

ST ANDREWS SCOTS SR SEC SCHOOL

9<sup>TH</sup> AVENUE, I.P. EXTN, PATPARGANJ, DELHI-92

## HOLIDAY HOMEWORK

SESSION 2023-24

CLASS XII

To be ready for  
tomorrow's opportunities,  
do your homework today.  
Learn, refine your skills,  
and focus on growth.

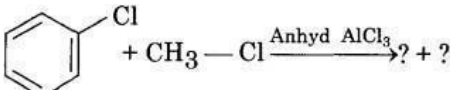
## **PHYSICS**

1. Do free electrons travel to region of higher potential or lower potential?
2. What is the electrostatic potential due to an electric dipole at an equatorial point?
3. Why is electrostatic potential constant throughout the volume of the conductor and has the same value (as inside) on its surface?
4. What is the amount of work done in moving a point charge around a circular arc of radius  $r$  at the centre of which another point charge is located?
5. Two charges  $4\mu\text{C}$  and  $-4\mu\text{C}$  are placed at points A and B 3 cm apart. Depict an equipotential surface of the system.
6. What is the magnitude of electric field intensity that will balance the weight of an electron? (Given Charge on electron  $e = 1.6 \times 10^{-19} \text{ C}$ . Mass of electron  $m = 9 \times 10^{-31} \text{ kg}$ .)
7. A piece of paper when brought near a charged body is attracted towards it but after touching the body, it falls away. Why?
8. What kinds of charges are produced on each when (i) a glass rod is rubbed with silk second and (ii) an ebonite rod is rubbed with wool?
9. Two charges  $q$  and  $-3q$  are placed fixed on x-axis separated by distance  $d$ . Where should a third charge  $2q$  be placed such that it will not experience any force?
10. Two concentric metallic spherical shell of radius  $R$  and  $3R$  are given charges  $Q_1$  and  $Q_2$  respectively. The surface charge densities on the outer surfaces of the shells are equal. Determine the ratio of  $Q_1$ :  $Q_2$ .
11. Calculate the total charge enclosed by a closed surface if the number of electric line of force entering it is 10,000 and leaving is 20,000.
12. Draw 3 equipotential surfaces corresponding to a field that uniformly increases in magnitude but remains constant along Z-direction. How are these surfaces different from that of a constant electric field along Z-direction?
13. Two parallel plate capacitors of capacitances  $C_x$  and  $C_2$  such that  $C_x = 2C_2$  are connected across a battery of  $V$  volt as shown in the figure Initially, the key (k) is kept closed to fully charge the capacitors. The key is now thrown open and a dielectric slab of dielectric constant  $K$  is inserted in the two capacitors to completely fill the gap between the plates. Find the ratio of (i) the net capacitance and (ii) the energies stored in the combination before and after the introduction of the dielectric slab
14. Two identical parallel plate (air) capacitors  $C_x$  and  $C_2$  have capacitance  $C$  each. The space between their plates is now filled with dielectrics as shown in the figure. If the two capacitors still have equal capacitance, they obtain the relation between dielectric constants  $K$ ,  $K_x$  and  $K_2$ .

## **CHEMISTRY**

1. Classify the following compounds as primary, secondary and tertiary halides.
  - a. 1-Bromobut-2-ene
  - b. 4-Bromopent-2-ene
  - c. 2-Bromo-2-methylpropane
2. Out of  $\text{C}_6\text{H}_5\text{CH}_2\text{Cl}$  and  $\text{C}_6\text{H}_5\text{CHClC}_6\text{H}_5$  which is more easily hydrolysed by aqueous  $\text{KOH}$ ?
3. Discuss the mechanism of  $\text{S}_\text{N}1$  reaction of haloalkanes.
4. What are ambident nucleophiles? Explain with an example.
5. An aromatic compound (A) having molecular formula  $\text{C}_6\text{H}_6\text{O}$  on treatment with  $\text{CHCl}_3$  and  $\text{KOH}$  gives a mixture two isomers B and C both of B & C give same product D when distilled with  $\text{Zn}$  dust. Oxidation of D gives E of formula  $\text{C}_7\text{H}_6\text{O}_2$  The sodium salt of E on heating with soda lime gives F which may also be obtained by distilling A with zinc dust. Identify compounds A to F giving sequence of reactions?

