

DAV PUBLIC SCHOOL, BISTUPUR, JAMSHEDPUR



SUMMER VACATION HOLIDAY HOME WORK CLASS XII SESSION 2026-2027

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ENGLISH CORE

PART A: LITERATURE

1. Comic Strip/drawing/doodle art:-

With reference to the chapter - The Tiger King, make a drawing, depicting the elements of humour in the chapter 'The Tiger King'.

Parameters:- Content , creativity, relevance .

PART B: WRITING SKILLS

1. Write Notices on **ANY TWO** of the following occasions:-

- a. Tours
- b. Sports
- c. Cultural / Extra- curricular activities
- d. Lost & Found
- e. Appeals

- Jot down the questions too for notices that you are attempting.

Parameters for Assessment:- Format , Content, Language accuracy

2. Watch and reflect on the following speeches and write 150 -200 words for **ANY ONE**, summarizing your takeaway from the address:

https://youtu.be/vacGRuHDtO0?si=pr4_P0mO3sQnKnwy

<https://youtu.be/aDG1T0kJnd4?si=JcZPUUWUCr4L2RXi>

Parameters - Content, language accuracy, relevance

Note- All the assignments should be done in English notebook.

MATHS

CHAPTER: MATRICES AND DETERMINANTS

Q1. Find the value of x if ; $\begin{bmatrix} 1 & x & 1 \\ 2 & 5 & 1 \\ 15 & 3 & 2 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \\ x \end{bmatrix} = 0$.

Q2. If $A = \begin{bmatrix} 1 & 3 & 2 \\ 2 & 0 & -1 \\ 1 & 2 & 3 \end{bmatrix}$; then show that A satisfies the equation $A^3 - 4A^2 - 3A + 11I = 0$.

Q3. Let $A = \begin{bmatrix} 2 & 3 \\ -1 & 2 \end{bmatrix}$, then show that $A^2 - 4A + 7I = 0$. Using this result calculate A^5 .

Q4. If the matrix $\begin{bmatrix} 0 & a & 3 \\ 2 & b & -1 \\ c & 1 & 0 \end{bmatrix}$ is a skew symmetric matrix then find the value of a , b and c.

Q5. If $P(x) = \begin{bmatrix} \cos x & \sin x \\ -\sin x & \cos x \end{bmatrix}$, then show that $P(x)P(y) = P(x+y) = P(y)P(x)$.

Q6. If $A = \begin{bmatrix} \cos \alpha & \sin \alpha \\ -\sin \alpha & \cos \alpha \end{bmatrix}$ and $A^{-1} = A^T$, then find the value of α .

Q7. Find the matrix A satisfying the following equations:

(a) $\begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix} A \begin{bmatrix} -3 & 2 \\ 5 & -3 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

(b) $\begin{bmatrix} 4 \\ 1 \\ 3 \end{bmatrix} A = \begin{bmatrix} -4 & 8 & 4 \\ -1 & 2 & 1 \\ -3 & 6 & 3 \end{bmatrix}$

Q8. Compute A^{-1} for the matrix $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$. Hence solve the system of equations $y + 2z + 8 = 0$,
 $x + 2y + 3z + 14 = 0$, $3x + y + 8 = 0$.

Q9. Using matrix method solve the following system of equations

$$3x + 2y - 2z = 3, x + 2y + 3z = 6 \text{ and } 2x - y + z = 2$$

Q10. Use the product $\begin{bmatrix} 1 & -1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix} \begin{bmatrix} -2 & 0 & 1 \\ 9 & 2 & -3 \\ 6 & 1 & -2 \end{bmatrix}$ to solve the system of equations

$$x - y + 2z = 1, 2y - 3z = 1, 3x - 2y + 4z = 2.$$

Q11. Show that the points $(a + 5, a - 4)$, $(a - 2, a + 3)$ and (a, a) do not lie on a straight line for any value of a.

Q12. The sum of three numbers is 6. If we multiply third number by 3 and add second number to it, we get 11. By adding first and third numbers, we get double of the second number. Represent it algebraically and find the numbers using matrix method.

Q13. If A and B are invertible matrices, then prove that $(AB)^{-1} = B^{-1}A^{-1}$.

Q14. On her birth day, Seema decided to donate some money to children of an orphanage home. If there were 8 children less, everyone would have got ₹ 10 more. However, if there were 16 children more, everyone would have got ₹ 10 less. Let the number of children be x and the amount distributed by Seema for one child be y (in ₹).



Based on the information given above, answer the following questions:

- (a) Represent the equations in terms x and y .
- (b) Write matrix equations to represent the information given above.
- (c) Find the number of children who were given some money by Seema.
- (d) How much amount is given to each child by Seema?

Q15. Three schools A, B and C decided to organize a fair for collecting money for helping the flood victims. They sold handmade fans, mats and plates from recycled material at a cost of ₹ 25, ₹ 100 and ₹ 50 each respectively. The numbers of articles sold are given as

| School /Article | A | B | C |
|-----------------|----|----|----|
| Handmade fans | 40 | 25 | 35 |
| Mats | 50 | 40 | 50 |
| Plates | 20 | 30 | 40 |



Based on the information given above, answer the following questions:

- (a) What is the total money (in Rupees) collected by the school A?
- (b) What is the total amount of money (in ₹) collected by schools B and C?
- (c) What is the total amount of money collected by all three schools A, B and C?
- (d) If the number of handmade fans and plates are interchanged for all the schools, then what is the total money collected by all schools?

Chapter: Relations and Functions

Q16. Find whether the following functions are onto (surjection) or not?

- (a) $f: R \rightarrow R$ defined by $f(x) = x^3 + 5; \forall x \in R$
(b) $f: R \rightarrow R$ defined by $f(x) = x^2 + 3; \forall x \in R$
(c) $f: Z \rightarrow Z$ defined by $f(x) = 5x - 9; \forall x \in Z$

Q17. If $A = R - \{3\}$ and $B = R - \{1\}$ and $f: A \rightarrow B$ is a mapping defined by $f(x) = \frac{x-2}{x-3}$ show that f is one one and onto function.

Q18. Let $f: R \rightarrow R$ be a function defined by $f(x) = \frac{x-m}{x-n}$, where $m \neq n$. Then show that f is one one but not onto.

