

CONFIDENTIAL



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2016/2017**

COURSE NAME : PRINCIPLES OF PROGRAMMING
COURSE CODE : DAT 10603
PROGRAMME CODE : DAT
EXAMINATION DATE : JUNE 2017
DURATION : 2 HOURS 30 MINUTES
INSTRUCTION : ANSWER ALL QUESTIONS

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THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Q1 (a) Relate program with programming language. (1 mark)

(b) Why must we create an efficient program? (2 marks)

Q2 (a) Label the following underlined item:

- (i) int main()
- (ii) int num;
- (iii) scanf("%d", &num);
- (iv) scanf("%d", &num);
- (v) sum = num1 + num2;
- (vi) if(num1 > num2)
- (vii) while(a==b && b!=c)

(7 marks)

(b) Identify the following types of C statement:

- (i) float total()
- (ii) char grade;
- (iii) scanf("%d", &qty);
- (iv) printf("Sum: %.2f ", total);
- (v) for(n=1;n<=10;n++)

(5 marks)

Q3 (a) Discuss types of error in C programming language below and show the corrected version:

- (i) int main;
- (ii) balance = deposit + withdrawal;
- (iii) Enter age: #

(6 marks)

(b) The format of printf() function is printf("output_format", print_list);

Give **FOUR (4)** examples of output statement, each using different type of print_list.

(4 marks)

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Q4 (a) Determine whether the following variable names is valid or invalid:

- (i) `_NUM`
- (ii) `Char`
- (iii) `_`
- (iv) `int`

(4 marks)

(b) Classify the following arithmetic operators:

- (i) `++`
- (ii) `%`
- (iii) `!`
- (iv) `,`

(4 marks)

Q5 (a) Predict the output for the following code segment:

```
int main()
{
    int array[3]={5};
    int i;
    for(i=0;i<=2;i++)
    {
        printf("%d",array[i]);
    }
    return 0;
}
```

(3 marks)

(b) Modify the following for loop to do...while loop.

```
for(m=1;m<=3;m++)
{
    printf("\nEnter salary: RM");
    scanf("%f", &sal);
}
```

(3 marks)

Q6 Represent the following mathematic expressions in arithmetic expressions.

- (i) $\sqrt{b^2 - 4ac}$
- (ii) $V = \frac{4}{3} \pi r^3$
- (iii) $S = 2\pi rh + 2\pi r^2$



(6 marks)

Q7 Simplify the following code segment using for loop with array:

```
printf("Enter 1st mark: ");
scanf("%f", &m1);
printf("Enter 2nd mark: ");
scanf("%f", &m2);
printf("Enter 3rd mark: ");
scanf("%f", &m3);
```

(4 marks)

Q8 Reconstruct the following code segment using functions that receive and return value.

```
int main()
{
    printf("Enter option (1 - addition, 2 - subtraction): ");
    scanf("%d", &option);
    printf("Enter 2 numbers: ");
    scanf("%d%d", &n1, &n2);
    if(option==1)
    {
        ans = n1+n2;
    }
    else
    {
        ans = n1-n2;
    }
    printf("Answer: %d", ans);
    return 0;
}
```

(10 marks)

Q9 Given the following code segment:

```
for (h=1;h<=5;h++)
{
    printf("%d\n", h);
}
```

- Manipulate the code so that it prints the numbers horizontally.
- Manipulate the code so that it prints the numbers backwards.
- Manipulate the code so that it prints odd numbers only.
- Manipulate the code so that it sums all the numbers and prints the final sum.

(10 marks)

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Q10 Given the following code segment:

```
int i = 0;
int list_array[5];
while(i<4)
{
    list_array[i]=2*i+5;
    if(i%2==0)
        list_array[i]=list_array[i]-3;
    i++;
}

int j = 0;
while(j<4)
{
    printf("%d\t", list_array[j]);
    j++;
}
```

(a) Show your memory table.

(b) Write the output.

(10 marks)

Q11 (a) Why is function suitable for large program?

(1 mark)

(b) Write a program that use the following functions to calculate and display summary of a test taken by 25 students:

- (i) avg() : receive mark, calculate total mark, and return average mark
- (ii) max() : receive mark, determine highest mark, and return highest mark
- (iii) min() : receive mark, determine lowest mark, and return lowest mark
- (iv) countPass() : receive mark, count the number of passed marks, and return number of students that pass (Passing mark is 50 and above)
- (v) countFail() : receive mark, count the number of failed marks, and return number of students that fail
- (vi) main() : ask user to input mark, call appropriate functions, and display average mark, highest mark, lowest mark, number of students that passed, number of students that failed

(20 marks)

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-END OF QUESTIONS -