6. Draw the structure and name the product formed if the following alcohols are oxidized. Assume that an excess of oxidizing agent is used.
  - a.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$
  - b. 2-Butanol
  - c. 2-methylpropanol
7. Name the reagents which are used in the following conversions:
  - a. A primary alcohol to an aldehyde
  - b. Butan-2-one to butan-2-ol
  - c. Phenol to 2, 4, 6-tribromophenol
8. How can phenol be converted to aspirin?
9. Give two reactions that show the acidic nature of phenol. Compare acidity of phenol with that of ethanol.
10. Among the isomeric alkanes of molecular formula  $\text{C}_5\text{H}_{12}$ , identify the one that on photochemical chlorination yields
  - a. A single monochloride.
  - b. Three isomeric monochlorides.
  - c. Four isomeric monochlorides.
11. i. Which compound in each of the following pairs will react faster towards  $\text{S}_\text{N}2$  reaction with -OH group?
  - a.  $\text{CH}_3\text{Br}$  or  $\text{CH}_3\text{I}$
  - b.  $(\text{CH}_3)_3\text{C}-\text{Cl}$  or  $\text{CH}_3-\text{Cl}$
 ii. Write the product(s) of the following reactions.
  - a.  $\text{CH}_3-\text{Cl} + \text{KCN} \rightarrow ?$
  - b.
 



$$\text{C}_6\text{H}_5\text{Cl} + \text{CH}_3-\text{Cl} \xrightarrow{\text{Anhyd AlCl}_3} ? + ?$$
12. Give the uses of freon 12, DDT, carbon tetrachloride and iodoform.
13. . Account for the following :
  - a) O-nitrophenol is more steam volatile than P-nitrophenol.
  - b) t-butyl chloride on heating with sodium methoxide gives 2-methylpropene instead of t-buty methylether.
  - c) Write the reaction involved in the following :
  - d) Reimer-Tiemann reaction
  - e) Give simple chemical test to distinguish between Ethanol and Phenol.
14. Give structures of the products you would expect when each of the following alcohol reacts with (a)  $\text{HCl}-\text{ZnCl}_2$ ,  $\text{HBr}$  and  $\text{SOCl}_2$ .
  - a. Butan-1-ol
  - b. 2-Methylbutan-2-ol
15. Ortho and para nitrophenols are more acidic than phenol. Draw the resonance structures of the corresponding phenoxide ions.
16. Alcohols react with active metals e.g. Na, K, etc. to give corresponding alkoxides. Write down the decreasing order of reactivity of sodium metal towards primary, secondary, and tertiary alcohols.

## **PHYSICAL EDUCATION**

Practical - 1 Fitness tests Administration for all items

Practical -2 procedures for Asana, benefits and Contraindication for any two Asana for each life style diseases

Practical - 3 Anyone IOA recognized Sports/ Game of choice, Labeled diagram of Field & Equipment. Also mention its Rules, Terminologies & skills

## **ACCOUNTANCY:**

A) Complete the project as discussed in the class.

B) Revise the topics taught in the class and answer the following questions in your register:

Q1 Profits : In 2019, ₹40,000; In 2020, ₹50,000; In 2021, ₹60,000, (ii) Non-recurring income of ₹1,000 is included in the profits of 2020, (iii) Profits of 2019 have been reduced by ₹6,000 because goods were destroyed by fire, (iv) Goods have not been insured but it is thought to insure them in future. The insurance premium is estimated at ₹400 per year, (v) Reasonable remuneration of the proprietor of business is ₹6,000 per year, but it has not been taken into account for calculation of above mentioned profits, (vi) Profits of 2021 include ₹5,000 income on investment.