Q19. Let $f: N \rightarrow N$ be defined by $f(n) = \begin{cases} \frac{(n+1)}{2} & ; n \text{ is odd} \\ \frac{n}{2} & ; n \text{ is even} \end{cases} \quad \forall n \in N$

Find whether the function is bijective. Justify your answer,

Q20. If $f(x) = x^3 - (k - 2)x^2 + 2x \quad \forall x \in R$ and if it is an even function, then find the value of k.

Q21. Prove that $f(x) = \frac{1}{x} \log_e \sqrt{x + \sqrt{x^2 + 1}}$ is an even function.

Activities to done in mathematics lab manual only

1. To verify that the relation R in the set L of all lines in a plane defined by $R = \{(l, m): l \perp m\}$ is symmetric but neither reflexive nor transitive.
2. To verify that the relation R in the set L of all lines in a plane defined by $R = \{(l, m): l \parallel m\}$ is an equivalence relation.
3. To demonstrate a function which is not one – one but is onto.
4. To demonstrate a function which is one – one but not onto.

PHYSICS

1. Why is the potential inside a hollow spherical charged conductor constant and has the same value as on its surface?
2. An electrostatic field line cannot be discontinuous. Why?
3. "For any charge configuration, equipotential surface through a point is normal to the electric field." Justify.
4. Two-point charges q and $-2q$ are kept 'd' distance apart. Find the location of the point relative to charge ' q ' at which potential due to this system of charges is zero.
5. An electric dipole is placed in a uniform electric field E with its dipole moment p parallel to the field. Find (i) the work done in turning the dipole till its dipole moment points in the direction opposite to E . (ii) the orientation of the dipole for which the torque acting on it becomes maximum.
6. A parallel plate capacitor is charged to a potential difference V by d.c. source and then disconnected. The distance between the plates is then halved. Explain with reason for the change in electric field, capacitance and energy of the capacitor.
7. What happens to capacitance of capacitor when a copper plate of thickness one third is of the separation between the plates is introduced in the capacitor.
8. N identical spherical drops charged to the same potential ' V ' is combined to form a big drop. Find the potential of the new big drop formed.
9. In the electric field of a point charge ' q ', the four points A, B, C and D are equidistant from q , however $AB > AC > AD$. Calculate the work done in taking a unit charge along AB, AC and AD
10. Three identical charges each $+q$ are placed at the corners of an equilateral triangle of side d cm. Calculate the force on a $+ve$ charge $+2q$ at the centroid of the triangle.
11. A $4\mu F$ capacitor is charged by a $200 V$ supply. The supply is then disconnected and the charged capacitor is connected to another uncharged $2\mu F$ capacitor. How much electrostatic energy of the first capacitor is lost in the process of attaining the steady situation?
12. You are given an isolated parallel plate capacitor of capacitance C charged to a potential difference V . What will happen to the following when separation distance between the plates is doubled with the help of insulating handle attached to the plates: (i) charge on the plates (ii) potential difference across the plates (iii) energy stored by the capacitor.
13. The plates of a parallel plate system are charged up to $100V$. A 4 mm thickness dielectric slab is inserted between the plates. Then to maintain the same potential difference, the distance between the systems plates are increased by 2 mm. find the dielectric constant.
14. Consider a uniform electric field $E = 3 \times 10^3 \hat{i}$ N/C. (a) What is the flux of this field through a square of 10 cm on a side whose plane is parallel to the yz plane? (b) What is the flux through the same square if the normal to its plane makes a 60° angle with the x -axis?
15. What is the net flux of the uniform electric field $E = 3 \times 10^3 \hat{i}$ N/C through a cube of side 20 cm oriented so that its faces are parallel to the coordinate planes?
16. Careful measurement of the electric field at the surface of a black box indicates that the net outward flux through the surface of the box is 8.0×10^3 Nm²/C. (a) What is the net charge inside the box?
(b) If the net outward flux through the surface of the box were zero, could you conclude that there were no charges inside the box? Why or Why not?

CHEMISTRY

- (a) If Solubility product of CuS is 6×10^{-16} , Calculate the maximum molarity of CuS in aqueous solution.

(b) Why excess intake of common salt is not advised to person suffering from High Blood pressure.

(c) Suggest type of intermolecular attractions present in I_2 and CCl_4 , Methanol and acetone.
- (a) What is the value of vant Hoff factor i for $K_4[Fe(CN)_6]$

(b) The preservation of fruits by adding concentrated sugar Solution protect against bacterial action.

(c) when 2 gram of benzoic acid is dissolved in 25 g of benzene, the experimentally determined molar mass is always greater than the true value.

(d) H_2S is a toxic gas with rotten egg smell is used for qualitative analysis. If solubility of H_2S in water at STP is 0.195m, calculate Henrys constant.
- (a) Determine the Osmotic pressure of a solution prepared by dissolving 25 mg of K_2SO_4 in 2 L water at $25^\circ C$, assuming to be completely dissociated. (at mass of $K=39$ and $S=32$)

(b) Give one example of Maximum and Minimum boiling Azeotrope.
- (a) What will be the Osmotic pressure of 58.5 g/l of NaCl. (at mass of $Na=23$ and $Cl =35.5$)

(b) Define Reverse Osmosis with one use.

(c) Why 0.9 % NaCl is used as intravenous liquid and is administered to human body.
- (a) write Units of Ebullioscopic constant and write its definition.

(b) Why aquatic species are more comfortable in cold water than in warm water.

(c) Give formula of Raoult's law with graphs of Positive and negative deviation.
- Three electrolytic cells A, B and C containing $ZnSO_4$, $CuSO_4$ and $AgNO_3$ are connected in series. A steady current of 1.5 amperes is passed till 1.45 g of Ag was deposited. How long did the current flow, what mass of zinc and copper got deposited.
- Draw a neat diagram of Dry cell. Lead storage battery and fuel cell. Also write their Anodic and cathodic reactions.
- What are concentration cells. Draw the diagram and write chemical reactions.
- write the Nernst equation for the following and calculate E_{cell} . $Zn(s)/Zn(0.004M)//Cu(0.200M)/Cu(s)$.
- Write electrolysis for the aq $AgNO_3$ containing Platinum electrodes.

