Set A

Unique Paper Code	:	22415103
Name of the Paper	:	Basics of Accounting
Name of the Course	:	B.Com (H) Sem. I (GE)
Duration	:	3 hours
Maximum Marks	:	75 Marks
Mode	:	Open Book Examination (OBE)

Instruction for candidates

- Attempt any 04 questions in 03 hours.
- All questions should have equal marks
- Students shall answer the question on A4 size papers and marks page number on the top of each page on the first page, the student shall write the following details.
  - Date and time of examination (DD/MM/YYYY, HRS:Min);
  - Examination roll number
  - Name of the Program i.e. B.A., B.Com, B.Sc. (Hons/Pass) etc.
  - Semester
  - Unique Paper Code (UPC)
  - Title of the paper:
  - Name of College/Institution
  - Email id of student
  - Phone number of student
- Scanning the answer sheet in the Portable Document Format (PDF) format and upload the scanned PDF of answer on the University of Delhi Portal

1. Mr Charnjeet Singh, a shopkeeper, had prepared the following trial balance from his ledger as on 31st March, 2021

Particulars	Dr. Amount	Cr. Amount
Purchase and Sales	6,20,000	8,30,000
Cash in Hand	4,200	
Cash at Bank	24,000	
Stock of Goods on 1-4-2020	1,00,000	
Capital and Drawings	8,000	5,77,200
Salaries	64,000	
Postage and telephones	23,000	
Salesmen's commission	70,000	
Insurance	18,000	
Advertisement	34,000	
Furniture	44,000	
Printing and Stationery	6,000	
Motor Car	96,000	

Bad debts	4,000	
Cash Discount	8,000	
General Expenses	60,000	
Carriage inwards	20,000	
Carriage Outwards	44,000	
Wages	40,000	
Debtors and Creditors	2,00,000	80,000
	14,87,200	14,87,200

You are required to prepare Trading and Profit & Loss Account for the year ended 31st March, 2021 and Balance Sheet as on that date. You are also given the following information:

(i) Stock on 31.3.2021 was Rs 1,45,000
(ii) Purchases include purchase of furniture worth Rs 10,000
(iii) Debtors are bad to extent of Rs 5,000
(iv) Sales include goods worth Rs 15,000 sent to Ram & Co. on approval and remain unsold as on 31.3.2021 the cost of goods was 12,500.
(v) Provision for Bad Debts is to be created at 5% on sundry Debtors.
(vi) Depreciate Furniture by 15% and Motor car by 20%.
(vii) The Salesman are entitled to a commission of 10% on total sales.

2. KIA Motors Limited Purchased a machinery for Rs 15,00,000 on 1st April, 2015. On 1st October, 2016 another Machinery was purchased for Rs 6,00,000. On 1st October, 2017 a new Machine was purchased for Rs 4,50,000. Depreciation at 20% per annum on the diminishing value.On 1st January, 2019 machine No.2 (purchased on 1st October, 2016) was damaged and had sold for Rs. 2,50,000 and on the same date a new machinery was purchased for Rs. 4,00,000. You are requested to show the machinery account from the accounting year 2015 to 2019. Books are closed on 31st March every year. Company follow the charging to the assets account method for recording of its depreciation in books.

3. .The following transactions have taken place in the month of March2019.

   April 1: Opening inventory 2,000 units @ Rs.11 per unit.
   April 5: Purchased 5,000 units @ Rs.10 per unit.
   April 15: Sold 5,000 units
   April 16: Sold 500 units
   April 25: Purchased 2,000 units @ Rs.12 per unit
   April 30: Sold 1,000 units

   Calculate the cost of goods sold& Closing stock by using FIFO, LIFO & Weighted average method under perpetual inventory system and period inventory system
4. Accounting principles become Generally Accepted Accounting principles (GAAP) when they satisfy certain norms." What are those norms? Explain.
5. What ratio would you consider most important while evaluating the performance and future profitability of a company? Explain.
6. Which techniques are generally used to examine financial statements? Explain any two techniques in details.

Unique Paper Code : 32345104

Name of the Paper : Programming using Python

Name of the Course : Computer Science: GE for Honours

Semester : I

Duration: 3 Hours Maximum Marks: 75

Instructions: Attempt any FOUR questions. All questions carry equal marks.

Q1

- Write an algorithm to find the least common multiple of two numbers.
- Which of the following are valid identifiers? If they are invalid, then mention the cause of violation.
    - `Nn3`
    - `pp_4`
    - `from`
    - `bv-1`
    - `highestOfHeight`
    - `2Good2BeTrue`
- Write a program to print the sum of the first `n` terms of the following series:

```
1/2 - 1/4 + 1/6 -1/8 + …
```

Q2

- Evaluate the following expressions and justify your answers:
    - `7 * 2 - 5 ** 2 // 4 + 8`
    - `10 < 5 or 7 < 12 and not 18 > 3`

- `float(6 - int(56.4) % 2)`
- `9 & -11`
- `'hello' < 'hi' or 'I am fine' > 'I am not fine'`

- Apply Selection Sort on the list `[95, 81, 14, 72, 68, 59, 42, 24]`, to sort it in the ascending order. Show the contents of the list after each iteration.