Goodwill is agreed to be valued at two year's purchase of the weighted average profits of the past three years. The appropriate weights to be used are:- 2019 : – 1; 2020 : – 2; 2021 : – 3

Q2 A firm earned profits of ₹80,000, ₹1,00,000, ₹1,20,000 and ₹1,80,000 during 2010-11, 2011-12, 2012-13 and 2013-14 respectively. The firm has capital investment of ₹5,00,000. A fair rate of return on investment is 15% p.a.

Calculate goodwill of the firm based on three years' purchase of average superprofits of last four years.

Q3 Capital invested in a firm is ₹3,00,000. Normal rate of return is 10% Average profits of the firm are ₹41,000 (after an abnormal loss of ₹2,000). Calculate goodwill at five times the super profits.

Q4 The capital of the firm of Anuj and Benu is ₹10,00,000 and the market rate of interest is 15%. Annual salary to the partners is ₹60,000 each. The profit for the last three years were ₹2,80,000, ₹3,80,000 and ₹4,20,000. Goodwill of the firm is to be valued on the basis of two years purchase of last three years average super profits.

Calculate the goodwill of the firm.

Q5 On 1st April, 2014, a firm had assets of ₹1,00,000 excluding stock of ₹20,000. Partners' Capital

Accounts showed a balance of ₹60,000. The current liabilities were ₹10,000 and the balance constituted the reserve. If the normal rate of return is 8%, the 'Goodwill' of the firm is valued at ₹60,000 at four years purchase of super profit, find the average profit of the firm.

Q6 On April 1st 2020, an existing firm had assets of ₹5,00,000 including cash of ₹20,000. The firm had a General Reserve of ₹90,000, partner's capital accounts showed a balance of ₹3,80,000 and creditors amounted to ₹30,000. If the normal rate of return is 20% and the goodwill of the firm is valued at ₹64,000 at 4 year's purchase of super profit, find the average profits of the firm.

Q7 The average profits of a firm is ₹48,000. The total assets of the firm are ₹8,00,000. Value of other liabilities is ₹5,00,000. Average rate of return in the same business is 12%.

Calculate goodwill from capitalization of average profits method.

Q8 A and B are partners sharing profits and losses in the ratio of 3 : 1. It was decided that with effect from 1st April, 2021 the profit sharing ratio will be 5 : 3. Goodwill is to be valued at 2 year's purchase of average of 3 year's profits. The profits for the years ending 31st March 2019, 2020 and 2021 were ₹36,000, ₹32,000 and ₹40,000 respectively.

### Q.9 OBJECTIVE TYPE QUESTIONS

State whether the following statements are True or False.

- (i) Excess of actual profit over normal profit is known as Weighted Average Profit.
- (ii) Two factors affecting goodwill are efficient management, repeated customers leading to higher sales and profit thus, it leads to higher value of goodwill.
- (iii) A firm known for quality of products funds immediate customers leading to higher sales and profit. Thus, it leads to higher value of goodwill.
- (iv) Purchased goodwill means goodwill for which consideration has not been paid but is generated due to performance in the past.
- (v) Self-generated goodwill means goodwill for which consideration in money or money's worth has been paid.
- (vi) The formula of super Profit is  $\text{Super Profit} \times$  .
- (vii) Goodwill is a fictitious asset and is not saleable.
- (viii) The formula for calculating goodwill by Capitalisation of Average Profits:  
 $\text{Goodwill} = \text{Capitalised value of Average Profit} - \text{Net Assets}$ .
- (ix) Goodwill existing in the Balance Sheet means Self-generated Goodwill.
- (x) Valuation of goodwill is not subjective and does not depend on the assessment of the value.
- (xi) Excess of actual profit over the normal profit is known as super profit.
- (xii) Goodwill is valued at the time of dissolution of a firm.
- (xiii) Goodwill under average Profit Method means Average profit multiplied by number of years' purchase.
- (xiv) Purchased goodwill arises at the time of opening of a new business.
- (xv) Normal profit is calculated to value goodwill by deducting abnormal gains and adding abnormal losses.
- (xvi) Goodwill has a realizable value, being an intangible asset.
- (xvii) Continuously incurring losses increases the value of goodwill.

