Answer all questions.

1. Predict the output for the following C code.

|  |  |
| --- | --- |
| (a) | #include <stdio.h>  #define NAME "Pusat Asasi Sains Universiti Malaya"  #define AGE 43  #define sign "by Aliff"  int main()  {  printf("%s is over %d years old.\n", NAME, AGE);  printf(" %s", sign);  return 0;  } |
| (b) | #include <stdio.h>  #define AGE (20 / 2)  int main()  {  printf("TechOnTheNet.com is over %d years old.\n",AGE);  return 0;  } |
| (c) | #include <stdio.h>  #define square(x) x\*x  int main()  {  int A;  A = 36/square(6);  printf("%d", A);  return 0;  } |
| (d) | #include<stdio.h>  #define Plus(a,b,c) ((a)+(b)-(c))  int main (void)  {  int i;  i=Plus(5,2,1)\*Plus(1,5,2)\*Plus(2,1,5);  printf(“%d”,i);  return 0;  } |
| (e) | #include <stdio.h>  #define MAX(x,y) ((x) > (y) ? (x) : (y))  int main(void)  {  printf("Max between 20 and 10 is %d\n", MAX(10, 20));  return 0;  } |

1. Write a C program that defines a macro with one argument to compute the volume of sphere. The formula for the volume of a sphere is πr3 where *r* is the radius of the sphere and 𝜋 is

3.14159.

1. Write a C program that prompt the user to input the radius (*r*) and the height (*h*) of the cylinder. Then, calculate the volume and surface area of the cylinder. The formulas are

Volume = πr2ℎ

Surface Area = 2πrℎ + 2πr2

Use #define (macros) with multiple arguments.

1. Write a C program that that can display a message “Congratulations, you succeeded.” to the user if the error is equal to 0, otherwise it will display the message "Sorry, you failed". (use Stringize operator (#))
2. Write C code for User Interface below. The characters are input by user. Use Token pasting operator (##).

**Input Character 1: w**

**Input Character 2: r**

**Input Character 3: y**

**Input Character 4: o**

**Input Character 5: f**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Your sign is wryof**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

1. Find the errors in the following program:

line 1 :#include <stdio.h>

line 2 :#define compare(num1,num2)

line 3 : if (num1>num2) \

line 4 : printf("%d is bigger than %d\n", num1,num2); \

line 5 : else \

line 6 : printf("%d is smaller than %d \n", num2,num1);\

line 7 :

line 8 :int main()

line 9 :{

line 10: int num1,num2;

line 11: printf("Enter a first number: ");

line 12: scanf("%d", &num1);

line 13: printf("Enter a second number: ");

line 14: scanf("%d", &num2);

line 15: compare(num);

line 16: return 0;

line 17:}

1. Find the errors in the following program:

line 1 :#include <stdio.h>

line 2 :#define text(msg) #msg

line 3 :#define numbers(a, b, c) a#b#c

line 4 :

line 5 :int main()

line 6 :{

line 7 :printf(text(“Numbers in descending orders:\n “));

line 8 :printf("numbers(30, 20, 10) = %f\n", numbers(30, 20, 10));

line 9 :return 0;

line 10 :}