Q3 Write functions for the following:

- a function that accepts a number and a string as arguments. It should return a list having n elements such that the i^{th} element of the list has the string repeated i times. For example, if the arguments are `3` and `'Hello'` then the function should return `['Hello', 'HelloHello', 'HelloHelloHello']`. Use list comprehension to generate this list.
- a function that accepts two tuples as arguments and returns a third tuple which has the alternate elements from the two tuples passed to it as arguments. `IndexError` should be raised if the number of elements in the two tuples are not same. The function should have `try … except` statements to handle `IndexError`.
- a function that accepts a list and computes the frequency of each numeric element in the list. The non-numeric elements should be ignored. The function should return the answer as a dictionary. For example, if the list is `['Hello', 1.2, 5, [2, 7], 7, 5, 5, 1.2, 7.4]` then the output should be `{1.2: 2, 5: 3, 7: 1, 7.4: 1}`

Q4 What will be the output produced on execution of the following code segments? Justify your answers.

- ```
  s = 0
  for i in range(1, 10):
     if i % 2 == 0:
        continue
  ```
  ```

```
    else:
        s += i
print(s)
```

- ```
  color = set(['White', 'Green', 'Yellow', 'Blue'])
  primary = set(['Red', 'Green'])
  print('Green' in color)
  allcolor=color.union(primary)
  print(allcolor)
  print(color.intersection(primary))
  print(color.difference(primary))
  ```

- ```
  list1 = ['physics', 'chemistry', 1997, 2000]
  print(list1[1][-3:-9:-1])
  list1[2] = 2001
  del list1[2]
  print(list1[2])
  print(list1)
  ```

- ```
  txt = 'Hi there! Hello! Have a good day.'
  txt = txt.split('!')
  print(txt)
  print('!!!'.join(txt))
  ```

- ```
  def avg(marks):
      assert len(marks) != 0, "List is empty."
  ```

```
    return sum(marks)/len(marks)


try:
    mark1 = [55, 88, 78, 90, 79]
    print("Average of mark1:", avg(mark1))
    mark2 = []
    print("Average of mark2:", avg(mark2))
    print("Bye")
except AssertionError as err:
    print(err)
```

Q5

- A stack is initially empty. Show the contents of this stack on execution of each of the following operations: `push('Jan')`, `push('Feb')`, `pop()`, `push('Mar')`, `pop()`, `pop()`.

  What will happen if another `pop()` operation is invoked after the execution of the above sequence of operations?

- Write a function that accepts names of two files: source and target as arguments and copies alternate characters from the source file to the target file. The function should return -1 if the source file does not exist.

- Identify the errors in the following pieces of code and rewrite the code after removing them.

  ♦
```
DEF execmain():
   x = input("Enter a number:")
   if (abs(x) =  x):
      print("You entered a positive number")
   else:
```