### **ECONOMICS:**

Complete the NCERT questions of the following chapters: Indian Economy on the eve of Independence.

Indian Economy (1950-1990) New  
Economic Policy 1991

Make a collage on A3 size sheet showing the “Evolution of money” (using pictures, newspaper clippings, etc.)

Revise the topics taught in the class and answer the following questions:

Q1 State, giving reasons whether the following statements are true or false: Low level of productivity was the principal characteristic of Indian agriculture on the eve of Independence. Zamindari system of land revenue gave incentives to tillers of soil to increase their productivity. Railways during the British Rule in India promoted colonial exploitation of the Indian economy.

The year 1921 was the year of Great Divide with regard to the growth of population in India. Zamindari system brought stability to cultivation during the British rule. Surplus generated in trade was used to meet administrative expenses by the British government in India. GDP growth often leads to decline in percentage contribution of agriculture to GDP. Industrialization leads to structural shift in the economy. SSI promotes equity.  
Features of Indian Economy reveal the story of its backwardness.

Q2 Calculate the value of credit multiplier if the legal reserve deposit ratio is 20%.

Q3 If the Reserve Deposit ratio is 25% and the initial deposits of the public are Rs 2,000, What is the value of deposit multiplier, total deposit creation and total lending by the banking system?

Q4 Define credit multiplier. What role does it play in determining the credit creation power of the banking system? Use a numerical illustration to explain.

Q5 Excess money supply is necessary for economic development but it also creates inflationary situation. Suggest any two monetary measures to control inflationary situation.

Q6 RBI has reduced bank rate from 7.25% to 6.75% on 29th September 2015. Analyze its economic value from view point of (i) household (ii) investors and (iii) economy.

**NOTE:** Do all the above questions in register.

## **BUSINESS STUDIES:**

Q1) Complete notes of chapter 2 Principles of management. (already send in the group)

Q2) Prepare a chart or stick pictures in file to show management is applicable in all types of organization and at all levels.

Q3) Revise the topics taught in the class and answer the following questions:

- a) Name that intangible force which creates productive relationships among resources of an organization.
- b) Production manager tries to produce goods with minimum costs. Name the concept which is being focused by management?
- c) Coordination is the responsibility of all managers. How?
- d) To meet the objectives of the firm, management of Angora Ltd. offers employment to

physically challenged persons. Identify the organizational objective it is trying to achieve.

e) “Management has been defined as a process of getting things done with the aim of achieving goals effectively and efficiently.” Explain briefly the three important terms used in this definition of management—process, effectiveness and efficiency.

f) “For management, it is important to be both effective and efficient. Effectiveness and efficiency are two sides of the same coin.” Comment.

g) “In the absence of management the productive resources will remain resources and shall never become production.” Explain the importance of management in the light of the above statement

h) “Lack of proper management results in wastage of time, money and efforts.” Do you agree with this statement? Give reasons in support of your answer.

i) “Management is regarded as fully developed profession.” Do you agree? Give reasons.

j) “Management is regarded as a perfect Science.” Do you agree?  
Give reasons

l) “Management is neither as precise nor as comprehensive as the natural and pure sciences are.” Why? Explain.

m) Your grandfather has retired as the Director of a manufacturing company. At what level of management was he working? What functions do you think he was performing at that level? State any four functions.

n) Your uncle is employed in Deepti Ltd., as a production manager. At what level of management is he working? State any three functions that he might be performing at that level.

