RAMAKRISHNA SENIOR SECONDARY SCHOOL
SUMMER HOLIDAY HOMEWORK
CLASS XII (2023-24)

Dear Parents
Greetings from the RKS Fraternity!

The Academic Session 2023-24 has begun in full swing and students have settled well in their classes. Now is the time for Summer Break. The School will be closed for Summer Break from May **15, 2023** to **July 2, 2023**. The school will reopen on **July 3, 2023**. In order to keep our students well engaged, we are sending the **Summer Holiday Homework**.

==**General Instructions:-**==

1. Revise the syllabus covered so far in the class to prepare for Periodic Tests, which will be held in the month of July.
2. Do all the work as specified by the subject teacher.
3. Submit your Holiday Homework in the first week of July as per the teacher‟s instructions.
4. The students must do their work neatly in their own handwriting. Marks of Internal Assessment will be awarded only if the students do the work in their own handwriting.

Summer Vacations are the most awaited holidays by the students. It is also a time to enjoy those little pleasures of life that get overlooked during the busy school routine. They get a positive bounce back when they rejoin school after this much-needed break. There are a few things that students can keep in mind to utilize this break fruitfully.

● Go for educational trips and excursions.
● Spend quality time with family and friends
● Pursue your hobbies and interests
● Sharpen your skills and develop new ones
● Follow a fitness regime to stay agile both mentally and physically
● Learn and explore new things
● Relax your body and mind because, „**A Healthy Mind Lives in a Healthy Body.'**

Have a delightful and productive Summer Break!

ENGLISH:

1. Prepare a General Studies Project on the topic 'Science and Society' on A4 sized white ruled sheets.

Resources such as newspapers, books, magazines, TV Channels and internet (relevant website) can be used.

The project should include the following:

● Title of the topic

● Introduction to the topic/ Nature of Science

● How science and society are related / Science as a social enterprise

- Role of science in society

- Role of science in developing society

- What will be your contribution or an appeal to the people for the topic you have been allotted

- Conclusion (clearly mentioning if you want to strengthen a move or you want to condemn it-depending on the topic)

- Bibliography/ list of resources used

2. Attempt the following Comprehension Passages in Evergreen Practice Papers:
- Evergreen Test Assignment-1 to Evergreen Test Assignment 7 (Page no. 21 to 33)

3. Attempt the following Notice Writing questions in Evergreen Practice papers:
- Evergreen Test Assignment 3, Q. 1, Page -58
- Evergreen Test Assignment 3, Q. 2, Page -58
- Evergreen Test Assignment 4, Q. 5, Page -60

4. Attempt the following Letter Writing questions in Evergreen Practice papers:
- Evergreen Test Assignment 15, Q. 1, Page -115
- Evergreen Test Assignment 17, Q. 3, Page -119
5. Revise the syllabus covered so far in the class for the PT-1 Examination.

ECONOMICS

Q1. Do the assignments of Chapter 1 to Chapter 6, and Chapter 10 to Chapter 12 of Macro Economics .
Q2. Complete the Economics Project Work as per the discussion and topic allotted in the class.
Q3. Revise the Syllabus done so far.
Q4. Complete the general Studies Project on the topic-
Contemporary problems of Indian Society covering the following contents:
*Issues related to woman
*Health care system
*Contemporary Phase

BUSINESS STUDIES

1. Prepare project files as per topics given by teacher(anyone).
   A.   Principles of Management
   B.   Marketing
   C.   Stock Exchange.

2. Prepare a project on Social responsibility by covering the following contents:
   A. Types of Social responsibility
   B. Role of students within a group
   C. Principle of Socially responsible behaviour.

3. Answer the following questions in your homework notebook.
1. Mayra Ltd. received a new order of 30,000 toys. Mr. Abhilash, the production manager is expected to deliver goods in fifteen days otherwise the contract will be null and void. To retain the customers, Abhilash outsourced the production of 15,000 toys and delivered the order on time. The outsourcing of production resulted in increase in cost by 50%. Mayra Ltd. uses environment friendly methods of production and disposes off the waste material by either recycling it or using the same for landfill in such a manner that the aquatic life is not disturbed." Which concept of management is being adhered to here by Mr. Abhilash?

(a) Effectiveness
(b) Efficiency
(c) Both a. and b.
(d) None of these

Which concept of management is being overlooked by Mr. Abhilash?

