

Name: Roll No:
e.g. 170001Dept.:
e.g. CHESect.:
e.g. A4IIT Kanpur
ESC101 Fundam. of Comp.
Major Quiz 1B
Date: January 31, 2018

Instructions:

Total: 45 marks

1. This question paper contains a total of 6 pages (6 sides of paper). Please verify.
2. Write your name, roll number, department, section on **every side of every sheet** of this booklet
3. Write final answers **neatly with a pen** in the given boxes.
4. Do not give derivations/elaborate steps unless the question specifically asks you to provide these.

Problem 1 (: 6 + 4 + 5 marks). Give your answers in the space provided only.1. *Write T or F in the box for True and False respectively*

- | | | | |
|----|--------------------------|------------------------------------------------------------------------------------------|---|
| 1. | <input type="checkbox"/> | The loop for($i = 0; i < n; i++$) and for($i = 0; i < n; ++i$) are functionally same | T |
| 2. | <input type="checkbox"/> | $8 > 6 > 4$ evaluates to 1. | F |
| 3. | <input type="checkbox"/> | To check equality of two floating point expressions we should use <code>==</code> | F |
| 4. | <input type="checkbox"/> | The value of $-45\%6$ is -3 in C. | T |
| 5. | <input type="checkbox"/> | Value of $5/2 * 2$ is equal to value of $5 * 2/2$ | F |
| 6. | <input type="checkbox"/> | The expression $a < b < c$ is same as $(a < b) \&\& (b < c)$ | F |

2. *Write output in the space below*

```

1 #include<stdio.h>
2 int main() {
3     printf("%d\n", 9999999);
4     printf("%2d%4d\n", 9, 9);
5     printf("%3d%2d\n", 9, 9);
6     printf("%4d\n", 9);
7     return 0;
8 }
```

```

1 9999999
2  9    9
3   9  9
4    9
```

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3. Write output in the space below

```

1 #include<stdio.h>
2 int main() {
3     int a = 3, b = 3, c=1;
4     if(++a <= b++) {
5         c=++a*--b+c;
6         printf("%d %d %d\n", a, b, c);
7     }
8     else if(++b < a++){
9         c=--a*++b+c;
10        printf("%d %d %d\n", a, b, c);
11    }
12    else {
13        c=b+++a+++c;
14        printf("%d %d %d\n", a, b, c);
15    }
16    printf("%d \n", a+1);
17    printf("%d\n", a++);
18 }
```

```

1 6 6 25
2 7
3 6
```

Problem 2 (Conditionals bang! : 2 + 3 + 4 + 6 marks). Give your answers in the space provided only.

1. Write output in the space below if the program runs properly or write “**RUNTIME ERROR**” or “**COMPILE ERROR**”

```

1 #include<stdio.h>
2 int main() {
3     int a = 8;
4     int b = 3;
5     if(a||b/0) printf("Old is Gold!\n");
6     return 0;
7 }
```

```

1 Old is Gold!
```

2. Write output of the following program

```

1 #include<stdio.h>
2 int main() {
3     int a = 10;
4     if(a % 5 == 0) printf("Sunday\n");
5     if(a % 15 == 0) printf("Monday\n");
6     else printf("Friday\n");
7     return 0;
8 }
```

```

1 Sunday
2 Friday
```

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3. Write output of the following program when it is given "6 8 7" followed by "1 2 3" as input.

```

1 #include<stdio.h>
2 int main() {
3     int a,b,c,i;
4     for (i=0;i<2;i++){
5         scanf("%d %d %d",&a,&b,&c);
6         if(a>b) b = a;
7         else a = b;
8         if(c==a) printf("New world\n");
9         else if(c>b) printf("Old world\n");
10        else printf("Out of this world\n");
11    }
12    return 0;
13 }
```

```

1 Out of this world
2 Old world
```

4. Write output in the space below

```

1 #include<stdio.h>
2 int main() {
3     int a = 8;
4     int b = 3;
5     if(b=a/2) printf("Old is gold!\n");
6     else printf("New rules!\n");
7     switch (b){
8         case 3: printf("Great!\n ");
9         case 4: printf("Interesting!\n");
10        case 8: printf("Rock on!!\n");
11        default: printf("Same old stuff\n");
12    }
13    return 0;
14 }
```

```

1 Old is gold!
2 Interesting!
3 Rock on!!
4 Same old stuff
```

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Problem 3 (Froot Loops! : 4 + 4 + 7 marks). Leonardo visited Uncle Nolan this summers to know his recipe for the renowned yummy froot loops he sells. Uncle Nolan whispered in his ears that there are three major ingredients he uses to make them. But extracting each of them requires some hard work. Given below are three programs for which you have to print the final output in the box provided to extract the ingredients. In case of crashing programs, write **CRASH** and similarly for infinite loops, write **INFINITE LOOP** in the box.

1. *Ingredient 1 - Dunkirk*

```

1  #include <stdio.h>
2
3  int main()  {
4      int a,b,c;
5      for(a=b=c=2017;a<2020||b>2025;a++)
6      {
7          printf("%.1.2f\n", (float)a);
8          if((a-b+c)||((a+b+c)/(a-b))) b++;
9      }
10     return 0;
11 }
```

```

1  2017.00
2  2018.00
3  2019.00
```

2. *Ingredient 2 - Inception*

```

1  #include <stdio.h>
2
3  int main()  {
4      int a=7,b=2010,c=2010;
5      while((a-=2) || -1)
6      {
7          if(b<2013)
8              if(c>2005)
9              {
10                 a+=2;
11                 b++;
12             }
13         else
14         {
15             a--;
16             b--;
17             c--;
18             break;
19         }
20     }
21     printf("%d\n",a*b/c);
22     return 0;
23 }
```

```

1  INFINITE LOOP
```

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3. Ingredient 3 - The Dark Knight

```

1  #include <stdio.h>
2
3  int main()  {
4      int i,j;
5      for(j=2;j<5;j--)
6      {
7          do {
8              for(i=7;i>10;i++)
9              {
10                 printf("%d,%d\n",i-j,2008);
11             }
12             ++j;
13             break;
14         } while(1);
15         printf("%d ", ++j+i++);
16         printf("%d %d\n",i,j);
17     }
18     return 0;
19 }

```

1	11	8	4
2	12	8	5
3	13	8	6

Fun Note: Those who couldn't get the references and arbit 2000+ values used in initialization, they know what they have to watch after this major quiz. Bug your tutor for the ingredients used in set A after the quiz and you will get some stuff for the weekend too! :D

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BLANK SPACE: Any answers written here will be left ungraded.
No exceptions.
You may use this space for rough work.

FOR ROUGH WORK ONLY