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**National Institute of Business Management School of Computing and Engineering**

**BSc (Hons) Computing|ITB |EHNS-Year 1 | Diploma in Computer Systems Design-21.2F | Diploma in Software Engineering–21.2F**

**Programming Fundamentals**

**Time Allowed: Three Hours 07th March 2022|9AM – 11AM**

**INSTRUCTIONS TO CANDIDATES**

* This paper contains 5 questions.
* Marks for each question is indicated.
* This is a closed book examination.
* All calculators are not allowed.
* Answer ALL questions.

**ADDITIONAL MATERIALS**

* None

**Question 01 (20 marks)**

1. Write down the three control structures in programming? (3 marks)
2. Emphasizing the main functions carried by the compiler, explain the term ‘preprocessing’ in relation to C language compiler. (5 marks)
3. With suitable examples explain Global and Local Variables commonly use in C programs. (5 marks)
4. What does best practice mean in programming? Briefly describe two best coding practices the programmers should follow. (3 marks)
5. What are the outputs of statements, after execution of following codes according to the operator precedence? Assume that all variables are initialized into 5. (4 marks)
6. printf("%d",a++ - --b\*c/--b);
7. printf("%d",x+=5-y);

**Question 02 (20 marks)**

1. In an online ordering system, customers have been categorized into ‘Regular’ and ‘Non-regular’to allow the discount.
   1. System will accept the customer no , password and the order value, they will be categorized as follows:

|  |  |
| --- | --- |
| **Customer number** | **Customer type** |
| Even number | Regular |
| Odd number | Non-Regular |

Regular customers will be given a 10% discount from the order value. Non-regular customers are given a 5% discount.

Display the Customer number, Customer type, Net value of the order. (8 marks)

1. A plant sales company will do N number of sales per day (N – User input value). Program must accept number of sales per month. Then calculate the average daily sales.

Find the number of days that they exceeded the average sales and display the message according to the following criteria.

|  |  |
| --- | --- |
| No of days exceeding the average sales | Message |
| Average sale days >=15 | Excellent |
| Average sale days >=10 | Good |
| Average sale days >= 5 | Need More Product Advertising |

(12 marks)

**Question 03 (20 marks)**

1. RTX Company decided to give awards to senior employees. Write a program to accept employee number, designation and years of working of 50 employees. Display the employee number of employees who have at least 10 years of working experience with RTX company and numbers of employees who are eligible for the awards.
2. marks)
3. Write a program to accept number of covid cases of year 2021. Insert number of covid cases of each month to an array. Program should display the month which has minimum number of covid cases, the month which has maximum number of covid cases, total number of covid cases in 2021 and the months which are greater than average covid cases. (10 marks)

**Question 04 (20 marks)**

1. The passenger management system of Katunayake airport requests passport number, destination country, visa type (Student visa – 1, Working Visa – 2, Tourist Visa –3, Immigration –4). You may write the following 3 functions using c programming language.

Function 1 : Read above details for any number of passengers. In order to stop entering details user may enter –111 as the passport number.

Function 2: Calculate following important information

1 . Total passengers left in the day

2. % of passengers left for study purpose

3.% of passengers left for working

4. % of passengers left for travel purpose

5. % of passengers left as immigrants

Function 03: Display above calculated information

1. marks)
2. Write a c program to accept student id, name and marks of students who have completed PF module.
3. Write the student id, name, marks and grade (‘Pass’ if the marks greater than 50, ‘Fail’ if the marks less than 50) into a text file named ‘Result.txt’.
4. Read the above data file and display. (05 marks)

**Question 05 (20 marks)**

|  |  |
| --- | --- |
| #include<stdio.h>  void main()  { int x,y;  for(x=0;x<2;x++)  { y=2;  do  { y--;  printf("Answer is %d\n",x+y);  }  while(y>0);  }  } | #include<stdio.h>  void main()  { int x,y;  for(x=0;x<2;x++)  { for(y=1;y<3;y++)  { if(x==y)  { break;  }  printf("x is %d y is %d\n",x,y);  }  }  } |
| #include<stdio.h>  void main()  { int x,y;  x=1;  while(x<3)  { switch(x)  { case 1:  printf("value is %d\n",x);  case 2:  printf("value is %d\n",x);break;  case 3:  printf("value is %d\n",x);  }  x++;  }  } | #include<stdio.h>  void check(int \*x,int y)  {\*x=\*x+y;  }  void main()  { int a;  a=50;  check(&a,a);  printf("a is %d",a);  } |
| #include<stdio.h>  void main()  { int g,h;  g=1;  while(g<3)  { for(h=0;h<2;h++)  { if(g==2 && h==1)  { continue;  }  printf("h is %d g is %d\n",h,g);  }  g++;  }  } | |