

TED (10)-1018
(REVISION-2010)

Reg. No.....
Signature

SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY—MARCH, 2011

PROGRAMMING METHODOLOGY
(Common-Except CP and CB)

[Time : 3 hours

(Maximum marks : 100)

PART—A

(Answer *all* questions in one or two sentences. Each question carries 2 marks.)

Marks

- I
- List the two basic type of numeric data.
 - Write the output of the following pseudocode in cases mentioned below :
If amount > 0 then
 Write amount
Else
 Set amount = -amount
 Write amount
End if
(a) amount = 5 ?
(b) amount = -1.
 - Write whether the following statement is true or false :
(a) "word"! = "Word"
(b) "Ann" <= "Anne".
 - While developing a program, a programmer wants to store the mark of 20 students. Write an efficient method to store these values.
 - What is meant by scope of a variable ?

(5×2=10)

PART—B

(Answer any *five* of the following questions. Each question carries 6 marks.)

- II
- Write a pseudocode that inputs a temperature in degree Fahrenheit and outputs the corresponding temperature in degree celsius. Use degrees F and degrees C for the variable names. (Hint : Use the formula $C = \frac{5(F - 32)}{9}$ where C is temperature in degree Celsius and F is temperature in degree Fahrenheit).
 - Suggest most appropriate variable name and data type for the following items :
(a) Name of student (d) Branch
(b) Admission number (e) Phone number including STD code
(c) Age (f) Average mark.

3. The following portion of pseudocode is expected to produce sum of even numbers upto n. State whether the code will produce the expected output. If no, identify the error, type of error and correct it :

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Set sum = 1
Set counter = 2
Input N
While (counter <= N)
    Set sum = Sum + counter
    Counter = counter +2
End while
Write sum.

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4. Write a pseudocode that inputs age, displays "Yes, you can vote" if age is 18 or older and displays "You are too young to vote" if age is less than 18. Also draw the corresponding flowchart.
5. How many times the statement write A [I, J] of the following pseudocode executed? Also predict the output :
- For (I = 0 ; I < 3 ; I++)
 - For (J = 0 ; J < 2 ; J++)
 - Set A [I, J] = I * J
 - Write A [I, J]
 - End for (J)
 - End for (I).
6. Marks of n students for the subject science is given. Write an algorithm to find the number of students who has passed the exam where a pass minimum is 50 out of 100.
7. While solving a problem, programmer has to write algorithm to find x^n 10 times, where x and n are variables :
- Suggest an efficient method for solving this problem and justify your answer.
 - Write an algorithm to calculate x^n 10 times where x and n are input. (5×6=30)

PART—C

(Answer one full question from each unit. Each question carries 15 marks.)

UNIT—I

- III 1. Write a program that inputs the first name, middle initial (without the period). And last name of a user and displays the person's name with the first name first, middle initial followed by a period (.), and last name last. 6
2. Write the main purpose and use of the following :
- User's guide
 - Maintenance manual
 - Design documentation. 9

(C)

- IV 1. The owner of a super market would like to have a program that computes the monthly gross pay of their employees. The input for this program is an employee ID number, hourly rate of pay, and number of regular and overtime hours worked. Gross pay is the sum of the wages earned from regular hours and overtime hours ; overtime is paid at 1.5 times the regular rate. Net pay is gross pay minus deductions. Assume that deductions are taken for tax (10 percentage of gross pay) and transportation fee (100 per month). Write an algorithm to compute and display the employee's gross salary, deductions and net pay in neat format. 10
2. Briefly describe about program development cycle. 5

UNIT—II

- V 1. You are given the following formula for calculating the average scores for students in a certain class. Notice that all students begin average of 20 points. Average = (20 + total exam score)/Number of exams taken.
- (a) Is there any chance that program crash may crash? Justify.
- (b) Write a pseudocode to allow the teacher to input a student's total exam score and the number of exams that student has taken. Then compute and display the student's average. 8
2. Use a for loop to sum the integers from 1 to 100. 7

OR

- VI 1. Write a menu driven code that inputs two numbers and at the user's option, finds their sum, difference, product or quotient. 10
2. The number N factorial, denoted by N!, is defined to be the product of N positive integers :
- $$N! = 1 \times 2 \times 3 \times \dots \times N$$
- Write a pseudocode for the above computation. 5

UNIT—III

- VII 1. An array contains register number of students who have passed the examination. Write an algorithm that check for the existence of register number in the list. 8
2. Write an algorithm to sort a set of numbers in descending order. 7

OR

- VIII 1. A school records the names of students and their height in two arrays named 'Names' and 'Height'. Determine name of the student who has the maximum height. 10
2. Write a short note on arrays. 5

UNIT—IV

IX 1. Design an algorithm to find the area of a rectangle. Use a subprogram to input the sides of the rectangle, use function to calculate the area and a subprogram to display the result. 12

2. List the different methods to exchange data between subprogram and main program. Compare the methods of data transfer between subprogram and main program.

OR

X 1. The number of combinations of n different objects selected r at a time is given by $nCr = \frac{n!}{r!(n-r)!}$
Design an algorithm to compute nCr . Make use of subprograms and functions. 9

2. Write the basic steps to create a sequential file. 6

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