BIOLOGY

1. Investigatory project based on class 12 syllabus as prescribed by CBSE.
2. Solve the NCERT Questions from the topics completed.

BIOTECH

1. DNA Detective Timeline

Create a colourful timeline showing major discoveries leading to recombinant DNA technology.

Include:

- Discovery of DNA structure
- Restriction enzymes
- Plasmids
- Recombinant DNA formation
- PCR invention
- Human insulin production
- Human Genome Project
- Gene therapy

NOTE: Mention important scientists

2. Flowchart Challenge

Prepare a large flowchart showing steps of recombinant DNA technology.

Include:

- Isolation of DNA
- Cutting by restriction enzymes
- Amplification using PCR
- Ligation into vector
- Transformation into host
- Selection of transformants
- Expression of desired gene
- Product recovery

Use arrows, symbols, and colour coding.

3. Biotechnology News Board

Collect and paste 3 recent biotechnology-related news articles.

4. Research Task

Write a short article (1–2 pages) on:

“Should Genetic Engineering Have Limits?” Discuss:

- Benefits
- Risks
- Ethical issues
- Future applications

5. Design a futuristic biotech product and explain:





- Its working,
- Benefits,
- And impact on society.
 - Examples:
- Disease-detecting smart bacteria,
- Edible vaccines,

Personalized medicine chips.

HISTORY

Project Work (Internal Assessment – 20 Marks)

As per CBSE guidelines, students must prepare one detailed project based on the prescribed themes. The syllabus includes ancient, medieval, and modern Indian history topics such as the Harappan Civilization, Bhakti-Sufi traditions, Mughal agrarian system, Revolt of 1857, Gandhian movement, and Constitution making.

| | |
|---|--|
|  Objective <ul style="list-style-type: none">• Develop historical enquiry and research skills• Understand global civilizations and their impact• Enhance analytical and presentation abilities• Promote independent learning and creativity• Connect theory with real-life examples• Improve presentation and project-writing skills |  Instructions for Students <ul style="list-style-type: none">• Choose any ONE topic from the list below• Project must be handwritten (20–25 pages)• Include maps, diagrams, pictures, and timelines• Add case studies, sources, and illustrations• Submit in a well-decorated file with proper format• Use NCERT textbook as primary source |
|  Compulsory Project Format <p>A. Cover Page B. Certificate C. Acknowledgement D. Index E. Introduction F. Main Content (with headings/subheadings) G. Case Studies / Maps / Pictures H. Conclusion I. Bibliography</p> |  Assessment Criteria <ul style="list-style-type: none">• Content Accuracy & Research- 6• Presentation & Creativity- 4• Analysis & Understanding- 4• Viva Voce & File Work- 4+2=6• Total-Marks 20 |

Suggested Project Topics

Ancient India (Themes in Indian History – Part I)

- **Harappan Civilization:-**(Town planning, trade, seals, decline theories)
- **Early States and Economies:-**(Mauryan Empire, Ashoka's policies, inscriptions)
- **Kinship, Caste and Class:-**(Social structure using Mahabharata as source)
- **Religious Developments:-**(Buddhism, Jainism, stupas, temples)

Medieval India (Themes in Indian History – Part II)

- **Travellers' Accounts:** - (Ibn Battuta, Al-Biruni, Francois Bernier)
- **Bhakti and Sufi Movements:** - (Teachings, social impact, regional traditions)
- **Vijayanagar Empire:-**(Administration, architecture, Hampi)
- **Mughal Agrarian System:-**(Zamindars, peasants, revenue system)

Modern India (Themes in Indian History – Part III)

- **Colonialism and Rural Society:-**(Indigo revolt, British policies)
- **Revolt of 1857:-**(Causes, leaders, consequences)
- **Mahatma Gandhi and National Movement:** - (Non-Cooperation, Civil Disobedience, Quit India)

Framing of Indian Constitution: - (Constituent Assembly debates, key features)

GEOGRAPHY

Prepare an A3 file and write down the following points taking a reference from NCERT book.

A. Data- It's sources and compilations

- What is Data?
- Need for Data
- Sources of Data
- Processing of Data
- Index Number

B. Graphical Representation of Data

- General rules for drawing Graph Maps and Diagrams.

Draw Choropleth Map and Dot Map using the Political map of India. (Reference NCERT)

ECONOMICS

1. Direct tax is a tax which is imposed on
 - a) Corporations only
 - b) None of these
 - c) Individuals only
 - d) Individuals and corporations
2. An example of a direct tax is
 - a) Entertainment tax
 - b) Sales tax
 - c) VAT
 - d) Income tax
3. The major source of Revenue receipts for the government is not
 - a) Tax Revenue
 - b) Income tax
 - c) Wealth tax
 - d) Profits
4. The policies useful to reduce inequalities of income are the
 - a) Monetary policies
 - b) Public distribution policies
 - c) Budgetary policies
 - d) Foreign policies
5. Budgetary policies are implemented by the
 - a) Foreign sector
 - b) Finance Ministry
 - c) Government
 - d) Private sector
6. Capital Receipts
 - a) Create liability for the private sector
 - b) Create liability for the government
 - c) Do not create liability for the private sector
 - d) Do not create liability for the government
7. Disinvestment is a
 - a) Capital Expenditure
 - b) Revenue Expenditure
 - c) Capital Receipts
 - d) Revenue Receipts
8. Define a Budget.
9. What are the two types of taxes?
10. What are the main items of Capital Receipt?
11. What are the four different concepts of Deficits?
12. Give two examples of Developmental Expenditure.
13. Define Surplus Budget.
14. Give two examples of Non – Developmental expenditures.
15. What are the two types of Revenue Receipts?

Short Answer Questions (3/4 Marks)

16. Define Direct taxes and Indirect taxes. Also give two examples of each.
17. What are the three major ways of Public Expenditure?
18. Explain the four different concepts of Budget deficit.
19. Explain the objectives of the Government Budget.
20. What are the Non-Tax Revenue receipts?

Long Answer Questions (6 Marks)

21. What is a balanced government budget? Explain the multiplier effect of a balanced budget.
22. Explain the objectives of resource allocation and income distribution in a government budget.
23. How is tax revenue different from administrative revenue?
25. Explain the concept of fiscal deficit in a government budget. What does it indicate?

