



DEEP PUBLIC SCHOOL

Your Child's future is Our Priority !!

HOLIDAY'S HOME WORK

CLASS XIIB (22-23)

ENGLISH

Section A- Unseen Passage

Q1. Read the passage given below:

I saw 'Jaws', the popular shark movie, the summer it came out, in 1975 and became paranoid about sharks. Though I kept swimming after Jaws, it was always with the vague fear that a shark's teeth could tug on my leg at any moment. Never mind that there'd been only two shark bites since 1900 on the Connecticut coast, where I lived.

So, when I got this assignment for the National Geographic magazine, I decided to accept and do what I'd never wanted to do: swim with the sharks. I had to go to a place in the Bahamas known as Tiger Beach and dive with tiger sharks, the species responsible for more recorded attacks on humans than any shark except the great white. It was to be my first dive after getting certified—which meant it would be my first dive anywhere other than a swimming pool or a quarry—and without a diver's cage. Most people who got wind of this plan thought I was either very brave or very stupid.

But I just wanted to puncture an illusion. The people who know sharks intimately tend to be the least afraid of them, and no one gets closer to sharks than divers. The divers who run operations at Tiger Beach speak lovingly of the tiger sharks the way people talk about their children or their pets. In their eyes, these sharks aren't man-eaters any more than dogs are.

The business of puncturing illusions is never just black and white. My fellow divers had hundreds of dives under their belt and on the two-hour boat ride to the site in the morning of our first dive, they kept saying things like, "Seriously, I really can't believe this is your first dive." All this was okay with me until I reached the bottom and immediately had to fend off the first tiger shark, I had ever laid eyes on. However, when I watched the other divers feeding them fish and steering them gently, it became easy to see the sharks in a very benign light.

I think it would be unfair not to mention that though tiger sharks are apex predators. They act as a crucial balancing force in ocean ecosystems, constraining the numbers of animals like sea turtles and limit their behaviour by preventing them from overgrazing the sea grass beds. Furthermore, tiger sharks love warm water, they eat almost anything, have a huge litter and are the hardiest shark species. If the planet and its oceans continue to warm, some species will be winners and others will be losers, and tiger sharks are likely to be winners.

Based on your understanding of the passage, answer all the questions given below.

1. Cite a point in evidence, from the text, to suggest that the writer's post-Jaws fear was not justified.
2. State any one trait of the writer that is evident from lines 5-10 and provide a reason for your choice.
3. People thought the writer was 'either brave or very stupid'. Why did some people think that he was 'very stupid'?