(a) Effectiveness
(b) Efficiency
(c) Both a. and b.
(d) None of these

.Q.2 Mita has a successful ice cream business at Bikaner, namely 'Smartflavours'. Her ice creams are utterly delicious. She makes ice creams from fresh milk and the same are available in a wide range of flavours and packs. She sets viable business objectives and works with the same in mind in order to ensure that the customers will come back for purchasing. } Having the first mover advantage, her business was doing well. To earn higher profits, she started cutting costs. This would sometimes lead to delay in delivery and the ice cream was not reaching the market in time. Over a period of time, the demand for her ice cream declined and because of it the competitors entered the market. She lost some of her market share to competitors. } At the beginning of summer season, she got back to back orders for supply of 4,000 ice cream packs of different flavours for special occasions. To ensure that the task was completed and orders delivered in time she hired additional workers. She was, thus able to produce and deliver the ice cream packs but at a high production cost. While completing activities and finishing the given task for achieving goals, Mita realized that she was ignoring one of the important aspects of management. Identify the aspects of management that has been ignored by Mita in both para

Q.3 Sujata works as a designer in an export house. As per the terms of an order received by the export house, she has to get 1000 units of denim jackets made in 15 days @ ? 2000 per jacket. She is able to complete her target production in 20 days because in order to complete the order in 15 days she would have made the workers work over time. As a result, the cost of production per jacket may have increased by ? 100.In the context of the above case:Is Sujata efficient in her work?Give reason

Q.4 Nutan Tiffin Box service was started in Mumbai by the Mumbai Dabbawalas. The Dabbawalas who are the soul of entire Mumbai aim to provide prompt and efficient services by providing tasty homemade tiffin to all office goers at the right time and place. The service is uninterrupted even on the days of bad weather, political unrest and social disturbances. Recently, they have started online booking system through their website 'mydabbawala.com'. Owing to their tremendous popularity amongst the happy and satisfied customers and members, the Dabbawalas were invited as guest lecturer by top business schools. The Dabbawalas operate in a group of 25-30 people alongwith a group leader. Each group teams up with other groups in order to deliver the tiffins on time. They are not transferred on frequent basis as they have to remember the addresses of their customers. They follow certain rules while doing trade—no alcohol during working hours; no leaves without permission; wearing white caps and carrying ID cards during business hours.

Recently, on the suggestion of a few self-motivated fellow men, the dabbawalas thought out and executed a plan of providing food left in tiffins by customers to slum children. They have instructed their customers to place red sticker if food is left in the tiffin, to be fed to poor children later.

1. State any one principle of management given by Fayol

Q.5 Naman and Govind after finishing their graduation under vocational stream decided to start their own travel agency which will book Rail Tickets and Air Tickets on commission basis. They also thought of providing tickets within ten minutes through the use of internet. They discussed the idea with their Professor Mr. Mehta who liked the idea and suggested them to first analyse the business environment which consists of investors', competitors and other forces like social, political etc. that may affect their business directly or indirectly. He further told them about the technological improvements and shifts in consumer preferences that were taking place and hence they should be aware of the environmental trends and changes which may hinder their business performance. He emphasised on making plans keeping in mind the threat posed by the competitors, so that they can deal with the situation effectively. This alignment of business operations with the business environment will result in better performance.

Identify and state the component of business environment highlighted in the above Para.

State any two features of business environment as discussed by Professor Mehta with Naman and Govind.

Q.6 With changes in the consumption habits of people, Neelesh, who was running a sweet shop, shifted to the chocolate business. On the eve of Diwali, he offered chocolates in attractive packages at reasonable prices. He anticipated huge demand and created a website chocolove. com for taking orders online. He got a lot of orders online and earned huge profits by selling the chocolate.
Identify and explain the dimensions of business environment discussed in the above case.

Q.7'Accent Electronics Ltd.' was operating its business in Malaysia. The company started exporting its products to India when the Prime Minister announced relaxation in import duties on electronic items. The company appointed retailers in India who had direct online links with the suppliers to replenish stocks when needed.
Identify and explain the dimensions of business environment discussed in the above case.

Q.8 After completing his MBA from the USA, Mr. Ajay came to India to start a new business under the banner Ecom Creations Ltd. He launched a new product in e-learning for senior secondary school students in the commerce stream which already had an established market in the UK and the USA but not in India. His business started flourishing in India. As a result, more Indian companies entered into the market with other subjects also.
Identify and quote the lines from the above paragraph which highlight the significance of understanding business environment.

