LT. COL. MEHAR LITTLE ANGELS SR. SEC. SCHOOL

WINTER BREAK HOMEWORK

CLASS XI

SUBJECT	NAME OF SUBJECT TEACHER
PHYSICS	MR. SURYA PRATAP
CHEMISTRY	MR. MD. IMRAN ZAFEER
BIOLOGY	MS. MEENU SAINI
COMPUTER SCIENCE	MS. NAVITA SAINI
MATHEMATICS	MR. JOGINDER BAJAJ
ENGLISH	MS. SHILPA ARORA
HOME SCIENCE	MS. URVINDER KAUR
PHYSICAL EDUCATION	MR. SURYA PRATAP, MR. SANDEEP
ECONOMICS	MS. PRACHI JAIN
ACCOUNTANCY	MS. TAVNEET KAUR
BUSINESS STUDIES	MR. NAVEEN
INFORMATICS PRACTICES	MS. NAVITA SAINI, MS. SWATI GARG
HISTORY	MS. KAVITA CHAUHAN
POLITICAL SCIENCE	MS. RUCHIKA BENIWAL

CHEMISTRY

Do the following questions from Textbook for class XI Chemistry part 1 Book (NCERT) in classwork notebook.

CHAPTER NO. 6: THERMODYNAMICS

Exercise – 6.5, 6.6, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18, 6.19, 6.20

BIOLOGY

Prepare an investigatory project on any topic of Human Physiology.

COMPUTER SCIENCE

1. Practice Python programs and complete your computer science practical file.

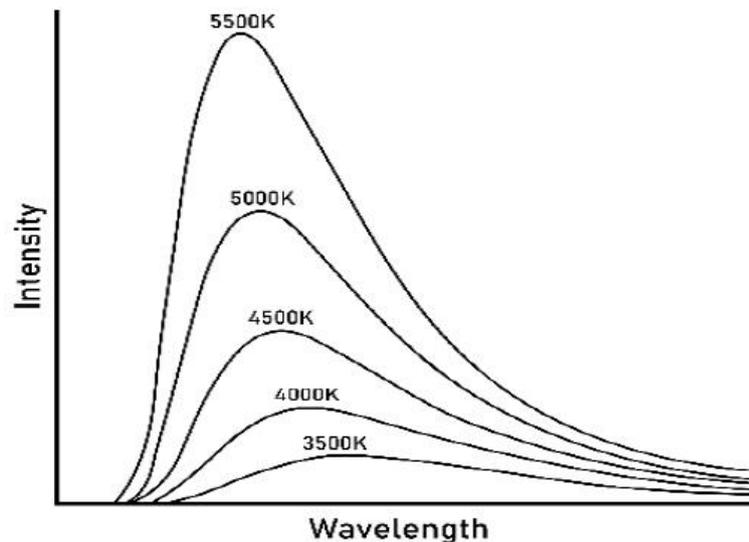2. Prepare Chapter 8– Tuples and Dictionaries in Python for the upcoming Revision Test

PHYSICS

Investigatory project on any one topic

1.To study the relation between angle of projection and range of projectile.

2.To study the loss/gain in k.E/p.E for a bouncing ball on different surfaces.

3.To study the variation in frequency and pitch of various natives.

4.To study the rate of evaporation of same volume of liquid but different surface area exposed

Assignment class 11th

1. Define **Linear, Superficial, and Cubical expansion.** Write the relationship between their coefficients (α, β, γ).

2. Why does water show **anomalous expansion**? Explain its importance for aquatic life in cold climates.

3. A brass rod and a steel rod have the same length at $0°C$. Find the difference in their lengths at $100°C$ if their coefficients of linear expansion are given.