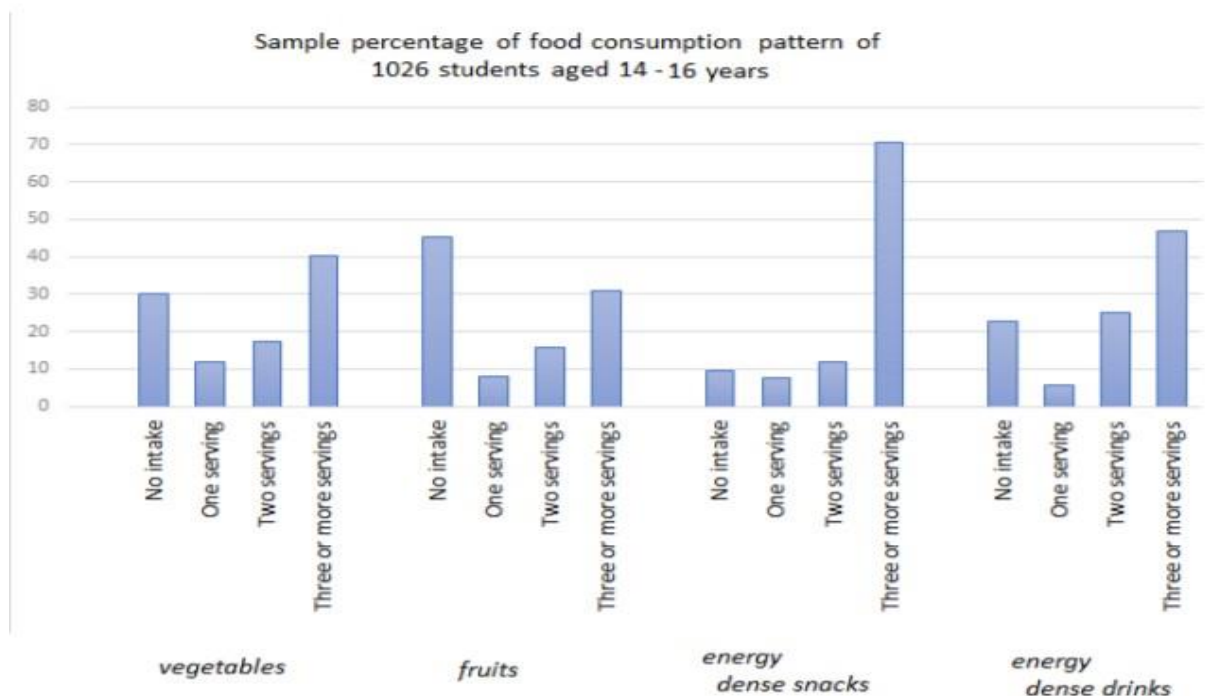
4. Why does the writer say that people who know sharks intimately tend to be least afraid of them?
5. Rewrite the given sentence by replacing the underlined phrase with another one, from lines 10 – 20.
Some academicians think that reward, as a form of discipline, is a simple right or wrong issue
6. What does the use of the phrase ‘benign light’ suggest in the context of the writer’s viewpoint about the tiger sharks?
7. Select a suitable phrase from lines 15-25 to complete the following sentence appropriately.
I agree the team will find this experience tough, but competing will be easier next time after they get this tournament_____.
8. Apex predators serve to keep prey numbers in check. How can we say that tiger sharks are apex predators?
9. Analyse why having a large litter is one of the features that empowers tiger sharks to emerge winners if global warming persists.

Q2 Read the passage given below:

Changing food preferences have brought about rapid changes in the structure of the Indian diet. The rapid proliferation of multinational fastfood companies and the influence of Western culture have replaced traditional home-cooked meals with ready-to-eat, processed foods thus increasing the risk of chronic diseases in urban Indians. Therefore, nurturing healthy eating habits among Indians from an early age would help to reduce health risks.

To date, little is known about the quality and quantity of foods and beverages consumed by urban Indian adolescents. This lack of evidence is a significant barrier to the development of effective nutrition promotion and disease prevention measures. Therefore, a self-administered, semi-quantitative, 59-item meal-based food frequency questionnaire (FFQ) was developed to assess the dietary intake of adolescents. A total of 1026 students (aged 14–16 years) attending private, English-speaking schools in Kolkata completed the survey.

A sample percentage of the food consumption pattern is displayed (Fig. 1)



The survey results report poor food consumption patterns and highlights the need to design healthy eating initiatives. Interestingly, while there were no gender differences in the consumption of legumes and fried snacks, the survey found more females consumed cereals, vegetables and fruits than their male counterparts.

In conclusion, the report suggested that schools ought to incorporate food literacy concepts into their curriculum as they have the potential of increasing the fruit and vegetable intake in teenagers. Additionally, healthy school canteen policies with improved availability, accessibility, variety and affordability of healthy food choices would support the consumption of nutritious food in students.

Based on your understanding of the passage, answer ANY SIX out of the seven questions given below.

1. What does the researcher mean by 'changing food preferences'?
2. Why was this survey on the food consumption of adolescents undertaken?
3. With reference to fig.1, write one conclusion about students' consumption of energy-dense drinks.
4. What can be concluded by the 'no intake' data of fruit consumption versus energy dense snacks, with reference to fig.1?
5. There were no gender differences observed in the consumption of healthy foods, according to the survey. Substantiate.
6. Why is 'affordability' recommended as a significant feature of a school canteen policy?
7. Identify a word from lines 9 - 18 indicating that the questionnaire was specifically designed to be completed by a respondent without the intervention of the researcher collecting the data.

