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Daffodil International University
Department of Business Administration

Course Code: 0613-114 **Course Title: Programming for Business Analytics**

Semester: Fall 2026 **Examination: Mid Term**
Time: **1.5 Hours** Full Marks: **25**
Section: **A, B, C, D, E, F, G, H** Teachers' Initial: **Asfaqur/Sagar/Sadman/Rabbi**

Answer ALL Questions

[The figures in the right margin indicate the full marks and the corresponding Course Learning Outcome. All portions of each question must be answered sequentially.]

1.	A bank wants to show a customer how a deposit of Tk 50,000 grows at 13% interest per year. The program must keep adding the yearly interest until the balance reaches at least Tk 120,000. The number of years is not known in advance. (a) **Explain** the three parts of every loop: initialization, condition and update. Identify each part for this savings problem, and state whether a for loop or a while loop suits it better. (b) **Demonstrate** which of the following variable names are valid and which are invalid in Python. For each invalid name, state the naming rule it breaks. `net_profit` `3rd_quarter` `unit cost` `sales-tax` `_count` `if`	**3+2=5**	**CLO-1**
2.	A loyalty program assigns a membership tier to each bill. Study the following code segment. `price = 250` `qty = 4` `discount = 10` `subtotal = price * qty` `total = subtotal - subtotal * discount / 100` `points = int(total) // 100` `code = "BDT" + str(points)` `print(total)` `print(points, total % 300)` `print(code * 2)` `if total >= 900 and points > 8:` `  print("Gold")` `elif total >= 900:` `  print("Silver")` `else:` `  print("Regular")` (a) **Apply** the rules of Python operators and if–elif–else statements to work out the exact output the program prints. (b) **Distinguish** between the value and data type of `points` with and without `int()`, and **examine** whether the printed tier would change.	**4+1=5**	**CLO-2**
3.	The program below should read a customer's name, the quantity, the unit price and the membership status, then print the amount payable after a 10% member discount. It contains FIVE errors. `name = input("Customer name: ")` `qty = input("Quantity: ")` `price = float(input("Unit price: "))` `member = input("Member (y/n): ")` `subtotal = qty * price`	**5**	**CLO-2**

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```
if member = "y":
    discount = subtotal * 10 / 100
else
    discount = 0
payable = subtotal - discount
print("Customer: " + name)
print("Amount payable: " + payable)
```

Analyze the program to distinguish each of the five errors. For each one, state the line, give the reason it is wrong and write the corrected line. (1 mark for each error)

4. A courier company in Dhaka calculates the delivery charge of a parcel using the rates below. **8+2=10** **CLO-2**

Location	Up to 1 kg	Above 1 kg
Inside Dhaka	Tk 60	Tk 60 + Tk 20 per kg above 1 kg
Outside Dhaka	Tk 120	Tk 120 + Tk 30 per kg above 1 kg

Premium customers receive a 10% discount on the final charge, wherever the parcel goes.

Sample input and output:

Sample input	Sample output
Location (inside/outside): outside Weight in kg: 2.5 Premium customer (y/n): y	Delivery charge: 148.5
Location (inside/outside): inside Weight in kg: 0.8 Premium customer (y/n): n	Delivery charge: 60

(a) **Apply** nested if–else statements to write a complete Python program that reads the delivery location ("inside" or "outside"), the parcel weight in kg (decimal) and whether the customer is premium ("y" or "n"), then calculates the charge and prints it.

(b) **Apply** your program to the following two cases and show the charge it prints for (i) inside Dhaka, 3 kg, premium customer and (ii) outside Dhaka, 0.5 kg, regular customer. Show your calculation.