4. Differentiate between **Conduction, Convection, and Radiation.**

5. State **Wien's Displacement Law** and explain how it helps in determining the temperature of stars.

6. State **Newton's Law of Cooling** and derive the expression for the rate of loss of heat.

7. Define **Specific Heat Capacity** and **Latent Heat.** Why is steam more dangerous than boiling water at $100°C$?

8. What is a **Black Body**? Draw the energy distribution curve for black body radiation at different temperatures.

9. State the **Zeroth Law of Thermodynamics** and explain the concept of temperature derived from it.

10. State the **First Law of Thermodynamics.** Apply it to an **Isothermal process** and an **Adiabatic process.**

11. Derive the expression for **Work Done** during an Isothermal expansion of an ideal gas.

12. Explain the difference between **Reversible and Irreversible processes** with examples.

13. State the **Second Law of Thermodynamics** (Kelvin-Planck and Clausius statements).

14. Define **Molar Specific Heat Capacities** (C_p and C_v) and derive **Mayer's Formula:** $C_p - C_v = R$.

15. What is a **Heat Engine**? Calculate the efficiency of a Carnot engine working between $227°C$ and $127°C$.

16. Explain the working of a **Refrigerator** and define its Coefficient of Performance (β).

17. State the basic **assumptions** of the Kinetic Theory of Gases.

18. Derive the expression for the **Pressure** exerted by an ideal gas: $P = \frac{1}{3}\rho v_{rms}^2$.

19. Define **Root Mean Square (RMS) Speed**, Average Speed, and Most Probable Speed. How do they relate to temperature?

20. State the **Law of Equipartition of Energy**. Calculate the internal energy of 1 mole of a Diatomic gas.

21. Define **Degrees of Freedom**. Calculate the value of γ (ratio of specific heats) for Monoatomic and Diatomic gases.

22. What is **Mean Free Path**? Write the formula and explain the factors it depends on.

23. Use KTG to explain why the pressure of a gas increases when it is heated at a constant volume.

24. Define **Simple Harmonic Motion (SHM)**. What are the essential conditions for a body to execute SHM?

25. For a particle in SHM, derive the expressions for:
   - Displacement (x)
   - Velocity (v)
   - Acceleration (a)

26. Show that for a particle performing SHM, the acceleration is directly proportional to the displacement and directed towards the mean position.

27. Derive the expression for the **Time Period of a Simple Pendulum**. On what factors does it depend?

28. Discuss the **Energy in SHM**. Prove that the Total Mechanical Energy remains constant throughout the motion.

29. A spring has a force constant k. If it is cut into two equal halves, what will be the force constant of each half?

30. Differentiate between **Free, Damped, and Forced oscillations**. What is **Resonance**? Give a real-life example.

MATHEMATICS

"Do all the questions of NCERT of chapter statistics (including examples)"

ENGLISH

Island Life in India: A Comparative Study

India has two important island groups—**Andaman & Nicobar Islands** and **Lakshadweep**—each with its own unique natural environment and way of life.

a) **Draw or paste two pictures** (one of Andaman & Nicobar Islands and one of Lakshadweep) showing their natural surroundings or lifestyle.
b) Write a **comparative paragraph (100–120 words)** highlighting **any two differences** in the lifestyle of the people based on climate, occupation, culture, or geographical location. (Use A4 size sheets)

HOME SCIENCE

1. Leaflet Preparation

Prepare four separate leaflets on the following topics:

a) Problems Faced by Consumers

b) Responsibilities of Consumers

c) Consumer Protection Act

d) Consumer Organizations

2. Learn Chapters 14 to 16 thoroughly.

3. Project Work

Prepare the Project File as per the given guidelines.

Instructions

PHYSICAL EDUCATION

Physical Fitness Activity
Maintain a daily fitness diary and record:
Warm-up exercises (5–10 min)
Any two activities: jogging, skipping, yoga, cycling, stretching, or indoor exercises
Cool-down stretches
Write date, activity, and time spent
Complete your practical file.

ECONOMICS

Write down the importance and the characteristics features of the "Folklore of Andaman and Nicobar Islands and Lakshadweep Islands"

Note:-

1) Only A4 sheets to be used.

2) Not exceeding 4 pages.

3) Creativity is highly appreciated.

4) Pictures can be pasted wherever necessary.

ACCOUNTANCY

Q1. Ascertain cost of goods sold from the following :

Indirect Expenses -15,200

Direct Expenses-18,600

Sales-1,20,000

Net Purchases-72,000

Return Inwards-12,000

Return Outwards-8,000

Closing Inventory-28,000

Opening Inventory-16,000

Q2. Net sales during the year ended 31st March, 2023 is 6,00,000. Gross profit is 25% on cost. Find gross profit and COGS.