o) Miss Amita is associated with Fortune Ltd. She told you that her workers have good relations with her. At what level of management is she? What may be her functions?

p) An enterprise does not have any preset objectives. It worked well for some years. However, now it finds difficult to survive. What could be the way to turn it into a successful venture?

q) Successful organizations do not achieve their goals by chance but by following a process. Name the process.

r) Success of Dabbawalas (who carry tiffin's to offices) of Mumbai is an example of which aspect of management

s) X Ltd. manufactures tea. The production department produces more tea than required and sales department is not able to sell the total production. What quality of Management do you think the company is lacking?

t) Without effective management the resources will remain as resources cannot be converted into productive utilities. “Do you agree”? Give reasons.

u) “Success of an organization largely depends upon its management.” Explain any five reasons to justify the above statement.

v) A Cloth manufacturer distributes its defective product at free of cost (after getting them repaired from Nari Niketan at lower cost) to orphanage



1. Which values are being attested in this solution?
2. Identify and explain the objective of management highlighted in the abovecase.

W) In order to be successful, an organization must change its goals according to the needs of the environment. Which characteristics of management are highlighted in this statement ?

## **PAINTING**

### **A.THEORY :**

1. Complete all the Questions and answers in the painting theory notebook of - Unit 1 and 2
2. What are the themes of Rajasthani and Pahari miniature paintings? Explain briefly.

### **B. PRACTICAL :**

\*Make any 5 paintings by using water colors /mix media/ Acrylic colors on A2 size file nicely.

\*still life composition

\* Human figures compositions

\* Seascape

\*Abstract art

\*Folk art (kalighat painting)

\*Birds study.

## **ENGLISH**

1. Make a project based on any lesson or poem in your syllabus.
2. Write an article on the Relevance of Gandhian principles in modern times.
3. Paste newspaper clippings of classified and display advertisement in your notebook.

## **COMPUTER SCIENCE**

**Note:** Do it in your C.S Notebook.

Q.1 Explain different components of a computer Network.

Q.2 Explain different types of computer Networks ?

Q.3 What are types of Communication channels?

Q.4 What is switching and its types?

Q.5 What are different divisions of SQL and commands? Give examples of commands in each division.

Q.6 What is foreign key? How do you define a foreign key in your table?

Q.7 Differentiate between:

(i) DROP TABLE, DROP DATABASE

(ii) DROP TABLE, DROP clause of ALTER TABLE

Q.8 Given the following tables:



- Orders (OrdNo, Ord\_date, ProdNo, Qty)
- Product (ProdNo, Descp, Price)
- Payment (OrdNo,Pment)

*Write a query to delete all those records from table Orders whose complete payment has been made.*

*Q.9 Write a short note on ARPANET.*

Q10 Differentiate between DDL and DML Commands?

## **INFORMATION PRACTICES**

**Note:** All work to be done in your computer notebook.

**Q1.** Write the output produced by the following SQL commands:

- SELECT POW(2,3);
- SELECT ROUND(123.2345,  
2), ROUND(342.9234,-1);
- SELECT LENGTH("Informatics Practices");
- SELECT YEAR("1979/11/26"),  
MONTH("1979/11/26"),  
DAY("1979/11/26"),  
MONTHNAME("1979/11/26");
- SELECT LEFT("INDIA",3), RIGHT("Computer Science",4);
- SELECT MID("Informatics",3,4), SUBSTR("Practices",3);

**Q2.** Site any two differences between Single row functions and Aggregate functions.

**Q3.** What is SQL . Explain its different keys.

**Q4.** Explore and find out the minimum internet speed required to make a video call.

**Q5.** Fill in the blanks:

- To transmit data for sharing on a network, it has to be divided into smaller chunks called \_\_\_\_\_.
- The set of rules that decide the functioning of a network is called \_\_\_\_\_.
- A LAN can be extended up to a distance of \_\_\_\_\_ km.
- The \_\_\_\_\_ connects a local area network to the internet.
- The \_\_\_\_\_ topology is of hierarchical nature.