Q.9With the presence of women in the workforce, there has been a shift towards formal wear, increased demand of electronic gadgets and increase in demand of cosmetics. The related dimension of business environment referred in the above lines is: a) Technological environment. b) Social environment c) Political environment. d) Economic environment

Q.10Read the following statements: Assertion (A) and Reason(R). Choose the correct alternative from those given below: ASSERTION (A): Management is concerned with efficient use of resources. REASONING (R): For management both efficiency and effectiveness need to be balanced. Alternatives: a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A) c) Assertion (A) is true but Reason (R) is False d) Assertion (A) is False but Reason (R) is True

Q.11 Mr. Vivek is working as the General Manager of Oshin Hotels Ltd. Mr. Vivek observed that Government was taking a special interest in the Tourism industry as this sector is an important source of foreign exchange and employment promotion. On the basis of this news, the company decided to set up hotels at several tourist places. Oshin Hotels Ltd. established 50 hotels before other companies considered this issue. Very soon, this brand Oshin Hotels Ltd. became well known in the market. Identify the importance of business environment described here. a) It enables the firm to identify opportunities and getting the first mover advantage. b) It helps the firm to identify threats and early warning signals. c) It helps in tapping useful resources. d) It helps in improving performance.

Q.12 Diligent developers, a website design company in Bangalore is a startup initiative of Mr. Maniraj which aims at achieving a profit margin of 10% in its first year. Mr. Maniraj appointed Mr. Advait as the Digital marketing Head, Mr. Kiyansh as the head of Backend department and Mr. Nirved headed the Graphics Designing Department. Since each head was specialised in specific skills, it resulted in increased efficiency and better coordination. However, problems arose when Mr. Advait started considering group objectives superior to organisational objectives and stopped exchanging information with Mr. Kiyansh and Mr. Nirved. The company had to bear the brunt of lack of coordination and was unable to achieve its objectives. a) Identify and state the organisational structure adopted by the company. b) State two benefits and two limitations of the identified structure highlighted in the above case.

Q.13 Explain the steps that are required to be performed by a manager before evaluating all possible courses of action in planning process.

Q.14 Explain how planning: a) Reduces overlapping and wasteful activities b) Establishes standards for controlling c) Facilitates decision making

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ACCOUNTANCY

1. Prepare project file as per topics given by teacher.(comprehensive project)

2. Prepare a project on Career pathways covering the following contents:
   A. Goal Setting'
   B. Common Career Paths
   C. Internship as a medium of transition from schools to universities.

3. Solve the following questions in Homework Notebook.

Q.1 Lokesh, Mansoor and Nihal were partners in a firm sharing profits as 50%, 30% and 20% respectively. On 31st March,2023, their Balance Sheet was as follows:

Liabilities		Amount	Assets		Amount
Creditors		34,000	Cash		68,000
Provident Fund		10,000	Stock		38,000
Investment Fluctuation Fund		20,000	Debtors	94,000	
Capital A/cs Lokesh	1,40,000		Less: Provision	6,000	88,000
Mansoor	80,000		Investment		80,000
Nihal	50,000	2,70,000	Goodwill		40,000
			Profit and Loss		20,000
		3,34,000			3,34,000

On the above date, Mansoor retired and Lokesh and Nihal agreed to continue on the following terms:

1. Firm's good will was valued at ₹ 1,02,000 and it was decided to adjust Mansoor's share of goodwill into the Capital Accounts of the continuing partner.

2. There was a claim for Workmen's Compensation to the extent of ₹ 12,000 and

investments were brought down to ₹ 30,000
3.Provision for Bad Debts was to be reduced by ₹ 2,000
4.The capital of new firm fixed as 5,00,000.
Preepare revaluation A/c, Partners Capital A/C and Balance sheet.

Q.2   Chander and Mohini are partners sharing profit in the ratio of 3:2. Their Balance Sheet
as at 31st March 2022 is given below:

Liabilities	Amount	Assets		Amount
Chander's Capital	11,40,000	Land & Building		5,60,000
Mohini's Capital	7,00,000	Plant & Machinery		6,00,000
Workmen's Compensation Reserve	60,000	Stock		1,60,000
Creditors	1,00,000	Sundry Debtors	6,00,000	
		Less: Provision	20,000	5,80,000
		Bank		1,00,000
	20,00,000			20,00,000

They decide to admit Shikha as a new partner form 1st April, 2023. Their new profit
sharing ratio was 3:2:5. Shikha brought in capital in proportionate to firm's capital and
her share of goodwill premium in cash.
(a)   Shikha share of goodwill premium was valued at ₹ 30,000.
(b)   Plant and machinery was found under valued by 20%.
(c)   Creditors were unrecorded to the extent of ₹ 20,000.
(d)   Claim on account of workmen compensation was ₹ 40,000.
(e)   Bad debts amounted to ₹ 30,000. Make New provision 10%.
Prepare Revaluation A/c and Partner's Capital Accounts and Balance sheet.