```
x=*-1
    print "Number made positive:"x
```

♦
```
print('test' * 3.0)
print(3 + '5 '+ 7.0)
```

Q6 Define a class `Student` that keeps track of the academic record of students in a school. The class should contain the following instance data members:

`rollNo`: Roll number of the student

`name`: Student name

`classSection`: class and section of the student

`marksList`: List of marks in five subjects

The class should support following methods:

`__init__` for initializing the data members

`setMarks` to set marks for five subjects

`computeTotal` for returning the total of the marks

`__str__` that display information about an employee

Include assert statements in appropriate functions to ensure that the marks in the `marksList` are >= 0 and <= 100.

Also write statements for the following:

- create an object `S1` of this class for `Rajesh` of `IX C` having roll no. as 19 and marks as `92`, `96`, `83`, `97` and `91`.
- display the details of this student using `__str__` function

Name of Course	: **CBCS (LOCF) Generic Elective- Mathematics**
Unique Paper Code	: **32355101**
Name of Paper	: **GE-1 Calculus**
Semester	: **I**
Duration	: **3 hours**
Maximum Marks	: **75 Marks**

Attempt any four questions. All questions carry equal marks.

1. Find the critical points, inflection points and asymptotes (if any) for the function $f(x) = \frac{x^2+3}{x^2-4}$. Determine the region where the function increase or decrease and also discuss its concavity. Also, sketch the curve.

2. Evaluate the following limits using L'Hopital's rule

$\lim_{x\to b} \frac{x^b - b^x}{x^x - b^b}$ and $\lim_{x\to\infty}[x - \ln(x^5 - 10^{10})]$.

3. Find the volume of the solid obtained by revolving the region bounded by the curves $y = 2x^2 + 1$ and $y = 3 - 2x^2$ about x-axis. Also find the length of the plane curve $y = 2x^2 + 1$ over the interval [1, 3]

4. Sketch the graph of $r^2 = \theta^2, 0 \le \theta$ in polar coordinates.

5. Let $f(x,y) = \begin{cases} \frac{xy^n}{x^3+y^{3n}}, & (x,y) \neq (0,0) \\ 0, & (x,y) = (0,0) \end{cases}$ where $n > 1$.

Discuss the continuity of $f(x,y)$. And show that $f_x(x,y)$ and $f_y(x,y)$ exist at all points (x,y).

6. Find the equation of parabola which has axis parallel to y-axis and which passes through the points $(0,2), (-1,0)$ and $(1,6)$. And plot this parabola.

An ellipse circumscribes a rectangle whose sides are given by $x = \pm 2$ and $y = \pm 4$. If the distance between the foci is $4\sqrt{6}$ and major axis is along y-axis, then find the equation of the ellipse. Also, plot this ellipse.

Name of Course	: **CBCS (LOCF) Generic Elective- Mathematics**
Unique Paper Code	: **32355101**
Name of Paper	: **GE-1 Calculus (for VH Only)**
Semester	: **I**
Duration	: **3 hours**
Maximum Marks	: **75 Marks**

Attempt any four questions. All questions carry equal marks.

1. Find the critical points, inflection points and asymptotes (if any) for the function $f(x) = \frac{x^2+3}{x^2-4}$. Determine the region where the function increase or decrease and also discuss it's concavity.

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An ellipse circumscribes a rectangle whose sides are given by $x = \pm 2$ and $y = \pm 4$. If the distance between the foci is $4\sqrt{6}$ and major axis is along y-axis, then find the equation of the ellipse.

5. If $w = \ln(x^2 + y^2 + z^2)$, $x = ue^v \sin u$, $y = ue^v \cos u$ and $z = ue^v$, find $\frac{\partial w}{\partial u}$ and $\frac{\partial w}{\partial v}$ using chain rule at the point $(u, v) = (-2, 0)$.

6. Find the directions in which the function $f(x,y,z) = \ln xy + \ln yz + \ln xz$ increase and decrease most rapidly at the point $P_0(1, 1, 1)$. Then find the derivatives of the function in those directions.

Roll No.:_____

Name of the Course	:	B.SC (Hons.) STATISTICS under CBCS (LOCF)
Semester	:	I
Name of the Paper	:	**Statistical Methods**
Unique Paper Code	:	**32375101**
Duration	:	3 hours
Maximum Marks	:	75

Instructions for candidates:

Attempt any FOUR questions.

Each question carries equal marks.

Show all the intermediate calculations and results.

1. Sixty students of Grade IX were given a test of quantitative reasoning, and their scores are given below. Tabulate the data into an appropriate frequency distribution table. Compute mean, standard deviation and mode for the constructed frequency distribution. Find mode graphically and compare it with the computed mode.

46	57	60	55	61	63	43	46	48	52
38	33	34	42	51	56	60	62	64	30
51	50	47	57	35	59	46	52	49	52
36	43	44	48	58	36	49	49	53	48
42	31	34	37	36	60	39	50	54	47
45	32	35	38	56	59	37	51	55	46

2. Define Skewness and Kurtosis. The salary range(in thousand rupees) and the number of employees for a manufacturing firm is given below:

Salary range	50-60	60-70	70-80	80-90	90-100
Numberof employees	7	10	15	6	5

Compute mean and hence first four moments about mean, β_1 and β_2 of the distribution Also, comment upon the nature of distribution.

3. Define coefficient of colligation. According to a survey the following results were obtained:

	Boys	**Girls**
No. of candidates appeared at an examination	800	200
Married	150	50
Married and successful	70	20
Unmarried and successful	550	110

Find the association between marital status and the success at the examination for both boys and girls.

4. Explain why are there two lines of regression. The following table shows the hours of sunshine, *x*, during nine days in August and the number of ice creams, *y*, sold by a beach shop:

x	4.3	6.9	0	10.4	5.2	1.8	8.0	9.2	2.1
y	224	208	123	419	230	184	362	351	196

Calculate the coefficient of correlation between number of hours of sunshine and number of ice creams sold. Calculate the equations of line of regression of *y* on *x* and *x* on *y*. Also,compute number of hours of sunshine when the ice creams sold are 360.

5. The job rating efficiency of an employee seems to be related to the number of weeks of employment. For a random sample of 10 employees, the following data were observed:

Job Efficiency (X)	55	50	20	55	75	80	90	30	75	70
Weeks of Employment (Y)	2	4	1	3	5	9	12	2	7	5

Fit a second-degree parabola of the form $Y = a + bx + cx^2$. Also, find the weeks of employment when job efficiency is 115.

6. Define partial correlation.Following are the scores of the students in three subjects:

X1	22	15	27	28	30	42	40
X2	12	15	17	15	42	15	28
X3	13	16	12	18	22	20	25

Compute $R_{2.13}$ and $r_{13.2}$and interpret the results.