**Q6.** Expand the following:

- ARPANET
- ISP

c) URL

**Q7.** Name the device for the following:

- a) It stands for Modulator Demodulator
- b) It regenerates the signals.

**Q8.** Differentiate between:

- a) MAN and WAN
- b) Website and web page
- c) Router and Gateway

**Q9.** What do you understand by Net Etiquettes? Explain any two such etiquettes.

**Q10. CASE STUDY:**

1. According to a survey, one of the major asian country generates approximately about 2 million tonnes of electronic waste per year. Only 1.5 % of the total e-waste gets recycled. Suggest some methods to manage e-waste .
2. Priyanka is using her internet connection to book a flight ticket. This is a classic example of leaving a trail of web activities carried by her. What do we call this type of activity? What is the risk involved by such kind of activity?
3. Prathyush has to prepare a project on “Cyber JaagrooktaDiwas”.He decides to get information from the Internet. He downloads three web pages (webpage1, webpage 2, webpage3) containing information.
  - a) He read a paragraph from webpage 1 and rephrased it in his own words. He finally pasted the rephrased paragraph in his project. And he put a citation about the website he visited and its web address also.
  - b) He downloaded three images of from webpage 2. He made a collage for his project using these images.
  - c) He also downloaded an icon from web page 3 and pasted it on the front page of his project report

Q - Step1 is an act of.....

- a) Plagiarism
- b) Copyright Infringement
- c) Intellectual Property Right
- d) None of the above

Q- Step 2 is an act of\_\_\_\_\_.

- a) Plagiarism
- b) Copyright Infringement
- c) Intellectual Property Right
- d) Digital Footprints

Q- Step 3 is an act of\_\_\_\_\_.

- a) Plagiarism
- b) Paraphrasing
- c) Copyright Infringement

d) Intellectual Property Right

Q- \_\_\_\_\_ is a small piece of data sent from a website and stored in a user's web browser while a user is browsing a website.

a) Hyperlinks

b) Web Pages

c) Browsers

d) Cookies

Q- The process of getting web pages, images and files from a web server to local computer is called\_\_.

## **BIOLOGY**

1- Make diagram of spermatogenesis , oogenesis , mammary gland , female reproductive system , male reproductive system , type of ovule , microspore genesis , megaspore genesis , anther (NCERT) , menstrual cycle , fertilization (NCERT) with short notes.

2- Complete text question which are mid in book (NCERT) and @ last of the chapters.

3- Last 5 year previous question of chapter 1, 2, 3rd half (PYQs) Unit – 1<sup>st</sup>.

4- Per day after 1-june I will give 10 MCQs which is very important for your board exams.

5- Work should be clean and in sequence.

## **HISTORY**

1. Complete notes/ questions & answer NCERT of all four Chapters of book 1.

2. Prepare synopsis of anyone topic given below:

A) Harappan civilization

B) Rise of mahajanapadas

C) Mahabharat

D) Buddha.. Ultimate path of enlightenment

E) India through travel ler's eyes

F) Bhakti sufi movement

G) Mughal painting

H) Revolt of 1857

- I) Gandhi: a leader or a thinker
- J) Also collect content for your project. Bring them in printed
- K) Form for observation.

