Chapter 3

A. Multiple Choice Questions

1. b
2. b
3. d
4. c
5. c
6. b
7. b
8. a
9. a
10. D

B. True or False

1. True
2. True
3. True
4. True
5. False
6. True
7. True
8. False
9. True
10. True
11. True

C. Exercise Questions

1.

Expression	Results
40/8	5.0
40//8	5
50%5	0
3%2	1
3**3	27

2.

Expression	Output
X +=10	14
X -=4	0
X *=6	24
X **=2	16
X %=2	0
X /=2	2.0

3.

i) 1200
ii) 25
iii) 40.0
iv) 0.0
v) 45.0

4.

Expression	Equivalent Expression
Z = Z* 10 + 4	Same as it as cannot reduce further
A = A % 20	A %= 20
B = B ** 10 + 2	B **=10 + 2
C = C / 3	C /= 3

5.

Expression	Output
X=X<<2	16
X=X>>2	1
X=x>>3	0
X=X<<3	32

6.

X= 4/2*2+16/8+5

Hierarchy is first / operation is performed followed by * and + operation.

```
X = 4/2*2+16/8+5
  = 2.0 *2 + 2.0 +5
  = 4.0 + 2.0 +5
    11.0
```

Y= 3*4/2+2/2+6-4+4/2

Hierarchy is first / operation is performed followed by * and + operation.

```
Y = 3 * 2.0 + 1.0 + 6 - 4 + 2.0
  =  6.0 + 5.0
  = 11.0
```

7. ((2*X*Y)/(c+10)) - ((x)/(4*(2+D))))
((10*Y*(a+b+c)/d)-(0.8+(2*b)))/((x+a)*(1/z))

8. Initially value length and breadth of rectangle is initialized to zero. After initializing itself programmer is supposed to read the values of length and breadth of rectangle from user and then calculate the area of rectangle. The correct solution is as follows

area=0

```
 length = 0
breadth = 0
length=eval(input('Enter the Length of Rectange:'))
breadth=eval(input('Enter the Breadth of Rectangle:'))
area = length * breadth
print('Area of Rectange = ',area)
```

9.

```
X = 4 and Y = 6
(X + Y - abs(X - Y))//2
Ans: 4

 X = 5 and Y = 4
(X + Y - abs(X - Y))//2
Ans: 4
```

Programming Assignments

1. Write a program to read the marks of 5 subjects through the keyboard. Find out the aggregate and percentage of marks obtained by the student. Assume maximum marks that can be obtained by a student in each subject are 100.

```
eng = int(input('Enter the marks of English Subject:'))
sci = int(input('Enter the marks of Science Subject:'))
geo = int(input('Enter the marks of Geography Subject:'))
his = int(input('Enter the marks of History Subject:'))
phy = int(input('Enter the marks of Physics Subject:'))
sum = eng + sci + geo + his + phy
agrigate = sum / 500
per = agrigate * 100
print(' Student has got ', per,' Percentage')
```

Output

```
Enter the marks of English Subject:50
Enter the marks of Science Subject:70
Enter the marks of Geography Subject:90
Enter the marks of History Subject:65
Enter the marks of Physics Subject:76
Student has got  70.19999999999999  Percentage
```

2. Write a program to read a 4 digit number through keyboard and calculate the sum of its digits.

```
num=eval(input('Enter 4 digit number: '))
print('Entered number is:',num)
r1=num%10
q1=num//10
r2=q1%10
q2=q1//10
r3=q2%10
```

```
q3=q2//10
r4=q3%10
print('Sum of all the digits within number ',num,' is  :',(r1+r2+r3+r4))
```

Output

```
Enter 4 digit number: 4225
Entered number is: 4225
Sum of all the digits within number  4225  is  : 13
```

3. Write a program to read the distances between any two cities in Kilometer (Km) and print the distance in meters, centimeter and miles.

Note: 1 Km = 1000 meter
1 Km = 100000 centimeter
1 Km = 0.6213 miles

```
distance = int(input('Please Enter the distance(Km) between two cities:'))
meter = distance * 1000
centimeter =  distance * 100000
miles = distance * 0.6213
print('Distance :',distance)
print(' Meter: ',meter)
print(' Centimeter: ',centimeter)
print(' Miles: %.2f'%(miles))
```

Output

```
Please Enter the distance(Km) between two cities:10
Distance : 10
Meter:  10000
Centimeter:  1000000
Miles: 6.21
```

4. Write a program to read the weight of the object in terms of kilogram and print its weight in terms of pound and Tonne.

Note: 1 Kg = 2.20 pound
1 Kg = 0.001 Tonne

```
weight = int(input('Enter the weight of object in kilogram:'))
pounds = weight * 2.20
Tonne = weight * 0.001
print(' Weight =  ',weight,' Kilograms')
print(weight,' kg  =  %.2f'%(pounds),' pounds')
print(weight,' kg  =  %.2f'%(Tonne),' Tonne')
```

Output

```
Enter the weight of object in kilogram:0100
Weight =   100  Kilograms
100  kg  =  220.00  pounds
100  kg  =  0.10  Tonne
```

5. Read distance in meters, and time in seconds to be inputted through keyboard. Write a program to calculate the speed of a car in meter/second.

Note: Speed = $\frac{\text{Distance}}{\text{Time}}$

```
distance = int(input('Enter the distance in meters:'))
time = int(input('Enter time in seconds:'))
speed = distance / time
print(' Speed of vehicle is %.2f'%(speed),'meter/second')

Output
Enter the distance in meters:1500
Enter time in seconds:45
Speed of vehicle is 33.33 meter/second
```

6. Write a program to read radius of sphere from user and calculate the volume of sphere.

Note: Volume of Sphere = $4/3*3.14*r^3$

```
radius = float(input('Enter the radius of Sphere:'))
volume = (4/3)*3.14*radius**3
print(' Radius of Sphere:',radius)
print(' Volume of Spehere is: %.2f'%(volume))

Output
Enter the radius of Sphere:5
Radius of Sphere: 5.0
Volume of Sphere is: 523.33
```

7. If ATM contains Indian currency notes of 100, 500, and 1000. To withdraw cash from ATM, the user has to enter number of notes he/she wants of each currency i.e. of 100, 500 and 1000. So write a program calculate total amount withdrawn by person from ATM in terms of rupees.

```
N1 = int(input('Enter the number of 10Rs notes u want to withdraw:'))
N2 = int(input('Enter the number of 50Rs notes u want to withdraw:'))
N3 = int(input('Enter the number of 100Rs notes u want to withdraw:'))
Total_Amount = N1 *10 + N2 * 50 + N3 * 100
print(' Total Amount Withdrawn = ',Total_Amount,' Rs ')
Output
Enter the number of 10Rs notes you want to withdraw:5
Enter the number of 50Rs notes you want to withdraw:5
Enter the number of 100Rs notes you want to withdraw:4
Total Amount Withdrawn =  700  Rs
```