Section B - Notice Writing

Q1.Due to a sudden landslide and inclement weather, St. Francis School, Vasco has to be closed for a week. As Principal of that school, draft notice in not more than 50 words to be displayed at the school main gate notice board.

Q2.Your school has planned an excursion to Lonavala near Mumbai during the autumn holidays. Write a notice in not more than 50 words for your school notice board, giving detailed information and inviting the names of those who are desirous to join. Sign as Naresfy/Namita, Head Boy/Head Girl, D.V. English School, Thane, Mumbai.

Q3.You are Anoop/Arya, the cultural secretary of your school. As part of the national heritage programme, the school has decided to put up a show on ancient art forms. Write a notice to be put up on the school notice board inviting students to watch the show and encourage the artists. Write the notice in not more than 50 words.

Q4.Your state government has banned the use of plastic bags. You are Amarjeet, a reporter of The National Herald. Write a report in 100-125 words on how the ban is being ignored and what damage the indiscriminate use of plastic bags is causing to the environment.

Q5.You visited a Job Fair organised by Ability Foundation at Chennai recently. You were impressed to see that nearly 55 companies from various sectors such as information technology, telecommunication, electronics etc. offered jobs to the final year students of colleges. As a reporter of 'The Deccan Times', Chennai, prepare a report in 100-125 words. You are Peeyush/Priya.

Q6.You are Pulkil/Prema, a staff reporter of The Times of India. You have been asked to cover an incident of daylight robbery on the outskirts of Delhi when the inmates were present in the house. Write a report in 100-125 words.

ACCOUNTANCY

- 1) Comprehension Project 1: - The students will be allowed to select any business of their choice, frame

it in a story line of all the transactions they must have performed during the year in a fictitious business.

2) Worksheet of Ch 2 to 4 in practice H.W copy.

(a) Worksheet- 1

(Fundamentals of Partnership Firm)

Q1) Ankur and Bobby were into the business of providing software solution in India. They were sharing profits and losses in the ratio 3:2. They admitted Rohit for a $\frac{1}{5}$ share in the firm. Rohit, alumni of IIT, Chennai would help them to expand their business to various South Africa countries where he had been working earlier. Rohit is guaranteed a minimum profit of 2, 00,000 for the year. Any deficiency in Rohit's share is to be borne by Ankur and Bobbu in the ratio 4:1. Losses for the year were 1, 00,000. Pass the necessary journal entries.

Q2) Kanika and Gautam are partners doing a dry cleaning business in Lucknow, sharing profits in the ratio 2:1 with capitals 5, 00,000 and 4, 00,000 respectively. Kanika withdrew the following amounts during the year to pay the hostel expenses of her son.

1 st April	10,000
1 st June	9,000
1 st Nov	14,000
1 st Dec	5,000

Gautam withdrew 15,000 on the first day of April, July, October and January to pay rent for the accommodation of his family. He also paid 20,000 per month as rent for the office of partnership which was in a nearby shopping complex.

Calculate interest on Drawing @6% p.a.

Q3) Satnam and Qureshi after doing their MBA decided to start a partnership firm to manufacture ISI marked electronic goods for economically weaker section of the society. Satnam also expressed his willingness to admit Juliee as a partner without capital who is especially able but a very creative and intelligent friend of him. Qureshi agreed to this. They formed a partnership on 1st April 2012 on the following terms:

- a) Satnam will contribute 4, 00,000 and Qureshi will contribute 2, 00,000 as capitals.
- b) Satnam, Qureshi and Juliee will share profit in the ratio of 2:2:1.
- c) Interest on capital will be allowed @6% p.a.
Due to shortage of capital Satnam contributed 50,000 on 30th September, 2012 and Qureshi contributed 20,000 on 1st January, 2013 as additional capitals. The profit of the firm for the year ended 31st March, 2013 was 3, 37,800.
- d) Identify any two values which the firm wants to communicate to the society.
- e) Prepare Profit & Loss Appropriation A/c for the year ending 31st March, 2013.