Q3. In a burglary at the godown of Hansraj Traders on the night of 14th July, 2023, part of the stock was stolen.

From the following particulars, find out the estimated value of loss of stock by theft:

Stock on Ist April, 2023 – 60,000

Purchases from 1st April to 14th July, 2023- 4,10,000

Sales from 1st April to 14th July, 2023- 6,00,000

Stock remaining after burglary- 12,000

The normal rate of gross profit for his business is 30% of selling price.

Q4. Calculate Gross Profit, Operating Profit and Net Profit.

Opening Stock- 2,00,000

Purchases- 19,00,000

Sales- 25,00,000

Purchase Returns- 70,000

Sales Returns- 1,00,000

Wages- 80,000

Advertising- 12,000

Salaries- 1,78,000

Rent & Taxes- 62,000

Lighting- 15,000

Commission Paid- 2,400

Commission Received- 6,000

Travelling Expenses – 4,800

Office Expenses- 3,500

Interest on Long Term Loans- 22,000

Dividend on Investments- 2,800

Printing & Stationery- 3,600

Loss on sale of Machinery- 35,000

Carriage Outwards- 1,400

Loss by Theft- 25,100

Gain on Sale of Building- 50,000

Closing stock was valued at 2,50,000

(Hint – use the account method)

Q5. Given below is the Trial Balance of Gopi Chand Bros. as at 31st March, 2020. Yor are required to prepare a Trading and Profit & Loss A/c for the year ended 31st Mart 2020 and Balance Sheet as at that date-

Debit balances	Amt	Credit balances	Amt
Opening Stock	45,000	Sundry Creditors Return	22,100
Purchases	1,20,000	outwards	2,500
Return inwards	3,200	Sales	3,50,000
Carriage inwards	2,400	Capital	2,00,000
Carriage outwards	1,500	Loan from Bank	24,000
Office furniture	8,000	Discount Received	2,000
Sundry Debtors	68,000	Commission	1,600
Dock Charges	5,000		
Electric Power	10,000		
Fuel, Gas and Water	12,000		
Bad-debts	1,100		
Advertisement	25,000		
Salary	36,000		
Cash in hand	8,100		
Cash at Bank	30,000		
Motor Vehicles	58,000		
Motor Repairs	3,000		
Interest on Bank Loan	2,400		
Rent and Insurance Business	24,500		
Premises	1,06,000		
Household expenses	33,000		
	6,02,000		6,02,000

Q6. Given below is the Trial Balance of Sh. Rama Nand Sagar, as at 31st March, 2023. You are required to prepare a Trading and Profit & Loss A/c for the year ended 31st Mart 2023 and Balance Sheet as at that date-

Debit balances	Amt	Credit balances	Amt
Opening Stock	20,000	Sales	2,70,000
Purchases	80,000	Purchase Return	4,000
Sales Return	6,000	Discount	5,200
Carriage Inwards	3,600	Sundry Creditors	25,000
Carriage Outwards	800	Bills Payable	1,800
Wages	42,000	Capital	75,000
Salaries	27,500		
Plant & Machinery	90,000		
Furniture	8,000		
Sundry Debtors	52,000		
Bills Receivable	2,500		
Cash in Hand	6,300		
Travelling Expenses	3,700		
Lighting (Factory)	1,400		
Rent and Taxes	7,200		
General Expenses	10,500		
Insurance	1,500		
Drawings	18,000		
	6,02,000		6,02,000

Adjustments:-

(1) Stock on 31st March, 2019 was valued at 24,000 (Realisable Value 30,000).

(2) Wages outstanding for March, 2019 amounted to 3,000.

(3) Salaries outstanding for March, 2019 amounted to 2,500.

(4) Prepaid insurance amounted to 300.

(5) Provide depreciation on Plant and Machinery at 5% and on Furniture at 20%.