Q.3 .A, B and C sharing profits and losses in the ratio of 5:3:2. They decide to share profits and losses
equally with effect from 1st April,2022. Following is the extract of their Balance Sheet as on 31st
March,2022

Liabilities	Amount (Rs.)	Assets	Amount (Rs.)
Investment Fluctuation Reserve	40000	Investment (at cost)	300000

Show the accounting treatment (Journal entry) under the following cases
Case (i) if the market value of the investment is Rs.280000
Case (ii) if the market value of the investment is Rs.300000
Case (iii) if the market value of the investment is Rs.330000

Q 4.Asha and Aditi are partners in a firm sharing profits and losses in the ratio of 3 : 2. They admit
Raghav as a partner for1/4 share in the profits of the firm. Raghav brings Rs 6,00,000 as his capital and
his share of goodwill in cash. Goodwill of the firm is to be valued at two years' purchase of average
profits of the last four years.
The profits of the firm during the last four years are given below :
Year Profit (Rs)
2013 – 14 3,50,000
2014 – 15 4,75,000
2015 – 16 6,70,000
2016 – 17 7,45,000
The following additional information is given :
(i) To cover management cost an annual charge ofRs56,250 should be made for the purpose of
valuation of goodwill.
(ii) The closing stock for the year ended 31.3.2017 was overvalued by Rs.15,000.

5. Vinod, Kamal and Rohit are partners sharing profits in the ratio of 3:2:1. Their capitals on 1st April 2020 were: Rs.5,00,000; Rs.4,00,000 and Rs.3,50,000 respectively.

(i) Vinod withdrew Rs.2,500 in the beginning of every month for personal use.

(ii) Kamal withdrew Rs.10,000 at the end of each Quarter for his personal use.

(iii) Rohit withdrew Rs.22,500 during the year for his personal use.

After preparing accounts, it was found that interest on capital was calculated only 10% p.a. instead of 12% p.a. and interest on drawings 8% p.a. was not charged at all. It was decided to pass a single adjustment entry to correct the above. Give adjustment entry.

Q.6. Vinod, Mukesh and Shiv are partners sharing profits in the ratio of 3:2:1. Their capitals on 1st April 2019 were Rs.5,00,000; Rs.3,00,000 and Rs.2,00,000 respectively. As per the partnership deed partners are entitled to 10% p.a. interest on capital. Shiv is guaranteed a minimum profit of Rs.45,000 p.a. deficiency (if any) will be borne by Vinod and Mukesh in the ratio of 3:2.

The firm incurred a loss of Rs.90,000 for the year ended 31st March 2020. Give necessary entries giving effect to the minimum guaranteed profit to Shiv.

Q.7 .L, M and N are partners sharing profits and losses in the ratio of 1:2:3. From April 1st 2020 they decided to share profits in the ratio of 2:3:4. On that date, Profit and Loss account disclosed a debit balance of Rs.60,000. Record the necessary Journal entry for above adjustment also calculate sacrificing ratio.

Q.8 On Kirti's admission, Land appeared in the books of the firm at Rs.1,60,000 and Machinery at Rs.5,00,000. On revaluation, it was found that Land is undervalued by 20% and machinery is overvalued by 25%. There were bad debt amounting to Rs.10,000. Loss on revaluation will be
   (a) Rs.78,000 (b) Rs.1,03,000 (c) Rs.95,000 (d) Rs.70,000

Q.9 .X, Y and Z were partners of an architect firm sharing profits in the ratio of
2: 2: 3. Their partnership deed provided the following :
(i) A monthly salary of ₹15,000 each to X and Y
(ii) Z was guaranteed a profit of ₹5, 00,000 and Y guaranteed that he will earn an annual fee of
 ₹2, 25,000. Any deficiency arising because of guarantee to Z will be borne by X and Y in the ratio of 2:
2. During the year ended 31st March, 2018 Jay earned fee of ₹2, 00,000 and the profits of the firm amounted to ₹20, 00,000.
Showing your workings clearly prepare Profit and Loss Appropriation Account.