Q4) Naveen, Seerat and Hina were partners in a firm manufacturing blanket. They were sharing profits in the ratio of 5:3:2. Their capitals on 1st April, 2012 were 2, 00,000; 3, 00,000 and 6, 00,000 respectively. After the floods in Uttaranchal, all partners decided to help the flood victims personally.

For this Naveen withdrew 10,000 from the firm on 1st September, 2012. Seerat, instead of withdrawing cash from the firm took blankets amounting to 12,000 from the firm and distributed to the flood victim. On the other hand, Hina withdrew 2, 00,000 from her capital on 1st January, 2013 and set up a centre to provide medical facilities in the flood affected area.

The Partnership deed provides for charging interest on drawings @6% p.a. After the final accounts were

prepared, it was discovered that interest on drawing had not been charged. Give the necessary adjusting journal entry and show the working notes clearly. Also state any two values that the partners wanted to communicate to the society.

Q5) Singh and Gupta decided to start a partnership firm to manufacture low cost jute bags as plastics bags were creating many environmental problems. They contributed capitals of admit Shakti as a partner without capital, who is specially abled but a very creative and intelligent friend of his. Gupta agreed to this. The terms of partnership were as follows:

- a) Singh, Gupta and Shakti will share profits in the ratio of 2:2:1.
- b) Interest on capital will be provided @6% p.a.
Due to shortage of capital Singh contributed 25,000 on 30th September, 2012 and Gupta contributed 10,000 on 1st January, 2013 as additional capital. The profit of the firm for the year ended 31st March, 2013 was 1, 68,900.
- a) Identify any two values which the firm wants to communicate to the society.
- b) Prepare Profit & Loss Appropriation A/c for the year ending 31st March, 2013.

Q6) Seema, Tanuja and Tripti were partners in a firm trading in garments. They were sharing profits in the ratio of 5:3:2. Their capitals on 1st April, 2012 were 3, 00,000; 4, 00,000 and 8, 00,000 respectively. After the floods in Uttarakhand, all partners decided to help the flood victims personally.

For this Seema withdrew 20,000 from the firm on 15th September, 2012. Tanuja instead of withdrawing cash from the firm took garments amounting to 24,000 from the firm and distributed

those to the flood victims. On the other hand, Tripti withdrew 2, 00,000 from her capital on 1st January, 2013 and provided a mobile medical van in the flood affected area.

The partnership deed provides for charging interest on drawing @6% p.a. After the final accounts were prepared, it was discovered that interest on drawing had not been charged.

Give the necessary adjusting journal entry and show the working notes clearly. Also state any two values that the partners wanted to communicate to the society.

Q7) Alex, John and Sam are partners in a firm. Their capital accounts on 1st April, 2011, stood at 1,00,000; 80,000; 60,000 respectively.

Each partner withdrew 5,000 during the financial year 2011-12. As per the provisions of their partnership deed:

- a) John was entitled to a salary of 1,000 per month.
- b) Interest on capital was to be allowed @10% per annum.
- c) Interest on drawing was to be charged @4% per annum.
- d) Profits and losses were to be shared in the ratio of their capitals

The net profit of 75,000 for the year ended 31st March 2012, was divided equally amongst the partners without providing for the terms of the deed.

You are required to pass a Single Adjustment Journal Entry to rectify the error. (Show the working clearly).

Q8) X, Y and Z have been sharing profit in the ratio of 2:2:1 respectively. Z wants that he should be given equal share in profits with X and Y and he further wants that the change in the profits sharing ratio should come into effect retrospectively for the last three years. X and Y have no objection to this. The profits for the last three years were, 52,000, 44,200 and 51,610.

Show the adjustment of profit for the last three years by means of a journal entry.

Q9) A, B and C were partners in a firm having capitals of 60,000; 60,000; and 80,000 respectively. Their

Current Account balances were A: 10,000; B: 5,000 and C: 2,000(Dr.). According to the partnership deed the partners were entitled to interest on capital@5% p.a. C being the working partner was also entitled to a salary of 6,000 p.a. the profits were to be divided as follows:

- The first 20,000 in proportion to their Capital.
- Next 30,000 in the ratio of 5:3:2
- Remaining profits to be shared equally.