BUSINESS STUDIES

Project on an Entrepreneur

Prepare a project on any one entrepreneur (Indian) covering:

- Introduction
- Nature of business
- Type of organization
- Challenges faced
- Conclusion

Use A-4 size sheet maximum 6 to 7 pages project and make the project as creative as you can.

INFORMATICS PRACTICES

1. Practice Python programs and SQL queries on your system. Complete your IP practical file.

2. Prepare Chapter 6 – Dictionaries in Python for the upcoming Revision Test

HISTORY

Take out the printouts, solve the worksheet and paste in your History register.

WRITING AND CITY LIFE

Q1: What was the primary reason for the growth of cities in Mesopotamia?

(a) Natural fertility and abundant rainfall

(b) Highly productive agriculture and water transport

(c) Military strength and the power of kings

(d) The development of metal tools

Q2: Which of the following was the first known language of Mesopotamia?

(a) Akkadian   (b) Aramaic

(c) Sumerian   (d) Hebrew

Q3: What was the main purpose of the earliest written tablets in Mesopotamia?

(a) To record historical events   (b) To keep records of trade and transactions

(c) To create laws and decrees   (d) To document religious rituals

Q4: How did writing in Mesopotamia contribute to city life?

(a) It allowed kings to assert their power

(b) It helped in the documentation of historical events

(c) It was essential for keeping records of trade and managing the urban economy

(d) It was used for artistic expressions

Q5: What was the significance of the ?

(a) It was an important religious artefact

(b) It was a symbol of the power of kings

(c) It was a finely sculpted representation of a woman from Uruk

 (d) It represented the divine ruler of Mesopotamia

AN EMPIRE ACROSS THREE CONTINENTS

Q.1 The Roman Empire at its height covered most of Europe and large parts of:

(a) North Africa and the Fertile Crescent

(b) South America and Australia

(c) Central Asia and Antarctica

(d) South Asia and North America

Q.2 The 'Principate' was established in 27 BCE by:

(a) Julius Caesar   (b) Augustus

(c) Diocletian   (d) Constantine

Q.3 The primary writing material used for everyday records in the Roman Empire was:

(a) Stone inscriptions   (b) Parchment

(c) Papyrus   (d) Clay tablets

Q.4 The Roman Empire was permanently divided into eastern and western halves in:

(a) 27 BCE   (b) 284 CE   (c) 395 CE   (d) 476 CE

Q.5 The Third Century Crisis was characterised by nearly fifty emperors ruling in:

(a) Twenty-five years   (b) Fifty years

(c) Seventy-five years   (d) One hundred years

NOMADIC EMPIRE

Fill in the Blanks

Q1: The term "barbarian" is derived from the Greek word "_____," which meant a non-Greek. Q2: The Great Wall of China was built to defend against nomadic invasions, particularly from the _____.

Q3: Genghis Khan was born near the _____ river in the north of present-day Mongolia. Q4: Genghis Khan proclaimed himself as the "Universal Ruler" or "Great Khan" in the year _____.

Q5: The Mongol courier system known as "_____" connected distant areas of the empire. Q6: "Yasa" served as a _____ code of Genghis Khan.

Q7: The administrative regulations, including the organization of the hunt and the army, were part of the "yasa" and helped integrate the _____ regions.

Q8: The tax levied on nomads for the maintenance of the Mongol communication system was known as the _____ tax.

Assertion and Reason Based

Q1: Assertion: The term "barbarian" is derived from the Greek word "barbaros."

Reason: "Barbaros" referred to someone whose language sounded like a random noise.

(a) Both Assertion and Reason are true, and Reason is the correct explanation of the Assertion.

(b) Both Assertion and Reason are true, but Reason is not the correct explanation of the Assertion. (c) Assertion is true, but Reason is false.

(d) Assertion is false, but Reason is true.

Q2: Assertion: The Mongol courier system was known as "yam." Reason: It connected the distant areas of the Mongol empire.

(a) Both Assertion and Reason are true, and Reason is the correct explanation of the Assertion.

(b) Both Assertion and Reason are true, but Reason is not the correct explanation of the Assertion. (c) Assertion is true, but Reason is false.

(d) Assertion is false, but Reason is true.

