Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2015/2016

COURSE NAME	:	PRINCIPLES OF PROGRAMMING
COURSE CODE	:	DAT 10603
PROGRAMME CODE	:	DAT
EXAMINATION DATE	:	JUNE / JULY 2016
DURATION	:	2 HOURS 30 MINUTES
INSTRUCTION	:	A) ANSWER ALL QUESTIONS B) ANSWER **ONE (1)** QUESTION ONLY

THIS QUESTION PAPER CONSISTS OF **SIX (6)** PAGES

PART A

Q1 (a) Give **TWO (2)** algorithm techniques.

(2 marks)

(b) List any **THREE (3)** phases in program development environment.

(3 marks)

Q2 (a) Label **Program 1**.

```
#include<stdio.h>                          (i)
int main()                                 (ii)
{
    //a program to add two numbers         (iii)

    int num1, num2, sum;                   (iv)

    printf("Enter 2 numbers: ");           (v)
    scanf("%d%d", &num1, &num2);           (vi)

    sum = num1 + num2;                     (vii)

    printf("Sum of two numbers is: %d", sum);

    return 0;
}
```

Program 1

(7 marks)

(b) Name **FIVE (5)** reserved words in C programming language.

(5 marks)

Q3 (a) Discuss **THREE (3)** types of error in C programming language.

(6 marks)

(b) Describe **TWO (2)** methods to assign value to a variable with example.

(4 marks)

Q4 (a) Indicate the appropriate data type for the following variables:

(i) Age
(ii) Price
(iii) CGPA
(iv) Grade

(4 marks)

(b) Give example on how to use the following placeholders in C programming language.

(i) %d
(ii) %f
(iii) %c
(iv) %s

(4 marks)

Q5 (a) Predict the output after **Program 2** is executed.

```
double value1, value2;

printf("The value of pi is %.2f", 3.142);
value1= 23.46;
printf("\n Value 1: %.1f",value1);
value2= 15.78;
printf("\n Value 2: %.3f",value2);
```

Program 2

(3 marks)

(b) Modify **Program 3** to produce sample output like Figure 1.

```
char subject[20];

   printf("Enter subject: ");
   scanf("%s",&subject);
   printf("Subject: %s ",subject);
```

Program 3

```
Enter subject: Programming Principles
Subject: Programming Principles
```

Figure 1

(2 marks)

Q6 Change the following mathematic expressions to arithmetic expressions.

(i) $b = \frac{3 + b}{\sqrt{a + 4}}$

(ii) $x = (a - b)(a - c^2)$

(iii) $d = \frac{(3e - d)}{x - 9} - \frac{(4 - 3c^3)}{4y}$

(iv) $r = 2s + \frac{3(s - 9)}{s}$

(8 marks)

Q7 Discover **EIGHT (8)** syntax errors in Program 4.

```
#include(stdio.h)
int main();
{
    int gender;

    printf("Enter your gender (f/m)");
    scanf("%f",&gender);

    switch(gender)
    {
        case 'f':
        case 'F';
            printf("Female\n");
            break
        case 'm':
        case 'M':
            printf("Male\n");
            break;
        default:
            printf(Invalid gender);

    return 0;
}
```

Program 4

(8 marks)

Q8 Reconstruct a **for loop** from **Program 5**.

```
#include <stdio.h>
int main()
{
    int bil,i, nom;

    i=1;

    printf("\nEnter amount of numbers: ");
    scanf("%d", &bil);

    while(i < = bil)
    {
        printf("\nEnter a number: ");
        scanf("%d", &nom);

        i++;

        printf("The input number is %d", nom);
    }
}
```

Program 5

(8 marks)

Q9 Analyze **Program 6** using trace table.

```
#include <stdio.h>
int main()
{
    int p = 10, total = 0;

    do
    {
        total += p * 2;
        p -= 2;
        printf("p%d\t", total);
    } while (p >= 0);

    return 0;
}
```

Program 6

(8 marks)

Q10 Design a program to find the highest salary of 100 workers in a department using pseudocode or flowchart.

(8 marks)

PART B

Q11 **Table 1** shows menu to perform different operations based on user's choice.

Table 1

Choice	Operation	Formula
s	Calculate volume of sphere	$(4/3) \times 3.142 \times radius^3$
e	Calculate volume of ellipsoid	$(4/3) \times 3.142 \times radius1 \times radius2 \times radius3$
c	Calculate volume of cylinder	$3.142 \times radius^2 \times height$

Based on **Table 1**:

(a) Recommend the appropriate function type for each operation.

(3 marks)

(b) Write a program using C programming language using the type of function suggested in (a) to display output based on user's choice.

(17 marks)

Q12 (a) Contrast between call by value and call by reference.

(4 marks)

(b) Write a program that use appropriate functions to calculate and display summary that consists:

i) total marks
ii) average marks
iii) number of students that pass (Passing mark is 40 and above)
iv) number of students that fail

Number of students will be entered by user.

(16 marks)

-END OF QUESTIONS –