The firm made a profit of 1, 56,000 before charging any of the above items. Prepare the Profit & Loss Appropriation Account and pass necessary journal entry for apportionment of profit.

Q10) A and B are partners sharing profits and losses in the ratio of 2:1. A is a non-working partner and has contributed 24, 00,000 as his capital. B is a working partner. The partnership deed provides

for interest on capital @10% p.a. and salary of 15,000 per month to the working partner. The net profit for the year ended 31st March, 2012 before providing for interest on capital and salary amounted to 1, 40,000. You are required to show the distribution of profit.

(a) Worksheet- 2

(GOODWILL: NATURE AND VALUATION)

Q1) A firm earned profits of 80,000; 1, 00,000; 1, 20,000 and 1, 80,000 during 2010-11; 2011-12; 2012-13; 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 super profit of last four years.

Q2) On 1st April 2013, an existing firm had assets of 10, 00,000 including cash of 20, 000. Its creditors amounted to 50,000 on that date. The partner's capital accounts showed a balance of 8, 00,000 while the reserve fund amounted to 1, 50,000. If the normal rate of return is 15% and the goodwill of the firm is valued at 1, 80,000 at 3 year's purchase of super profit, find the average profit of the firm.

Q3) A firm's average profits are 7, 00,000. It includes an abnormal profit of 50,000. Capital invested in the business is 55, 00,000 and the normal rate of return is 10%. Calculate goodwill at four times the super profit.

Q4) On April 1st, 2012 an existing firm had assets of 3, 00,000 including cash of 20,000. The partner's capital accounts showed a balance of 2, 40,000 and reserve constituted the rest. If the normal rate of return is 10% and the goodwill of the firm is valued at 96,000 at 4 years purchase of super profits, find the average profits of the firm.

Q5) X and Y are partners sharing profits and losses in the ratio of 3:2. They agree to take Z into partnership for 1/3rd share. For this purpose, goodwill is to be valued at two year's purchase of the average profit of last four years which were as follows:

Year ending on 31 st March 2009	50,000(profit)
Year ending on 31 st March 2010	1, 20,000(profit)
Year ending on 31 st March 2011	1, 80,000(profit)
Year ending on 31 st March 2012	70,000(loss)

On 1st April, 2011 a Motor bike costing 50,000 was purchased and debited to travelling expenses account, on which depreciation is to be charged @20% p.a. calculate the value of goodwill.

(a) Worksheet- 3

(Change in Profit Sharing Ratio)

Q1) Kabir and Farid are partners sharing profits and losses in the ratio of 7:3. Kabir surrenders 2/10th from his share and Farid surrenders 1/10th from his share in favour of Jyoti, a new partners.

Calculate new profit sharing ratio and sacrificing ratio

Q2) A, B and C are partners in a firm sharing profits and losses in the ratio of 4:2:1. Their BalanceSheet as at 31st March 2012 stood as follows:

Liabilities	Rs.	Assets	Rs.
Creditors	40,000	Sundry Assets	7,20,000
Reserve	1,30,000		
Profit& Loss A/c	5,000		
A's Capital	2,00,00		
B's Capital	2,00,000		
C's Capital	1,00,000		
	7,20,000		7,20,000

From 1st April 2012, the partners decided to change their profit sharing ratio to 5:3:2. For this purpose goodwill was valued at 1, 00,000. The partners do not want to record the goodwill and alsodo not want to distribute the reserves and profits. You are required to record the change by passinga single journal entry. Also prepare the revised balance sheet.

Q3) A, B and C are partners sharing profits in 3:4:5. They agreed to share the future profits equally. Goodwill of the firm is valued at 3, 00,000. Pass necessary journal entry.

Q4) P, Q and R sharing profits and losses in the ratio of 3:2:1, decided to share future profits and losses in the ratio of 4:3:2 with effect from 1st April, 2012. Following is an extract of their BalanceSheets as at 31st March, 2012:

Liabilities	Rs.	Assets	Rs.
Workmen Compensation Reserve	3, 00,000		

Show the accounting treatment if a claim on account of workmen's compensation is estimate at 1, 20,000.