Q.10 P, Q and R were partners with fixed capital of ₹ 40,000, ₹32,000and ₹24,000.After distributing the profit of ₹48,000 for the year ended 31st March 2022 in their agreed ratio of 3 : 1 : 1it was observed that: (1) Interest on capital was provided at 10% p.a. instead of 8% p.a. (2) Salary of ₹ 12,000 was credited to P instead of Q. You are required to pass a single journal entry in the beginning of the next year to rectify the above omissions.

INFORMATICS PRACTICES

1. Prepare MySQL Practical File as discussed in the class. Complete file to be submitted on July 5,

2023.

2. Do Solved and Unsolved Exercise of Chapter – Computer Network in your register.

3. Revise the syllabus for PT1 Examination.

4. **General Studies** -- Prepare Project on Human Rights covering the given topics :-
   - The Universal Declaration of Human Rights and its significance.
   - The responsibility of individual , communities and business in promoting Human rights.
   - The relationship between Human rights and sustainable development.

   Project to be submitted by July 7, 2023.

APPLIED MATHEMATICS

Holiday Homework Class XII(Applied Mathematics)

EXERCISE 1.1

1. Evaluate the following:
   (i) 22 mod 4   (ii) 35 mod 7
   (iii) −15 mod 2   (iv) 4 mod 9
   Ans : (i) 2, (ii) 0, (iii) 1, (iv) 4

2. Evaluate the following:
   (i) 43 (mod 6)
   (ii) 97 (mod 5)
   (iii) − 17 (mod 4)
   Ans : (i) 1, (ii) 2, (iii) 3

3. Evaluate the following:
   (i) $(57 - 42) \bmod 11$
   (ii) $(62 + 53) \bmod 7$
   (iii) $(9 \times 8) \bmod 5$
   Ans : (i)4, (ii) 3, (iii) 2

4. Evaluate the following :
   (i) $45 +_{13} 18$ (ii) $55 -_{11} 17$
   Ans : (i) 11, (ii) 5

5. Evaluate the following :
   (i) $5 \odot_7 8$ (ii) $13 \odot_{11} 7$
   Ans : (i) 5, (ii) 3

6. Find the last two digits of the product 4895×6789
   Ans : 55

7. Find the last two digits of the product $123 \times 234 \times 345$
   Ans : 90

8. Find the last three digits of the product 2345×4567.
   Ans : 615

EXERCISE 1.2

1. Evaluate $5^{10} \pmod 3$.
   Ans : 1

2. Evaluate $9^{9} \pmod{11}$.
   Ans : (i) 1, (ii) 5

3. Find the remainder when 2^{12} is divided by 41.
   Ans : 37

4. Find the remainder when 9^{10} is divided by 11.
   Ans : 1

5. Find the remainder when 2^{102} is divided by 5.
   Ans : 4

6. Find the remainder when 3^{200} is divided by 13.
   Ans : 9

EXERCISE 2.1

1. In what ratio must rice at ₹18.60 per kg be mixed with rice at ₹21.60 per kg so that the mixture be worth ₹20 per kg ?
   Ans : 8 : 7

2. In what ratio must a grocer mix two varieties of pulses costing ₹30 and ₹40 respectively so as to get a mixture worth ₹31 per kg?
   Ans : 7 : 3

3. In what ratio must water be mixed with milk to gain $16\frac{2}{3}\%$ on selling the mixture at cost price?
   Ans : 1 : 6

4. A milkman mixed some water with milk to gain 25% by selling the mixture at the cost price. Find the ratio of water and milk.
   Ans : 1 : 4

5. If ₹170 is divided among 100 students such that each boy got ₹2 and each girl each girl got one ₹, then find the number of girls.
   Ans : 30

6. How many kgs. of rice costing ₹36 per kg must be mixed with 36 kg of rice costing ₹27 per kg so that 20% gain may be obtained by selling the mixture at ₹36 per kg?
   Ans : 10.8 kg

7. A butler stole wine from a butt of sherry which contained 40% of spirit and he replaced what he had stolen by wine containing only 16% spirit. The butt was then 24% strength only. How much of the butt did he steal?
   Ans : $\frac{2}{3}$

8. Mahalaxmi General Store has 1000 kg of sugar, part of which he sells at 8% profit and the rest at 18% profit. He gains 14% on the whole. Find the quantity sold at 8% profit.
   Ans : 400 kg

9. Milk and water in two vessels A and B are in the ratio $4:3$ and $2:3$ respectively. In what ratio the liquids in both the vessels should be mixed to obtain a new mixture in vessel C containing half milk and half water?
   Ans : 7 : 5

10. The respective ratio of milk and water in the mixture is $4:3$. If 16 litres of water is added to this mixture the respective ratio of milk and water becomes $8 : 7$. What is the quantity of milk in the original mixture?
    Ans : 48 litre.

