

**FACULTY OF COMPUTING**

**MIDTERM TEST**

**COURSE : PROBLEM SOLVING**

**COURSE CODE : BCI1143 / DCI1013**

**LECTURER : AWANIS BINTI ROMLI**

**MOHD ZAMRI BIN OSMAN**

**NOOR AZIDA BINTI SAHABUDIN**

**SALWANA BINTI MOHAMAD @ ASMARA**

**YUSNITA BINTI MOHD NOOR**

**ZURIANI BINTI MUSTAFFA**

**ZAFRIL RIZAL BIN M. AZMI**

**DURATION : 2 HOURS**

**SESSION/SEMESTER : SESSION 2020/2021 SEMESTER I**

**PROGRAMME CODE : BCS BCG BCN DCS**

**INSTRUCTIONS TO CANDIDATE:**

1. This question paper consists of **ONE (1)** question.

**EXAMINATION REQUIREMENTS:**

NONE

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

This examination paper consists of **THREE (3)** pages including the front page.

**QUESTION 1**

Due to pandemic of COVID 19, Bantuan Prihatin Elektrik (BPE) is an additional assistance package provided by the Government of Malaysia with TNB to all domestic customers. Domestic customers who use electricity between 601 - 900 kWh per month will gain a 10% discount (existing 2% discount rate + additional 8%) from April 2020 to September 2020. The discount rates enjoyed by residential (domestic) customers are based on the total monthly electricity consumption as shown in **Table 1**. **Table 2** shows the block tarif rate and the values are constant. **Figure 1** shows a sample of customer’s bill. **Discount BPE** is total discount receive by customer. **Total usage** is the **total bill before discount** and the **total payment** is the **total bill after discount**.

**Table 1: Discount Rate**

| **Amount of Usage** | **Total Bil** | **Discount** |
| --- | --- | --- |
| 1 - 200kWj | (RM0.22 - RM44.00) | **50%** |
| 201 - 300 kWj | (RM68.34 – RM102.00) | **25%** |
| 301 - 600 kWj | (RM156.52 – RM312.00) | **15%** |
| 601 - 900 kWj | (RM402.67- RM603.00) | **2% + \*8%** |
| >900 kWj | (RM765.00 and above) | **2%** |

**Table 2: Block Tarif Rate**

| **Block Tarif** | **Rate (RM)** |
| --- | --- |
| 1 - 200kWj | 0.22 |
| 201 - 300 kWj | 0.34 |
| 301 - 600 kWj | 0.52 |
| 601 - 900 kWj | 0.67 |
| >900 kWj | 0.85 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Account No:** 225245  **Customer Name:** Abdullah bin Osman  **Address:**  No. 25, Lorong 1, Taman Setia, Kg. Selamat, 63320 Pekan, Pahang. | | | |
| **Bill Date:** | 15 June 2020 | | |
| **Amount of usage (kWj)** | 750 | **Discount rate:** | 2%+ 8% = 10% |
| **Total usage** | RM 502.50 | | |
| **Discount BPE** | RM X | | |
| **Total payment:** | RM Y | | |

**Figure 1: Customer’s Bill**

1. Based on the case study, construct a:
2. **PAC [12 Marks]**
3. **IC [3 Marks]**
4. **IPO** **[20 Marks]**

to calculate the Discount BPE and Total Payment that need to be paid by the user.

1. Identify **variables, constant** and **data type** for each of the item: **[10 Marks]**
2. Based on the custmer’s bill as in **Figure 1**, solve the calculation of total payment with an amount of usage is **750 kWj** and total usage is **RM 502.50** by following the hierarchy of operations. Total payment = A, Total usage = B, Discount (2%) = C, Discount (8%) = D.

**[5 Marks]**

A = B – (B \* (C+D))

1. Write an **algorithm** with decision logic for the given problem. **[15 Marks]**
2. Draw a **flowchart** based on the algorithm. **[15 Marks]**
3. Trace the logic of the algorithm by executing **desk checking** using the set data in **Figure 1 and Block Tarif Rate in Table 2. [20 Marks]**

**End of Questions**