COMPUTER SCIENCE

Find the output of the following code fragment:

| | | |
|---|---|---|
| <pre>s1="SQP-25" s2="" i=0 while i<len(s1): if s1[i]>='0' and s1[i]<='9': Num=int(s1[i]) Num-=1 s2=s2+str(Num) elif s1[i]>='A' and s1[i]<='Z': s2=s2+s1[i+1] else: s2=s2+'^' i+=1 print(s2)</pre> | <pre>S = "LOST" L = [10, 21, 33, 4] D={} for I in range(len(S)): if I%2==0: D[L.pop()] = S[I] else: D[L.pop()] = I+3 for K,V in D.items(): print(K,V,sep="*")</pre> | <pre>def Exam2026(given): new = 0 while given: if new % 2: new += given % 10 else: new += given % 5 print(new, end='-') given //= 10 Exam2026(123456)</pre> |
| <p>Write the output of the following code :</p> <pre>def Exam2026(given): new=[] for ch in given[1:-1]: if ch.isupper(): new.reverse() elif ch not in new: new.append(ch) elif ch in new: new.pop() print(new) Exam2026("Gold-24Medals") OR</pre> | <pre>d = {"apple": 15, "banana": 7, "cherry": 9} str1 = "" for key in d: str1 = str1 + str(d[key]) + "@" + "\n" str2 = str1[:-1] print(str2)</pre> | |

II) Answer the following questions:

TOPIC: USER DEFINED FUNCTION

i) Answer following questions with appropriate example:

- Positional and Keyword argument
- nonlocal and global keyword
- What is the use of return keyword?

TOPIC: EXCEPTION HANDLING

d) Give appropriate example to show the use of 'raise' and 'assert' keyword.

e) Write Python code to show following exceptions:

- TypeError
- ValueError
- AttributeError
- KeyError
- IndexError
- ModuleNotFoundError
- ZeroDivisionError

d) Find the output of the following program code:

i)

```
x=5
def fun(a,b=10):
    global x
    for I in range(a,b):
        x+=i
    return x
print(fun(4))
print(fun(10,15))
```

ii)

```
def fl(a,b):
    C=10
    A+=b+c
```

```

b-=c
print(a,b,c)
def f2(n):
    nonlocal c
    while n:
        c+=n%10
        n//=10
    else:
        return c
c=f2(543)
print(c)
f1(15,25)

iii)
s='ENCYCLOPEDIA'
def prm(n=2):
    st=''
    for I in range(len(s)-1,n,-1):
        st=st+s[i].lower()
    return st
print(prm())
print(prm(3))

iv)
s='CbsE@AaisCE23-24'
def fun(lst):
    x=0
    while x<len(s):
        if s[x].isalpha():
            if s[x].islower():
                lst.append(s[x].upper())
            elif s[x].isupper():
                lst.append(s[x+1])
        elif s[x].isdigit():
            lst.append(chr(ord(s[x])+1))
        else:
            lst.append('#')
        x+=1
    else:
        return lst

#Main Block
lst=fun(list(s))
print(lst)

v)
def outer():
    x='welcome'
    def inner():
        x='goodbye'
    inner()
    print('x=',x)
outer()

```

```
vi)
def outer():
    x='welcome'
    def inner():
        nonlocal x
        x='goodbye'
    inner()
    print('x=',x)
outer()
```

PROGRAMMING

- A) Write a Python function that displays all the words containing @email from a text file "Emails.txt".
 - B) Write a Python function that finds and displays all the words longer than 5 characters from a text file "Words.txt".
 - C) WAF to accept a word as argument and replace all its vowels in capital letter.
 - D) WAP to enter a sentence and display words not containing any vowels.
- WAP to display second largest word(s) present in a sentence.

INFORMATION PRACTICES

Q.1- Given the following Series1

| | |
|---|-----|
| A | 100 |
| B | 200 |
| C | 300 |
| D | 400 |
| E | 500 |

Write the command to create above Series and then double the value in series and store in another series named Series2

Q.2- Consider a given Series, Series1:

| | |
|-----|-----|
| 200 | 700 |
| 201 | 700 |
| 202 | 700 |
| 203 | 700 |
| 204 | 700 |

Write a program in Python Pandas to create the series and display it.

Q.3- Consider the following Series object, s

| | |
|---------|----|
| IP | 95 |
| Physics | 89 |
| Chem | 92 |
| Math | 95 |

- Write the Python syntax which will display only IP.
- Write the Python syntax to increase marks of all subjects by 10.

Q.4- Consider a given series: SQTR

| | |
|------|-------|
| QTR1 | 50000 |
| QTR2 | 65890 |
| QTR3 | 56780 |
| QTR4 | 89000 |
| QTR5 | 77900 |

Write a program in Python Pandas to create and display the series.

Q5- What will be the output produced by the following programming statements 1 & 2?

```
import pandas as pd
S1=pd.Series(data=[31,41,51])
print(S1>40)          -->Statement1
print(S1[S1>40])     -->Statement2
```

Q.6- Given two series S1 and S2

| S1 | S2 |
|------|------|
| A 39 | A 10 |
| B 41 | B 10 |
| C 42 | D 10 |
| D 44 | F 10 |

Find the output for following python pandas statements?

- $S1[:2]*100$
- $S1 * S2$
- $S2[::-1]*10$

Q.7- Consider the following Series object, "company" and its profit in Crores

| | |
|----------|-----|
| TCS | 350 |
| Reliance | 200 |
| L&T | 800 |
| Wipro | 150 |

- Write the command which will display the name of the company having profit>250.
- Write the command to name the series as Profit.

Q.8- Consider two objects a and b. a is a list whereas b is a Series. Both have values 10,20,25,50.

