ISYS 350, Spring 22, Exam 1 review and sample

I won’t publish the answers to questions on this review. But you may send questions to me to get answers.

This exam covers the following PowerPoint presentations:
1. Python Introduction
2. Making decision with if statement
3. Complex condition
4. Repetitions (loops) – up to slide # 21

And Revel assignments 1, 2, 3, 4 and programming assignments 1, 2, 3.

Sample questions:

1. Write an equivalent statement using compound operator: \( X = X + 2 \) ______________ 

2. Which operation is performed first in the following expression: \( 2 * 2 ** 2 / 2 - 1 \)
   a. \( 2 * 2 \)    b. \( 2 ** 2 \)    c. \( 2 / 2 \)    d. \( 2 - 1 \)

3. Write a Python expression for this formula: \( 1 + \frac{A^B}{C^D} \) ______________

4. How to determine if the data from an input statement contains valid number?

5. State University calculates students tuition based on the following rules:
   - State residents:
     • Total units taken \( \leq 12 \), tuition = 1200
     • Total units taken \( > 12 \), tuition = 1200 + 200 per additional unit.
   - Non residents:
     • Total units taken \( \leq 9 \), tuition = 3000
     • Total units taken \( > 9 \), tuition = 3000 + 500 per additional unit.

   Complete the following program to compute and show the tuition.

   ```python
   status=input('Enter status, R for resident, NR for non-resident')
   units=float(input('Enter number of units:'))
   ```

6. A program to determine state tax rate is given below. Identify a situation where this program will not return correct tax rate after entering a state code:

   ```python
   state=input("Enter state code: ")
   if state == "CA":
       tax= 0.01
   elif state=="WA":
       tax=0.015
   elif state=="NY":
   ```
tax=0.012
else:
tax=0.005
print("Tax rate is: " + "{:.2%}".format(tax))

7. A program to determine letter grade is given below. If a student’s exam score is 76, what is the grade returned by the program? 

```python
score= float(input("Enter exam score: "))
if score >= 90:
    grade="A"
elif score >= 80:
    grade="B"
elif score >= 70:
    grade="C"
elif score >= 60:
    grade="D"
else:
    grade="F"
print("Your grade is: " + grade)
```

8. How many times the loop below will be executed? What is the value of counter after the loop? What is the value of variable sum after the loop?

```python
Sum=0
counter = 1
while counter<5:
    sum+=counter
    counter+=2
print(counter, sum)
```

9. An integer is stored in a variable MyInt. Write the if statement to test if MyInt is divisible by 5 or not and use print() statement to show “Divisible by 5” or “Not divisible by 5”.

10. A Business student with GPA 2.5, will the complex condition below evaluate to true or false?

```python
Major=’BUS’ or Major=’Sci’ and GPA>3.0
```

11. Problems similar to assignment 1, 2 and 3 and examples and practice problems in the PowerPoint slides.

12. In 2022, the Social Security FICA tax is based on the first $147,000 paid at the rate of 6.2% with a maximum amount withheld of $9114($147,000 x 6.2%). Complete the program below to compute the Social Security FICA tax

```python
Salary=float(input(‘Enter your salary: ’))
```