EXERCISE 2.2

1. In a river, Mahesh takes 3 hours in rowing 3 km upstream or 15 km downstream. What is the speed of the current?
   Ans : 2 km/hr

2. A boat goes 2.4 km downstream in 10 hours. It takes 2 hours more to cover the same distance against the stream. What is the speed of the boat in still water?
   Ans : 2.2 km/hr

3. A boat goes 6 km in an hour in still water. It takes thrice as much time in covering the same distance against the current. Find the speed of the current.
   Ans : 4 km/hr

4. Raju can row $7\frac{1}{2}$ km/hr in still water. If in a river running at 1.5 km an hour, it takes him 50 minutes to row to a place and back, how far off is the place?
   Ans : 3 km

5. Jethalal can row three-quarters of a kilometre against

the stream in $11\frac{1}{4}$ minutes and return in $7\frac{1}{2}$ minutes. Find the speed of the man in still water.

Ans : 5 km/hr

6. Ambar can row $7\frac{1}{2}$ kms an hour in still water and he finds that it takes him twice as long to row down the river. Find the rate of the stream.

    Ans : 2.5 km/hr

7. A boat covers 32 km upstream and 36 km downstream in 7 hours. Also, it covers 40 km upstream and 48 km downstream in 9 hours. Find the speed of the boat in still water and that of the stream.

    Ans : 10 km/hr, 2 km/hr

8. A boat goes 8 km upstream and then returns. Total time taken is 4 hours 16 minutes. If the velocity of current is 1 km/hr, find the actual velocity of the boat.

    Ans : 4 km/hr

9. The speed of a boat in still water is 11 km/hr. It can go 12 km upstream and return downstream to the original point in 2 hours 45 minutes. Find the speed of the stream.

    Ans : 5 km/hr

10. Kritika can row her boat a speed of 5 km/hr in still water. If it takes her 1 hour more to row the boat 5.25 km. upstream then to return downstream, find the speed of the stream.

    Ans : 2 km/hr

EXERCISE 2.3

1. A pipe can fill a tank in 3 minutes and another pipe can fill it in 4 minutes. How long would it take both pipes, working together, to fill it?
    Ans : $\frac{12}{7}$ minutes

2. A tap can fill a cistern in 8 hours and another tap can empty it in 16 hours. Find the time taken to fill the tank, if both the taps are open.
    Ans : 16 hours

3. A pipe can fill a tank in 12 hours. Due to leak in the bottom, it is filled in 16 hours. If the tank is full, how long will it take to empty from the leak.
    Ans : 48 hours

4. Pipes A and B can fill a tank in 6 hours and 9 hours respectively and pipe C can empty it in 12 hours. If all the pipes are opened together in the empty tank, in how much time will it be full ?
    Ans : $5\frac{1}{7}$ hours

5. A cistern has two taps which fill it in 12 minutes and 15 minutes respectively. There is also a waste pipe in the cistern. When all the three are opened, the empty

cistern is full in 20 minutes. How long will the waste pipe take to empty the full cistern?

Ans : 10 minutes

6. A cistern can be filled by two pipes filling separately in 12 and 16 minutes respectively. Both the pipe are opened together for a certain time but being clogged, only $\frac{7}{8}$ of the full quantity of water flows through the former and only $\frac{5}{6}$ through the later pipe. The obstructions, however, being suddenly removed, the cistern is filled in 3 minutes from the moment. How long was it before the full flow began?

    Ans : after $4\frac{1}{2}$ minute

7. A cistern has three pipes A, B and C. A and B can fill it in 3 hours and 4 hours respectively while C can empty the completely filled cistern in 1 hour. If the pipes are opened in order at 3 P.M., 4 P.M. and 5 P.M. respectively, at what time will the cistern be empty ?

    Ans : 7 : 12 PM

8. A large tanker can be filled by two pipes A and B in 60 minutes and 40 minutes respectively. How many minutes will it take to fill the tanker from empty state if B is used for half the time and A and B fill it together for the other half ?

    Ans : 30 minutes

9. A pipe can empty a tank in 40 minutes. A second pipe with diameter twice as much as that of the first is also attached with the tank to empty it. How much time will the two pipes together take to empty the tank ?

    Ans : 8 minutes

10. A tap can fill a tank in 40 minutes and another outlet pipe can empty it in 24 minutes. If the tank is already two-fifths full and both the taps are opened together, will the tank be filled or emptied? How long will it take before the tank is either filled completely or emptied completely, as the case may be ?