Q5) A, B and C are partners producing electronic goods and sharing profits and losses in the ratio of 2:3:4. They decided to share future profits and losses in the ratio of 4:3:2. They also decided to record the effect of the following without affecting their book values:

General Reserve	1, 60,000
Profit & Loss A/c	80,000
Advertisement Suspense A/c	60,000

You are required to give the necessary single journal entry.

BUSINESS STUDIES

1) Prepare the Project work on the topic allotted: - (Any 1)

- ❖ Project A:- Marketing Management
- ❖ Project B:- Business Environment
- ❖ Project C:- Stock Exchange
- ❖ Project D:- Principles of Management

2) Worksheet of Ch 1 and Ch-2 in practice H.W copy.

(a) Activities involved in managing an organisation are common to all organisation whether economics, social or political. Identify the characteristics of management highlight in the given case.

(b) Co-ordination is the process of achieving unity of action among inter-dependent activity and department of an organization. Explain the nature of co-ordination in the light of this statement.

(c) Management is the trinity of art, science and profession. In the light of this statement explain the nature of Management.

(d) Explain the following principles of management.

(i) Scalar chain (ii) Espirit de-corps (iii) Division of work (iv) Unity Of Direction (v) Equity

(e) Explain the contingent nature of management principles.

(f) Explain the technique of differential wage system. Develop an imaginary plane of the differential piece rate to be introduced for the works, engaged in sewing shirts.

ECONOMICS

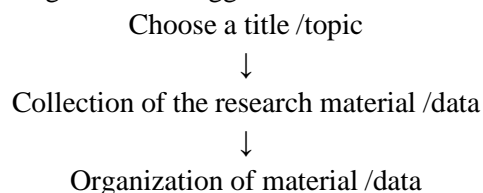
To prepare PROJECT REPORT as per the following guidelines :

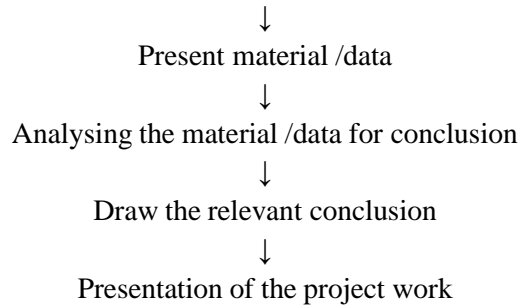
The expectations of the project work are that :

- learners will complete only ONE project in each academic session .
- project should be of 3500-4000 words (excluding diagrams & graphs),preferably hand written.
- it will be an independent self directed piece of study.

Scope of the project :

Learners may work upon the following lines as a suggested flow chart :





Expected Checklist :

- Introduction of topic/title
- Identifying the causes , consequences and /or remedies
- NVarious stakeholders and effect on each of them
- Advantages and disadvantages of situations or issues identified
- Short term and long term implications of economic strategies suggested in the course of research
- Validity & reliability ,appropriateness and relevance of data used for research work and for presentation in the project file.
- Presentation and writing that is succinct and coherent in project file
- Citation of the materials referred to ,in the file in footnotes ,resources section ,bibliography etc.
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Mode of Presentation /Submission of the project :

At the end of the stipulated term ,each learner will present the research work in the Project file to the external and internal examiner .The questions should be asked from the Research Work /Project File of the learner .The Internal Examiner should ensure that the study submitted by the learner is his / her original work .In case of any doubt ,authenticity should be checked and verified .