What will be the output of the following two statements considering that the above objects have been created already

| | |
|----------------------------|----------------------------|
| a. <code>print(a*2)</code> | b. <code>print(b*2)</code> |
|----------------------------|----------------------------|

- Q.9- Given a Pandas series called Sample, the command which will display the last 3 rows is .
 a. print(Sample.tail(3)) b. print(Sample.Tail(3)) c. print(Sample.tails(3)) d. print(Sample.Tails(3))
- Q.10- What will be the output of the following code?

```
import pandas as pd
s = pd.Series(6,index=range(0,5))
print(s)
```
- Q.11- What will be the output of the following code?

```
import pandas as pd
import numpy as np
s = pd.Series(np.arange(10,50,10))
print(s)
print (s.ndim)
print(s.shape)
print(len(s))
```
- Q.12- Consider the following Series 's'-

| | |
|---|------|
| 0 | 4.0 |
| 1 | 5.0 |
| 2 | 7.0 |
| 3 | NaN |
| 4 | 1.0 |
| 5 | 10.0 |

 dtype: float64
 (i) Write a Python code to add 1 to all the elements.
 (ii) Write a code to replace all NaN with 0.
- Q.13- Create a Series object S1 using a python range function for the given values [2,4,6,8] and default indices.
- Q.14- Write the output of the following code fragment.

```
import pandas as pd
s1=pd.Series(200,index=range(2,13,2))
print(s1)
```
- Q.15- Write the output of the following code fragment.

```
import pandas as pd
s1=pd.Series(range(2,11,2), index=[x for x in "abcde"])
print(s1)
```
- Q.16- Write the output of the following code fragment.

```
import pandas as pd
import numpy as np
x=np.arange(10,15)
s3=pd.Series(index=x, data=x*2)
s4=pd.Series(x**2,x)
print(s3) print(s4)
```
- Q.17- Sequences section and contribution store the section name ('A','B','C','D','E') and contribution (8900,8700,7800,6500,NaN) for charity. Your school has decided to donate more contribution by each section, so donation has been doubled. Write code to create series object that stores the contribution amount as the values and section name as indexes with data type as float32.
- Q.18- Consider a series object s 10 that stores the number of students in each section of class 12 as shown below.
 First two sections have been given task for selling tickets @ Rs.100/- per ticket as a part of social experiment. Write code to create the series and display how much section A and B have collected.
- | | |
|---|----|
| A | 39 |
| B | 31 |
| C | 32 |
| D | 34 |
| E | 35 |

Q.19- Consider the Series object s12 that stores the contribution of each section, as shown below:

- A 6700
- B 8000
- C 5400
- D 3400

Write code to modify the amount of section 'A' as 8800 and for section 'C' and 'D' as 7700.
Print the changed object.

Q.20- Consider the following Series s3-

- a 1.5
- b 3.0
- c 4.5
- d 6.0
- e 7.5

Now create the above series and find the output of the following commands

- i) `print(s3+3)` ii) `print(s3*2)`
- iii) `print(s3>3.0)` iv) `print(s3[s3>3.0])`

Q.21- Consider the Series object s12 that stores the contribution of each section, as shown below:

- A 6700
- B 8000
- C 5400
- D 3400

Write code to create the series and display those sections that made the contribution more than Rs. 5600/-

Q.22- Number of students in class 11 and 12 in three streams('Science', 'Commerce' and 'Humanities') are stored in two series objects c11 and c12. Write code to find total number of students in class 11 and 12 , stream wise.

Q.23- Consider the Series object s12 that stores the contribution of each section, as shown below:

- D 6700
- A 8000
- B 5400
- C 3400

- i) Write code to create the series and display all its values sorted in descending order.
- ii) Write code to display all its indices sorted in ascending order.

Q.24 What is the output of the following program:

```
import pandas as pd
import numpy as np
data=np.array(['Mon','Tue','Wed','Thu','Fri','Sat','Sun'])
s=pd.Series(data)
print(s[:4])
print(s[-4:])
```

Q.25 What is the output of the following program:

```
import pandas as pd
import numpy as np
data=np.array(['Mon','Tue','Wed','Thu','Fri','Sat','Sun'])
s=pd.Series(data, index=[101,102,103,104,105,106,107])
print(s[[103,105,107]])
```

MySQL:

Q26.

(a) Himanshu is the Sales Manager of a company who is keeping record of sale made by different salesman in the SALES table with the following attributes

SID – stores a unique ID for each Salesman

Name – stores name of the Salesman

City – stores the city where sale is made

Amount – stores amount of sale

SALES

| SID | Name | City | Amount |
|------|-------|--------|--------|
| S001 | Jiten | Ranchi | 15000 |
| S002 | Amar | Patna | 90000 |
| S005 | Param | Gaya | 54000 |
| S004 | Bikas | Rajgir | 30000 |

Help Himanshu by writing SQL query to do the following tasks

- Add a new record with values ('S003', 'Ashok', 'Tata', 80000)
- Display the cities starting with the letter 'R'
- Display name of salesman who have made sale more than 50000
- Display the average sale made by all the salesman

Q.27

TEACHER

| TID | TName | DESIG | DOJ |
|-----|--------|-------|------------|
| 101 | Alok B | PGT | 2024-12-10 |
| 102 | Sima S | TGT | 2023-10-15 |
| 103 | Rita H | PGT | 2025-06-24 |
| 104 | Ravi C | NULL | 2024-07-03 |
| 105 | Mina T | TGT | 2025-01-20 |

Help Computer Operator of the school to find output of the SQL queries

- SELECT NAME, YEAR(DOJ) FROM TEACHER WHERE DESIG='TGT'
- SELECT COUNT(*) 'TEACHER STRENGTH' FROM TEACHER
- SELECT LEFT(TNAME, 1), RIGHT(TNAME, 1) FROM TEACHER WHERE YEAR(DOJ)=2023
- SELECT DESIG, COUNT(DESIG) FROM TEACHER GROUP BY DESIG

Q.28. Define the following terms with appropriate examples:

- Data Redundancy
- Data Inconsistency
- Integrity Constraints
- Primary Key and Unique Key
- Degree & Cardinality
- DDL & DML

Q.29

(b) Consider the CUSTOMER table give below

| CID | Name | Address | Contact | Bill_Amount |
|-----|--------|------------|------------|-------------|
| C01 | Harish | 2, T Nagar | 9437634213 | 4045 |
| C02 | Suman | 5, Haripur | 9337829765 | 2563 |
| C03 | Raghav | 10, Allepy | 9437868206 | 1042 |
| C04 | Preeti | 5, T Nagar | 9861334243 | 3675 |

Write SQL query to do the following

- (i) Display customer names in capitals, with number of letters in them
- (ii) Display the house number from address of employees
- (iii) Display Name and Contact number of customers in ascending order of their names
- (iv) Display Bill amount rounded to nearest hundred
- (v) Display the total bill amount of all customers

Q.30

I. Write an SQL statement to create a table named PURCHASE, with the following specifications:

| Column Name | Datatype | Constraint |
|-------------|-------------|-------------|
| CNO | Varchar(5) | Primary Key |
| CNAME | Varchar(15) | |
| CITY | Varchar(10) | |
| QUANTITY | Numeric | Not Null |
| DOP | Date | |

II. Write an SQL Query to insert the following data into the PURCHASE table: C01, Gautam Kumar, Sirsa, 20, 2025-04-10

Q.31.