## **POLITICAL SCIENCE**

1. Complete notes/ questions & answer NCERT of all four Chapters of book 1.
2. Prepare synopsis of anyone topic given below:
  - A) End of bipolarity
  - B) International organizations
  - C) Globalization

## **SOCIOLOGY**

1. Complete notes/ questions & answer NCERT of all four Chapters of book 1.
2. Prepare synopsis of anyone topic given below:
  - A) Dowry
  - B) Caste system
  - C) Communalism

## **MATHEMATICS**

### **RELATION FUNCTION**

1. What is the key differences between relation and functions give an example of each.
2. Let R be the relation on a set  $A = \{1, 2, 3\}$ , which have properties of being
  - i) Reflexive, Transitive but not symmetric.
  - ii) Symmetric but neither Reflexive nor Transitive.
  - iii) Neither reflexive, Symmetric nor Transitive.
  - iv) Equivalence.
3. Show that a relation on the set of integer 'Z' defined as  $R = \{(a, b) : |a - b| \text{ is an even integer}\}$
4. Let N be the set of natural number and R be the relation on  $N \times N$  defined as  $(a, b)R(c, d)$  iff  $ad = bc$  for all  $(a, b) (c, d)$  belongs to  $N \times N$ . Show that R is an equivalence relation on  $N \times N$ .
5. Let f be a function defined on set of real number R such that
6.  $f(x) = 1 + x^2$ ; for all x belongs to R. Check the injective and surjective of the following functions.
- 7) Let a function from set  $A = \{1, 2, 3, 4\}$  to set  $B = \{2, 4, 6, 8\}$  is given by  $f(x) = 2x$  then white the domain and range of inverse of the function.
- 8) A function f is said to be bijective if it is one-one and onto why ?. Justify your answer .

9) A function from set of all real number to set of real number such that.

i)  $f(x) = 2x - 7$

ii)  $f(x) = 1 + x^2$

10) Find number of all onto function from set  $A = \{1, 2, 3, 4, \dots, n\}$  to itself.

11) If  $A = \{1, 2, 3\}$ , show that an onto function from A to itself.

12) Let  $A = \{1, 2, 3\}$ . Write all one-one functions on from A to itself.

## MATRICES AND DETERMINANT

1) A matrix has 27 elements. What is the possible order can have.

2) Let a matrix  $A = [a_{ij}]$  of order  $4 \times 4$  such that  $a_{ij} = (2i + j)^2$

3) In a certain city there are 30 collage. Each collageare has 15 peons, 6 clerks, 1 typist and 1 section officer.

Express the given information as a column matrix. Using scaler multiplication, find the total number of posts of each kind in all the collage.

4) The monthly income of Aryan and Babban are in the ratio 3:4 and their monthly expenditure are in the ratio 5:7. If each saved Rs15000 per month, find their monthly incomes using matrix method.

5) Matrix multiplication and matrix addition possible only when \_\_\_\_\_

6) Use matrix multiplication to divide Rs30000 into two parts such that the total annual interest at 9 percent and 11 percent on the second part amounts Rs3060.

7) If  $A = \begin{bmatrix} 3 & 5 \end{bmatrix}$ ,  $B = \begin{bmatrix} 7 & 3 \end{bmatrix}$ , then find a non-zero matrix C such that  $AC = BC$ .

8) A matrix X has a+b rows and a+2 column while the Y matrix has b+1 rows and a+3 column. Both matrices XY and YX exist. Find a and b. Can you say XY and YX are of same type? Are they are equal.

9) Let A and B be square matrices of order 3. Is  $(AB)^2 = A^2 B^2$ ? Give reason.

10) If A and B are square matrices of same order such that  $AB = BA$ , then show that  $(A+B)^2 = A^2 + 2AB + B^2$ .

11) If A is a square matrix such that  $A^2 = I$ , then find the simplified value of  $(A-I)^3 + (A+I)^3 - 7I$ .

12) Let A be a square atrx of order 3, then express it into sum of Symmetric and Skew-Symmetric matrix.

13) If A and B are two square matrices of same order such that  $A^T A = I$ , write the value of  $|A|$ .

14) If  $A = [a_{ij}]$  is a diagonal matrix of order 3 such that  $a_{11} = 1, a_{22} = 2$ , and  $a_{33} = 3$  then find  $|A|$ .

15) What is the key differences between matrix and determinant .S