EXERCISE 2.4

1. In a kilometer race, Ram beats Bharat by 40 metres or by 5 seconds. What is the time taken by Ram over the course.
   Ans : 2 minute

2. In a 300 m race Amar beats Bhavya by 22.5 m or 6 seconds. Find Bhavya's time over the course.
   Ans : 80 seconds

3. In a 100 m race, Seeta covers the whole distance in 36 seconds and Teena in 45 seconds. In this race, by how many metres Seeta beats Teena.
   Ans : 20 m

4. Akbar runs $1\frac{2}{3}$ times as fast as Roshan. If Akbar gives Roshan a start of 80 m. How far must the winning post be so that Akbar and Roshan might reach it at the same time?

   Ans : 200 m

5. In a 800 m race, Amar beats Akbar by 74 m and in a 600 m race, Akbar beats Anthony by 50 m. By how many meters will Amar beat Anthony in a race of 500 m?
   Ans : 84.06 m

6. In a 800 metre race, Geeta defeated Lata by 15 seconds. If Geeta's speed was 8 km/hr, then find the speed of Lata.
   Ans : $7\frac{17}{25}$ km/hr

7. Dheeraj and Fateh can cover a 200 m race in 22 seconds and 25 seconds respectively. When Dheeraj finished the race then Fateh is at what distance from the finishing line?
   Ans : 24 m

8. In a game of Snooker, Bhupesh can give Deepak 16 Points in 80 and Bhupesh can give Narendra 15 point in 90. How many points can Narendra give Deepak in a game of 50?
   Ans : 2 point

9. In a game, Badal can give 20 points to Chandu, Badal can give 32 points to Deepak and Chandu can give 15 points to Deepak. How many points make the game?
   Ans : 100

10. In a game of billiards, Rajesh can give Shailesh 10 points in 60 and he can give Tejendra 15 in 60. How many points can Shalelsh give Tejendra in a game of 90?
    Ans : 200

EXERCISE 9.1

For the following implicit function find $\frac{dy}{dx}$.

1. $xy^2 - x^2y = 3$

   Ans : $\dfrac{2xy - y^2}{2xy - x^2}$

2. $xy^3 - x^3y = x$

Ans : $\dfrac{2xy}{3y^2 - x^2}$

3. $(x^2 + y^2)^2 = xy$
    Ans : $\dfrac{y - 4x(x^2 + y^2)}{4y(x^2 + y^2) - x}$

4. If $x^{2/3} + y^{2/3} = 2$, find $\dfrac{dy}{dx}$ at $(1,1)$.
    Ans : -1

5. Use implicit differentiation to verify that $\dfrac{dy}{dx} \cdot \dfrac{dx}{dy} = 1$
    , when
    (i) $y^2 = 4ax$ (ii) $x^3 + y^3 = 3axy$.
    Ans : Proof

6. If $y \log x = x - y$, prove that $\dfrac{dy}{dx} = \dfrac{\log x}{(1 + \log x)^2}$
    Ans : Proof

7. If $e^x + e^y = e^{x+y}$, prove that $\dfrac{dy}{dx} = - e^{y-x}$.
    Ans : Proof

8. If $e^{x+y} = xy$, show that $\dfrac{dy}{dx} = \dfrac{y(1 - x)}{x(y - 1)}$.
    Ans : Proof

EXERCISE 9.2

Differentiate the following functions wrt x:

1. $(x+1)^2(x+2)^3(x+3)^4$

   Ans : $(x+1)^2(x+2)^3(x+3)^4\left(\dfrac{2}{x+1} + \dfrac{3}{x+2} + \dfrac{4}{x+3}\right)$

2. $\dfrac{x\sqrt{x^2+1}}{(x+1)^{2/3}}$, $x > 0$.

   Ans : $\dfrac{x\sqrt{x^2+1}}{(x+1)^{2/3}}\left[\dfrac{1}{x} + \dfrac{x}{x^2+1} - \dfrac{2}{3(x+1)}\right]$, $x > 0$

3. $(2x+3)^{x-5}$

   Ans : $(2x+3)^{x-5}\left[\dfrac{2(x-5)}{2x+3} + \log(2x+3)\right]$

4. $x^x(1+\log x)$

   Ans : $x^x\left(\dfrac{1}{x} + (1+\log x)^2\right)$

5. $x^{\log x} + (\log x)^x$

   Ans : $x^{\log x}\cdot\dfrac{2\log x}{x} + (\log x)^x\left[\log(\log x) + \dfrac{1}{\log x}\right]$

.