Q3: Assertion: Genghis Khan's "yasa" served as a code of law.

Reason: It was a compilation of customary traditions of Mongol tribes.

(a) Both Assertion and Reason are true, and Reason is the correct explanation of the Assertion.

(b) Both Assertion and Reason are true, but Reason is not the correct explanation of the Assertion. (c) Assertion is true, but Reason is false.

(d) Assertion is false, but Reason is true.

Q4: Assertion: The tax levied on nomads for communication facilities was known as the "qubcur tax." Reason: Nomads paid this tax willingly for the multiple benefits it brought.

(a) Both Assertion and Reason are true, and Reason is the correct explanation of the Assertion.

(b) Both Assertion and Reason are true, but Reason is not the correct explanation of the Assertion. (c) Assertion is true, but Reason is false.

(d) Assertion is false, but Reason is true

THE THREE ORDERS

Fill in the Blanks

Q1: The division of society in medieval Europe was known as _____.

Q2: The three social categories in medieval Europe were _____, _____, and _____.

Q3: Feudalism was a system of economic, legal, political, and social relationships that existed in _____.

Q4: The Pope, the head of the Catholic Church, resided in _____.

Q5: The nobility in medieval Europe had absolute control over their _____.

Q6: Peasants who cultivated land that belonged to the lord were known as _____.

Q7: The term 'taille' referred to a direct tax paid by _____ in medieval Europe.

Q8: The development of large churches known as _____ led to the growth of small towns around them.

Assertion and Reason Based

Q1: Assertion: Feudalism developed in medieval France, England, and Italy.

Reason: Feudalism was a system of agricultural production.

(a) Both assertion and reason are true, and the reason is the correct explanation of the assertion. (b) Both assertion and reason are true, but the reason is not the correct explanation of the assertion. (c) Assertion is true, but the reason is false.

(d) Assertion is false, but the reason is true.

Q2: Assertion: The nobility in medieval Europe raised troops called 'Feudal Levies.' Reason: The nobility had absolute control over their land.

(a) Both assertion and reason are true, and the reason is the correct explanation of the assertion. (b) Both assertion and reason are true, but the reason is not the correct explanation of the assertion. (c) Assertion is true, but the reason is false.

(d) Assertion is false, but the reason is true.

Q3: Assertion: The development of cathedrals in medieval Europe led to the growth of small towns. Reason: Cathedrals were used for agricultural production.

(a) Both assertion and reason are true, and the reason is the correct explanation of the assertion. (b) Both assertion and reason are true, but the reason is not the correct explanation of the assertion. (c) Assertion is true, but the reason is false.

(d) Assertion is false, but the reason is true.

Q4. Assertion: The Black Death had a significant impact on trade in medieval Europe.

Reason: It caused a massive population loss that reduced labor supply and market demand.

(a) Both assertion and reason are true, and the reason is the correct explanation of the assertion. (b) Both assertion and reason are true, but the reason is not the correct explanation of the assertion. (c) Assertion is true, but the reason is false.

(d) Assertion is false, but the reason is true.

CHANGING CULTURAL TRADITIONS

Q1: Which of the following cities was NOT a major center of the Renaissance in Italy?

(a) Florence   (b) Venice

(c) Rome   (d) Paris

Q2: Who coined the term 'Renaissance' to describe the cultural changes of the period?

(a) Jacob Burckhardt   (b) Francesco Petrarch
(c) Leonardo da Vinci   (d) Michelangelo

Q3: What significant technological advancement helped spread Renaissance ideas across Europe? (a) Printing Press   (b) Telescope

(c) Compass   (d) Mechanical clock

Q4: What was the major focus of Humanism during the Renaissance?

(a) Scientific discoveries   (b) Return to ancient Greek and Roman culture
    (c) Religious practices   (d) Political power

Q5: Who was responsible for the spread of Humanism in the early 15th century?

(a) Dante Alighieri   (b) Francesco Petrarch

POLITICAL SCIENCE

Prepare a project on "Political Impact on Indian Legislation" on A4 size sheets.

It should not exceed 8sheets.

Kindly mention your Name, Class & Section and Roll no. on the project.