGURE Q1**

**PEPERIKSAAN AKHIR**
***FINAL EXAMINATION***

**SEMESTER / SESI** : **SEM III / 2012/2013** **PROGRAM** : **1 DAJ**
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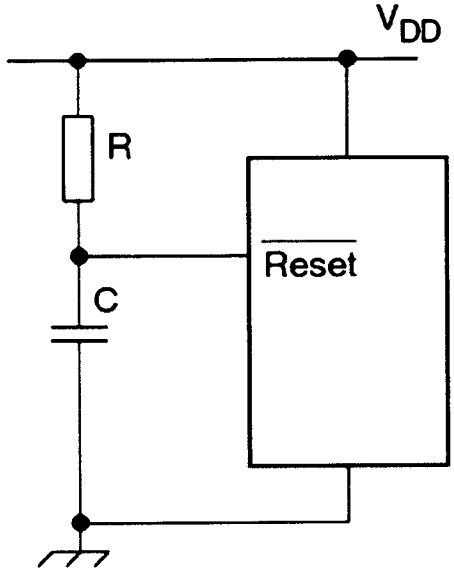


**RAJAH S2 / FIGURE Q2**