Write a complete C++ program that does the following. (Programs that correctly carry out some of the tasks will receive partial credit.) 75 pts

(1) The program asks the user to enter two integers a and b. Integers a and b must be greater than or equal to 3 and less than or equal to 12, in another word, the values must be in between 3 and 12, inclusive.

(2) If either of the user’s numbers is illegal the program terminates at once.

(3) The program prints a + b rows each of which contains a \textbullet{} b columns of Xs, but after each group of b complete columns the program prints a | symbol.

An example run of the program,

Enter two integers between 3 and 12: 3 5

XXXXX|XXXXX|XXXXX|XXXXX|XXXXX
XXXXX|XXXXX|XXXXX|XXXXX|XXXXX
XXXXX|XXXXX|XXXXX|XXXXX|XXXXX
XXXXX|XXXXX|XXXXX|XXXXX|XXXXX
XXXXX|XXXXX|XXXXX|XXXXX|XXXXX
XXXXX|XXXXX|XXXXX|XXXXX|XXXXX

#include <iostream>
using namespace std;

int main(){
    int a, b;
    cout << "Two integer: ";
    cin >> a >> b;
    if ( a > 12 || a < 3 || b > 12 || b < 3)
        return 0;
    for (int r = 1; r <= a + b; r++){
        for (int c = 1; c <= a * b; c++){
            cout << "X";
            if (c % b == 0) cout << "|";}
        cout << endl;
    }
    return 0;
}

Circle the best answer. 25 pts

Print all two digits odd numbers that’s not a multiple of 7. Ans: 6

1) for (int c = 11; c < 100; c+=2) { if (! (c % 7 == 0)) cout << c; } //go through every odd 2 digit numbers 11~99, increment by 2. If it’s not a multiple of 7, prints out
2) for (int c = 10; c <= 99; c++) { if (c % 2 == 1 && c % 7 != 0) cout << c; } //go thru every 2 digit number, 10~99; check if it’s odd number and not multiple of 7, print out
3) for (int c = 10; c < 100; c++) { if (c % 2 != 0 || c % 7 != 0) cout << c; } // OR is wrong

6) Only 1 and 2 are correct. 7) Only 1 and 3 are correct. 8) Only 2 and 3 are correct.

Extra credit: 10pts

(a) Which is the output of the following C++ code assuming the program includes \texttt{<cmath>}, cout << sqrt(1.44); //This function calculates the square root of 1.44. Ans: 2

1) 1 2) 1.2 3) 1.44 4) 2 5) error

(b) Which of the following is the correct C++ code that prints a random number in the range 23 to 34, inclusive. Ans: 2 To get the range from rand(), \% (34-23+1) + 23

1) cout << rand()%34 + 23; 2) cout << rand()%12 + 23;
3) cout << rand(23, 34); 4) cout << rand(23)%34;