

## Assignment (2023-24)

**Class : XII (Science)**

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### English (301)

1. Prepare a project on the poetic devices that you have come across in the poems prescribed in your syllabus (NCERT: Flamingo). The poetic devices with the relevant examples should be listed poem- wise and prepared on separate sheets. Use a project file for the same with a cover page, acknowledgement page, a contents page and a reference page for the sources that you will refer to for the project.
2. Collect newspaper clippings on different reports (school report and mishap report- minimum 10 each) and paste it on A4 size sheets to create a resource file. The file must be L- folders.

### Physics (042)

#### Investigatory project for Practical Board Exam

1. A.C. Generator
2. Half wave rectifier
3. Full wave rectifier
4. To investigate the relation in Transformer, between the ratio of
  - (i) Output and input voltage
  - (ii) Number of turns in the secondary coil & primary coil of a self-designed transformer
5. To study and investigate the phenomenon of **electromagnetic induction**.
6. To investigate the resistance pattern in the circuit of **Sequential glow of LED**
7. To observe **Diffraction of light** due to a thin slit.
8. To observe the **interference pattern** of light through double slit

#### Guidelines:

- Working Model need to be prepared.
- Report for the working model should be **hand written**.
- Project report should contain **Cover Page with Student's details (Project Topic, Session, Name, Board Roll number and School Name), Certificate, Acknowledgement, Index, Aim/Objective, Apparatus, Introduction, Theory, Circuit Diagram/ Ray diagram, Procedure, Working, Sources of error, Conclusion, Precautions and Bibliography.**
- Diagram should be **hand drawn and neat**.

### Chemistry (043)

1. Study of the acidity of different samples of tea leaves.
2. Determination of the rate of evaporation of different liquids.
3. Study of common food adulterants in food stuffs like; sugar, butter, turmeric powder etc.
4. Preparation of rayon thread from filter paper using cuprammonium process.
5. Analysis of vegetable and fruit juices.
6. Study of casein quantity present in different samples of milk.

**Note: -**

1. Students required to complete anyone project out of the given above projects during Durga puja vacation.
2. Presentation of the findings of a project is as important as its successful completion. The investigated projects are, generally, reported in the following format:
  - a. Preliminary: i) Title of the project (ii) Table of contents (iii) List of graphs and figures (if any).
  - b. Introduction: (i) History (ii) Scope for further work (iii) Objective of the project.
  - c. Experimental: i) Details of each experiment performed. (ii) Tabulation of data.
  - d. Discussion and conclusions: (i) Generalisation of the data. (ii) theory and conclusion. (iii) Suggestions for further work.
  - e. Bibliography: List of books, consulted in execution of the project.

**Biology (044)**

Make the investigatory project on any of the following topics with properly labelled diagrams.

1. Reproduction
2. Ecology
3. Effects of Pollution
4. Detailed description of any of the diseases of human being
5. Pollination
6. Reproduction in flower
7. Male and female reproductive system
8. DNA
9. Chromosomal Disorders
10. Biotechnology

**Standard Mathematics (041)**

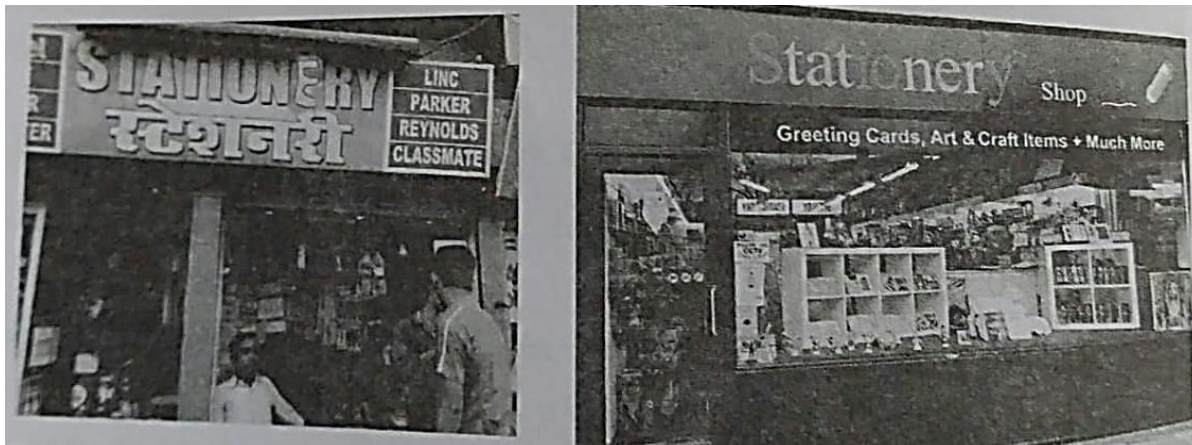
1. A line makes angles A, B, C, D with the four diagonals of a cube. Prove that:
$$\cos^2 A + \cos^2 B + \cos^2 C + \cos^2 D = \frac{4}{3}$$
2. Using vectors find the area of  $\Delta ABC$  whose vertices are A(1,2,3), B(2,-1,4) and C(4,5,-1).
3. Find the image of the point P(1, 6, 3) in the line
$$\frac{x}{1} = \frac{y-1}{2} = \frac{z-2}{3}$$
4. Form the differential equation of the family of all circles touching the X-axis at the origin.
5. Using integration, find the area of the region enclosed between the circles
$$x^2 + y^2 = 4 \text{ and } (x-2)^2 + y^2 = 4$$
6. Evaluate:  $\sin\left\{\frac{\pi}{3} - \sin^{-1}\left(\frac{-1}{2}\right)\right\}$
7. A window is in the form of a rectangle surmounted by a semicircular opening. The total perimeter of the window is 10 metres. Find the dimensions of the window to admit maximum light through it.
8. Prove that:  $\int_0^{\pi/2} \log(\sin x) dx = -\frac{\pi}{2} \log 2$
9. Solve the systems of equations using matrix method:
$$\begin{aligned}x+2y+z &= 7 \\x+3z &= 11 \\2x-3y &= 1\end{aligned}$$
10. Evaluate:  $\int_0^{\pi} \log(1 + \tan x) dx$