(A) Consider the following tables:

Table 1: LOAN

| LOAN_NO | BRANCH_NAME | AMOUNT |
|---------|-------------|--------|
| Q-21 | DELHI | 8000 |
| Q-22 | AGRA | 10000 |
| Q-23 | MATHURA | 25000 |

Table 2: CUSTOMER

| CUSTOMER_NAME | LOAN_NO |
|---------------|---------|
| KOMAL | Q-22 |
| HARISH | Q-21 |

Write appropriate SQL queries for the following:

- I. To list names of all customers with their Amount in ascending order
- II. Display name of all branches in uppercase where loan amount taken by customer is less than 20000.
- III. Display the names of customers along with their branch name and amount.

Q.32

a) Consider the following tables: Table 1: BIKES,

| Bid | Bikename | Bandname | Biketyp | Cost |
|------|-------------|----------|---------|---------|
| 1001 | Dream Racer | Speedo | Super | 1980000 |
| 1002 | Splendid | Indiana | NULL | 50000 |
| 1003 | Silver Wing | Indiana | Touring | 2300000 |
| 1004 | Astor | Victory | Normal | 1700000 |

Table 2: TRANSACTION,

| Bid | District | TotalSold |
|------|-----------------|-----------|
| 1001 | Tirunelveli | 205 |
| 1002 | Tiruchirappalli | 508 |
| 1003 | Kanyakumari | 306 |
| 1004 | Madurai | 208 |

a) Answer the following:

- i) Write an SQL query to list all bikenames and cost of bikes with Brandname "Indiana" sorted by Cost in descending order.
- ii) Write an SQL query to display the names of all bikes in lowercase where Biketype is 'Touring'.
- iii) Write an SQL query to display the Bikename, District, and TotalSold for each bike
- iv) Which attribute in Table : BIKES can be considered as the Primary Key? Justify.
- v) Write an SQL query to add a new column AreaManager of type VARCHAR(20) in the TRANSACTION table.
- vi) Write an SQL query to count the total number of bikes for each Brandname.

ACCOUNTS

Determination of Sacrifice and Gain

1. Janvi, Pakhi and Khushi are partners sharing profits and losses in the ratio of 5:4:3. They decided to change their profit-sharing ratio to 2:2:1 with effect from 31st March, 2024. Calculate sacrifice and gain for three partners.
2. Prateek, Sudhir, and Sachin were partners sharing profits in the ratio of 5:3:2. They now decide to change their profit-sharing ratio to 3:2:1. Compute sacrifice and gain of the partners.
3. Amit Sumit and Namit are partners sharing profits and losses in the ratio of 4:3:2. They agreed that in future Sumit will get 1/4th share in profit. Calculate the new profit-sharing ratio and sacrifice/gain of the partners.

Treatment of Goodwill

4. Mridul and Nikunj are partners sharing profits and losses in the ratio of 3:1. On 1st April, 2024, they decided to share future profits and losses in the ratio of 5:3. Goodwill of the firm was valued at 64,000. Pass necessary Journal Entry for the treatment of goodwill.
5. Ashu, Vasu and Chetan were partners in a firm sharing profits in 3:2:1 ratio. They decided to share the profits in future in 5:3:2 ratio. For this purpose, the goodwill of the firm was valued at 60,000. Pass an adjustment entry for the treatment of goodwill.
6. Calculate goodwill:
 - a) Nisha and Risha share profits in 3:1. They change ratio to 1:3. For goodwill calculation: Average capital employed = ₹8,00,000. Normal rate of return = 12%. Profits of last 4 years: ₹1,20,000; ₹1,05,000; ₹1,35,000 (includes profit on sale of asset ₹25,000); ₹1,10,000. Goodwill = 4 years' purchase of super profit. Calculate goodwill and pass journal entry.
 - b) Tarun and Varun share profits in 5:3. They change to 3:5. Calculate goodwill using both variants of the
Capitalisation Method:
Variant A — Capitalisation of Average Profit: Average profit = ₹90,000; Normal rate = 15%
Variant B — Capitalisation of Super Profit: Capital employed = ₹4,00,000; Normal rate = 15%;
Average profit = ₹90,000
Pass journal entry for goodwill adjustment after calculating using Variant A.
7. Tvisha and Divya were partners in a firm carrying on a tiffin service in Hyderabad. Divya noticed that a lot of food is left at the end of the day. To avoid wastage, she suggested that the same may be distributed among the needy. Tvisha wanted it to be mixed with the food to be served the next day. Tvisha then gave a proposal that if her share in the profit is increased, she will not mind free distribution of leftover food. Divya happily agreed. So, they decided to change their profit-sharing ratio to 3:2 with immediate effect. On the date of change in the profit-sharing ratio, the goodwill of the firm was valued at 50,000. Pass the necessary adjustment entry for the treatment of goodwill.
8. Sameer, Nikhil and Aditiya are partners sharing profits and losses in ratio of 3:2:1. With effect from 1 April, 2024, it was decided to change the profit-sharing ratio to 4:3:2. Goodwill is to be valued at 2 years purchase of average of 3 years' profit. The profits were: 95,000, ₹85,000 and ₹90,000. Pass necessary Journal Entry for goodwill, assuming that the firm adopted Fixed Capital Method.
9. Roohi, Noori and Pari are partners sharing profits and losses in the ratio of 5:3:2. They now decided to share future profits and losses equally. The goodwill of the firm has been valued at 2,10,000. Show Journal Entries under each of the following alternative cases:
Case 1. When no goodwill appears in the books.
Case 2. When goodwill appears in the books at 1,80,000 and it is agreed among the partners that existing goodwill is written off.