6. If $y = x^y$, prove that $x\dfrac{dy}{dx} = \dfrac{y^2}{1 - y\log x}$

   Ans : Proof

7. If $x = e^{x/y}$, prove that $\dfrac{dy}{dx} = \dfrac{x - y}{x\log x}$

   Ans : Proof

8. If $x^y = e^{y-x}$, prove that $\dfrac{dy}{dx} = \dfrac{2 - \log x}{(1 - \log x)^2}$

   Ans : Proof

9. If $x^y y^x = 5$, show that $\dfrac{dy}{dx} = -\dfrac{y(y + x\log y)}{x(x + y\log x)}$

   Ans : Proof

10. If $(x - y)\, e^{\frac{x}{x-y}} = a$, prove that $y\dfrac{dy}{dx} + x = 2y$

    Ans : Proof

For the following parametric equation find $\frac{dy}{dx}$.

1. $x = \dfrac{3at}{1+t^2}$ and $y = \dfrac{3at^2}{1+t^2}$

   Ans : $\dfrac{2t}{1-t^2}$

2. $x = e\left(t+\dfrac{1}{t}\right)$ and $y = e^{-t}\left(t-\dfrac{1}{t}\right)$

   Ans : $e^{-2t}\dfrac{(t^2-t^3+t+1)}{(t^3+t^2+t-1)}$

3. $x = \dfrac{2t}{1+t^2}$ and $y = \dfrac{1-t^2}{1+t^2}$

   Ans : $\dfrac{t^2-1}{2t}$

●

EXERCISE 9.4

Find the second order derivative wrt x of the following functions.

1. 1 $4x^3+x+7$

   Ans : $24x$

2. $\log x$

   Ans : $-1/x^2$

3. $y = x^3 \log x$

   Ans : $x(5+6\log x)$

4. $y = \log(x^2/e^x)$

   Ans : $-2/x^2$

5. If $e^y(x+1) = 1$, show that $\dfrac{d^2y}{dx^2} = \left(\dfrac{dy}{dx}\right)^2$.

   Ans : Proof

Make the project on general studies on the topic

"Human Rights"

1. The universal declaration of Human Rights and it's significance

2. The responsibility of individuals, communities, and business in promoting Human Rights.

 3. The relationship between Human Rights and sustainable development.

- **Write about Eml in practical file.**
   1. What is EMI?
   2. Calculation of EMI by flat rate method and reducing balance method.
   3. Amortization of loan
   4. Solve the case study given in class.

_____

MATHEMATICS

1.Do the Following questions from Together with Mathematics
Page number 92 (Integrated Exercise)
Question Number 01 to 06, 08 to 17,   20 to 22, 25 to 33, 35 to 49, 51 to 71, 73, 74,   76 to 90, 95, 96 and 100 to 103.

- **Make the project on general studies on the topic**
  "Human Rights"
  1. The universal declaration of Human Rights and it's significance
  2. The responsibility of individuals, communities, and business in promoting Human Rights.
  3. The relationship between Human Rights and sustainable development.

PAINTING

1.Make two compositions with three human figures and complete with water colors or pencil colors.

2. Make two beautiful Landscapes with pastel colors or water colors.

Size : Half Ivory sheet or cartridge sheet

PHYSICAL EDUCATION

File Work
1. Yoga as Preventive Measure for Lifestyle Diseases

1) Obesity
2) Diabetes
3) Asthma
4) Hypertension

*Meaning
*List of Preventive Asanas
*Asnas and Pranayamas are helpful to cure Asthma.

(explain any two from list)

2.Write detailed explanation of any one GAME of your choice in Physical Education file out of the list below:

*Basketball, Volleyball, Kho-Kho, Football, Kabaddi, Hockey, Cricket and Handball.

Including:
1. History of the game
2. Labelled diagram of field/court paste/draw.
3. Equipment used
4. Fundamentals Skills
5. Terminologies
6. Basic Rules

- Make the project on general studies on the topic
° The Universal Declaration of Human Rights and its significance.
° The responsibility of individual communities and business in promoting Human rights.
° The relationship between Human rights and sustainable development.

●Prepare a project for H.P.E. Sewa on the topic " being safe and responsible" as discussed in the class

WORK EXPERIENCE
Prepare a Project on Old Age Home and organise the activities for the aged people.
Title of Project file:Visit to an Old Age Home.