### Applied Mathematics (241)

1. A container contains 40L of milk. From this container 4L of milk was taken out and replaced by water. This process was repeated 2 more times. How much milk is now left in the container?
2. Solve the differential equation  $x \log x \frac{dy}{dx} + y = \frac{2}{x} \log x, x > 0$ .
3. From a container containing 50 liters of milk, 8 liters of milk was taken out and replaced by water. This process is repeated two more times. How much milk is now left in the container?
4. Show that the radius of a closed right circular cylinder of given surface area and maximum volume is equal to half of its height.

A manufacture produces three stationary product pencil, eraser and sharpener which he sells in two markets. Annual sells are given below:

Market		Products (in numbers)	
	Pencil	Eraser	Sharpener
A	10000	2000	18000
B	6000	20000	8000



If the unit sell of pencil, eraser and sharpener are Rs. 2.50, Rs. 1.50 and Rs. 1.00 respectively, and unit cost of the above three commodities are Rs. 2.00, Rs. 1.00 and Rs. 0.50 respectively.

Based on above statement answer the following question:

- a) Find the total revenue of market A
  - b) Find total revenue of market B
  - c) Find the profit in market A
5. Find the particular solution of the differential equation:
  6.  $y' - y = e^x$ , given that  $y=1$  when  $x=0$
  7. A man invests Rs 22500 shares available at 10 % discount. if the dividend paid by the company is 12%, calculate his rate of return.
  8. Mr. Verma invested Rs 18000 on Rs 100 shares at discount of Rs 25 paying 12% dividend. At the end of the year, he sells the shares at a discount of Rs 10. Find his rate of return.
  9. A person amortizes a loan of Rs 1500000 for renovation of his house by 8 years mortgage at the rate of 12% p.a. compounded monthly. Find
    - i. The EMI
    - ii. The principal outstanding at the beginning of 40<sup>th</sup> month.
    - iii. The interest paid in 40<sup>th</sup> month
    - iv. Total interest paid

10. What the sum of money invested now could establish a scholarship of Rs 5000 which is to be awarded at the end every year forever, if money is worth 8% p.a.

**Economics (030)**

1. Visit the site of Reserve Bank of India <https://www.rbi.org.in/> Write (a) Bank rate (b) Repo Rate (c) Reverse repo rate [mentioned in home page]

2. You have to go through the site <https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=21753> [RBI>Publications]

Collect/Highlight the important points of Monetary Policy Report – April 2023 by RBI and explain it (500 words) with special reference to the growth, Inflation, financial market and external environment.

Case Based Questions

3. Read the following article and answer the questions given below: The reserve bank of India unexpectedly cut its key deposit rate for the second time in three weeks, to discourage banks from parking idle funds with it and spur lending instead, to revive a flagging economy amid the corona virus lockdown. This week, Prime Minister Narendra Modi extended until May 3 a lockdown of population of 1.3 billion as India’s tally of infections exceeded 10000, despite the 3 week shutdown order from March 24. The RBI cut its reverse repo rate by 25 basis points (bps) to 3.75 percent with immediate effect. Govenner Shaktikanta Das told a video conference. The rate had already been cut by 90bps on March 27. “The surplus liquidity in the banking system has risen significantly in the wake of government spending and the various liquidity enhancing measures undertaken by the RBI”. He added. “In order to encourage banks to deploy these surplus funds in investments and loans in productive sectors of the economy, it has been decided to reduce the fixed-rate reverse repo rate”.

- a. The Reserve Bank of India lowered reverse repo rate to discourage banks from parking idle funds with \_\_\_\_\_ (RBI/Commercial Banks)
- b. RBI’s measure of reduction in reverse repo rate is done to enable commercial banks \_\_\_\_\_ a. To use the surplus funds for investment b. To grant loans for productive purposes c. To widen economic and financial land space d. all of these

**Computer Science (083)**

1. Create a table ‘Student’ in SQL under the Database ‘12DB’ with the given specification:

Field Name	Type	Description (Constraint)
ADMNO	Integer	Admission Number must be unique of maximum 5 digits
F_Name	String	First Name, can’t be blank and of maximum 15 characters
L_Name	String	Last name of maximum 15 characters
DOB	Date	Date of Birth, must have value
Roll	Number	Must be within 1-45
Sex	Character	Allowed only M, F or T
City	String	Name of City, By default it should be ‘Ranchi’
MKS	Decimal	Percentage of Marks scored, should not exceed 100

- 2. Insert 5 records in the above created table.
- 3. Upgrade the marks as 33 for those who have scored 28 to 32.

### **Informatics Practices (065)**

1. Make a project on any one of the following topics:

- Railways Reservation System
- Airways Reservation System
- Hotel Management System
- Library Management System
- Travel management System
- School Management System
- Payroll System

Note: Make a group of four students

### **Hindustani Music (Vocal) 034**

1. Write the taal notations of taal Rupak, taal Jhaptal and Dhamar taal alongwith the dugun, teegun, chaugun of the respective taals.

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