10. Avni and Chhavi are partners sharing profits and losses in ratio of 1:2. With effect from 1st April, 2024, they agreed to change their profit-sharing ratio. The Partnership Deed provides that in the event of any change in profit-sharing ratio; the goodwill should be valued at three years' purchase of the average of last four years profits. The profits and losses of the preceding four years were: 2020-21: 40,000; 2021-22: 25,000; 2022-23: 32,000; 2023-24: 23,000. The partners passed the following Journal Entry to give effect to the adjustment for goodwill:

| DATE | PARTICULARS | LF | DEBIT (Rs) | CREDIT (Rs) |
|---------------|---|----|------------|-------------|
| 2024 APR 1 | Chhavi's capital a/c To Anvi's capital a/c (being adjustment made for goodwill due to change in profit-sharing ratio) | Dr | 15,000 | 15,000 |

Calculate the individual partner's gain or sacrifice due to change in ratio and new profit-sharing ratio.

Treatment of Reserves, Accumulated Profits and Losses

11. Palak and Navya are partners sharing profits and losses in the ratio of 3:2. On 01.04.2024, they decide to admit Sneha as a partner for 1/6th share in profits. On that date, "Workmen Compensation Reserve" appears at in the Balance Sheet ₹ 50,000. Show the accounting treatment in each of the following alternative cases:

Case I: If there is no other information or if there is no claim.

Case II: If a claim on account of Workmen compensation is estimated at 20,000

Case III: If a claim on account of Workmen compensation is estimated at ₹50,000

Case IV: If a claim on account of Workmen compensation is estimated at ₹60,000.

12. Yash and Tanmay are partners sharing profits and losses in the ratio of 3:2. On 01.04.2024, they decide to admit Manik as a partner for 1/6th share in profits. An extract of their Balance Sheet as at 31st March, 2024 is as follows:

| LIABILITIES | AMT | ASSETS | AMT |
|--------------------------------|--------|-------------|----------|
| Investment Fluctuation Reserve | 10,000 | Investments | 2,00,000 |

Show the accounting treatment in each of the following alternative cases:

Case I: If no other information is given or market value of investments is ₹2,00,000.

Case II: If the market value of investments is 1,94,000.

Case III: If the market value of investments is ₹ 1,90,000.

Case IV: If the market value of investments is ₹ 1,70,000.

Case V: If the market value of investments is ₹ 2,20,000.

13. Ankit and Namit are partners in a firm sharing profits and losses in the ratio of 3:2. They decided to share future profits equally. On the date of change in the profit sharing ratio, the Profit and Loss Account showed a debit balance of 10,000 and General Reserve of ₹ 40,000. Record the necessary Journal Entries for the distribution of the balance in the Profit and Loss Account and General Reserve before the change in the profit sharing ratio.
14. Sangeeta, Deepa, Ajay and Lalit were partners in a firm sharing profits and losses in the ratio of 3:2:4:1. They decided to share profits and losses in the ratio of 5:1:2:2 with effect from 1st April, 2022. On this date, the goodwill of the firm was valued at 5,20,000, General Reserve appeared in the books at ₹ 1,00,000. Pass necessary Journal Entries for the above transactions. Show your workings clearly.
15. Satish and Taruna were partners in a firm sharing profits and losses in the ratio of 3:2. From 1st April, 2018 they decided to share profits equally. On that date, their Balance Sheet showed a credit balance of ₹35,000 in workmen compensation fund and Rs 40,000 in general reserve. The goodwill of the firm on that date was valued at ₹ 50,000. The firm accepted a claim of ₹40,000 for workmen compensation, Pass necessary Journal Entries for the above transactions on the reconstitution of the firm.

16. Reena, Heena and Meena are partners sharing profits and losses in the ratio of 5:3:2. With effect from April, 2024, they decided to share profits and losses in the ratio of 2:2:1. On that date, their Balance Sheet showed the following balances:

Profit and Loss (Dr.) 25,000

General Reserve 50,000

Workmen Compensation Reserve 5,000

Advertisement Suspense A/c 10,000

Pass necessary Journal Entries.

17. 16. Jai and Veeru were partners sharing profits and losses in the ratio of 2:1. On 31st March, 2024, their Balance Sheet showed a General Reserve of 60,000. It was decided that in future they will share profits and losses in the ratio of 3:2. Pass necessary Journal Entry in each of the following alternative cases:

(i) If they do not want to show General Reserve in the New Balance Sheet.

(ii) If they want to show General Reserve in the New Balance Sheet.

18. Laxmi, Durga and Parvati are partners sharing profits and losses in the ratio of 5:3:2. With effect from 1st April, 2024, they agreed to share profits and losses in the ratio of 2:2:1. They decided to record the effect of the following, without affecting their book values:

(i) General Reserve ₹45,000

(ii) Profit and Loss Account (Dr.) ₹12,000

(iii) Workmen Compensation Reserve ₹18,000

(iv) Investment Fluctuation Reserve ₹14,000

(v) Advertisement Suspense Account ₹3,000

Pass an adjustment entry, assuming no liability is expected on account of workmen compensation and market value of investments is also assumed to be equal to the book value.

Revaluation account.

19. Kavya and Divya share profits in 3:1. They agree to share equally from 1st April 2024. On that date:

(i) Machinery (Book value ₹80,000) revalued at ₹95,000

(ii) Stock reduced by 10% (Book value ₹60,000)

(iii) Provision for doubtful debts to be created at 5% on debtors of ₹40,000

(iv) An unrecorded liability of ₹8,000 to be recorded

Prepare Revaluation Account and show the effect on capitals.

20. Ram, Shyam and Mohan share profits in 5:3:2. They change to 2:2:1. On the date of change:

(i) Land appreciated by ₹50,000

(ii) Plant to be depreciated by 15% (Book value ₹1,20,000)

(iii) An unrecorded asset (computer) worth ₹12,000 to be recorded

(iv) Outstanding salary ₹9,000 not yet provided

(v) Bad debts ₹6,000 to be written off

Prepare Revaluation Account and show distribution of profit/loss.

Also solve the additional questions of chapter 2 'Change in Profit sharing ratio among the existing partners' given in the textbook.

BUSINESS STUDIES

CASE-BASED QUESTIONS

- Gemini Circus is organising shows internationally for the last thirty years. Their shows have been successful across the globe. Of late, their shows are not as popular as they were in the past. After analysing, they are thinking of bringing necessary changes in their shows to gain popularity.

 - Identify which characteristics of management is reflected in above situation? Give reasons.
 - Which function of management is indicated here?
- ABC Ltd. is a renowned company in Kirti Nagar market of Delhi for manufacturing quality furniture. From last 20 years, ABC Ltd. has occupied the No. 1 position in the market. It also specialised in imported furniture besides domestic one. It manufactures for both commercial and residential/domestic use. For this, company has hired two managers one each for commercial department and residential department. Mr. Sharma, who is the in charge of manufacturing furniture for commercial purpose, got the target of manufacturing 100 pieces of office tables from a corporate house. To achieve this target, Mr. Sharma has to operate on double shifts due to power failure most of the time. He is able to manufacture 100 pieces of office tables but at a higher production cost. Whereas, Mr. Gupta, who is the in charge of manufacturing furniture for residential/domestic use, got the target of manufacturing 50 double beds for one Ashram in Vrindavan. Mr. Gupta concentrated more on manufacturing beds with fewer resources (i.e., cutting down the cost of production) due to which he could not achieve his target.

 - From the two, which manager is effective but not efficient? Why?
 - Name the manager who is efficient but not effective. Give reason also.
 - What should be the ideal aim of managers in given
- Kamal, Khan and Devid are partners in a firm engaged in the distribution of dairy products in Madhya Pradesh. Kamal is a holder of Senior Secondary School Certificate from Central Board of Secondary Education with Business Studies as one of his elective subjects. Khan had done his post-graduation in Hindi literature and Devid in Dairy Farming. One day there was a serious discussion between Khan and Devid regarding the nature of 'Management as a Science'. Khan argued that Management was not a science whereas Devid was of the opinion that Management was a science. Kamal intervened and corrected both Khan and Devid about the nature of Management as a Science with the help of his knowledge of Business Studies. Explain, how Kamal would have been able to satisfy both Khan and Devid.
- Ashutosh Goenka was working in 'Axe Ltd.', a company manufacturing air purifiers. He found that the profits had started declining from the last six months. Profit has an implication for the survival of the firm, so he analysed the business environment to find out the reasons for this decline.

 - Identify the level of management at which Ashutosh Goenka was working.
 - State three other functions being performed by Ashutosh Goenka.
- Sachin Computers Ltd. is a leading company in Computer Technology and IT services. The Chief Executive Officer of the company attributes the success of the Company to its managerial team spirit, which have helped to handle rapid changes in technologies and to transform threats into opportunities. Like any other business enterprise profits are important for survival and growth of Sachin Computers Ltd. The management of the company believes that a satisfied employee creates a satisfied customer, who in turn creates profits that leads to satisfied shareholders.

Identify and explain the objective of the company discussed in the above para. Also quote the line for the identified objective.

6. 'Kanpur Leather Ltd.' is the manufacturer of leather products. It is producing on large scale and its organisational structure is functional. In the production department various foremen have been employed. Each foreman has been made responsible for production, planning, implementation and control. This has led to a situation of confusion and uncertainty.

Suggest a technique of scientific management to Kanpur Leather Ltd. which may help it to effectively organise planning and its execution.

7. Karan Nath took over 'D'north Motor Company' from his ailing father three months ago. In the past, the company was not performing well. Karan was determined to improve the company's performance. He observed that the methods of production as well as selection of employees in the company were not scientific. He believed that there was only one best method to maximise efficiency. He also felt that once the method is developed, the workers of the company should be trained to learn that 'best method'. He asked the Production Manager to develop the best method and carry out the necessary training. The Production Manager developed this method using several parameters right from deciding the sequence of operations, place for men, machines and raw materials till the delivery of the product to the customers. This method was implemented throughout the organisation. It helped in increasing the output, improving the quality and reducing the cost and wastage.

Identify and explain the principles and the technique of scientific management followed by the Production Manager in the above case.

8. Draw The mind map
 - (i) Nature and significance of management
 - (ii) Principles of management

Solve all the objective questions in Chapters 1 and 2 in the book itself.

PHYSICAL EDUCATION

- PRACTICAL 1 – FITNESS TESTS ADMINISTRATION. (SAI KHELO INDIA FITNESS TEST)
- PRACTICAL 2 – PROCEDURE FOR ASANAS, BENEFITS & CONTRAINDICATION FOR EACH LIFESTYLE DISEASES. (TWO FOR EACH)
- PRACTICAL 3 – HISTORY OF THE GAME, LABELLED DIAGRAM OF FIELD AND EQUIPMENTS, MENTION ITS RULE, TERMINOLOGIES, NATIONAL & INTERNATIONAL AWARDEES, TOURNAMENTS NAME. ANYONE GAME OF YOUR CHOICE FROM IOA RECOGNISED LIST OF GAMES.

NOTE: WRITE ALL THE PRACTICAL IN YOUR PHYSICAL EDUCATION PRACTICAL COPY.

POLITICAL SCIENCE

Objective

- To develop analytical and research skills
- To understand international events and democratic processes
- To connect theory with real-life examples
- To develop 21st-century skills such as communication, cooperation, coordination, critical thinking, creativity, and collaboration to produce extended and independent work
- To improve presentation and project-writing skills

Instructions for Students

- Choose **ONE** project
- The project must be **handwritten (10–15 pages)**
- Include **maps, case studies, pictures, and diagrams**
- Use the **NCERT textbook as the primary source**
- **Prepare the project in your notebook, not in a file**

Compulsory Project Format

- A. Cover Page
- B. Certificate
- C. Acknowledgement
- D. Index
- E. Introduction
- F. Main Content (with headings and subheadings)
- G. Case Studies / Maps / Pictures
- H. Conclusion

Additional Requirements

- Create **mind maps**
- Use **real-life examples** (international relations, summits, policies)
- Add **newspaper clippings**

Topics

1. Non-Aligned Movement (1961 to present times)
2. Disintegration of the USSR with special focus on Gorbachev
3. ASEAN
4. European Union and Brexit
5. BRICS
6. How Partition became a challenge for nation-building

If you want, I can also:

- Prepare a **complete 10–15 page project** for any topic
- Make **ready-to-write certificate, acknowledgement, and index**
- Add **case studies, maps, and mind maps**

HAPPY HOLIDAY

THANK YOU