Marking Scheme :

Marks are suggested to be given as –

S.No	Heading	Marks Allotted
1	Relevance of the topic	3
2	Knowledge /Content /Research work	6
3	Presentation Technique	3
4	Viva Voice	8
	Total	20 marks

ECONOMICS WORKSHEET –NATIONAL INCOME

1- Calculate a) Operating Surplus, and b) Domestic Income;

Items	₹ in Crore
i) Compensation of Employees	2,000
ii) Rent and interest	800
iii) Indirect Taxes	120
iv) Corporation tax	460
v) Consumption of fixed capital	100
vi) Subsidies	20
vii) Dividend	940
viii) Undistributed Profits	300

ix) Net Factor Income to abraod	150
x) Mixed Income	200

OS=2500 cr DI=4700 cr

2- Calculate National Income

Items	(₹ in crore)
i) Compensation of employees	2,000
ii) Profit	800
iii) Rent	300
iv) Interest	250
v) Mixed income of self employed	7000
vi) Net current transfers to abroad	200
vii) Net Exports	100
viii) Net indirect taxes	1,500
ix) Net Factor income to abroad	60
x) Consumption of fixed capital	120

NI=10290cr

3- Calculate NNPmp

Items	(₹ in thousand crore)
1. Compensation of Employees	250
2. Mixed income of self employed	600
3. Profit	80
4. Rent	30
5. Interest	40
6. Net factor income to abroad	10
7. Net exports	15
8. Consumption of fixed Capital	20
9. Net indirect taxes	10
10. Net current transfers to abroad	8

NNPmp =1020 thousand cr

4- Calculate National Income

Items	(Cr) s
1. Profit	1,000
2. Mixed Income of self employed	15,000
3. Dividends	200
4. Interest	400
5. Compensation of employees	7,000
6. Net factor income to abroad	100
7. consumption of fixed capital	400
8. Net exports	200
9. Net Indirect taxes	800
10. Net Current transfers to rest of the world	40
11. Rent	500

NI= 23800 Cr

5- Calculate GNPmp

Items	(₹ in Crore)
1. Mixed income of self Employed	8000
2. Depreciation	200
3. Profit	1000
4. Rent	600
5. Interest	700
6. Compensation of employees	3000
7. Net indirect taxes	500
8. Net factor income to abroad	60
9. Net exports	(-) 50
10. Net current transfers to abroad	20

GNPmp = 13,740 cr

6- Calculate Domestic Income

Items	(₹ in crore)
1. Rent	200
2. Net Current transfers to abroad	10
3. National debt interest	60
4. Corporate tax	100
5. Compensation of employees	900
6. Current transfers to government	150
7. Interest	400
8. Undistributed Profits	50
9. Dividend	250
10. Net Factor income to abroad	10
11. Income accruing to government	120

Domestic Income = 1900 cr.

7- Calculate National Income

Items	(₹ in crore)
1. Wages and Salaries	1000
2. Net Current transfers to abroad	20
3. Net Factor income paid to abroad	10
4. Profit	400
5. National debt interest	120
6. Social security contributions by employers	100
7. Current transfers from government	60
8. National income accruing to government	150
9. Rent	200
10. Interest	300
11. Royalty	50

National Income = 2040 cr.

8- Calculate Operating Surplus

Items	(₹ in crore)
1. Compensation of employees	300
2. Indirect taxes	200
3. Consumption of fixed Capital	100
4. Subsidies	50

5. Gross Domestic Product at market price	600
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Operating Surplus = 50 cr.

9- Calculate GNPmp

Items	(₹ in crore)
1. Mixed income of the self employed	800
2. Consumption of fixed capital	50
3. Wage and salaries	700
4. Compensation of employees from abroad	20
5. Rent on land	200
6. Royalty of sub soil assets	30
7. Interest paid by production units	150
8. Interest paid by consumers	100
9. Profits	300
10. Social security contribution by employers	100
11. Property and entrepreneurial income from abroad	20
12. Net indirect tax	200

GNPmp =2530 cr.

10- Calculate GDPmp

Items	(₹ in crore)
1. Dividend paid	20
2. Depreciation	25
3. Rent	75
4. Interest	125
5. Undistributed profits	50
6. Subsidies	10
7. Goods and services tax (GST)	40
8. Corporation tax	30
9. Mixed Income	500
10. Net factor income from abroad	20
11. Compensation of employees	300

GDP mp = 1155 cr.

MATHEMATICS –

CHAPTER- MATRICES AND DETERMINANTS

1. If $A_\alpha = \begin{bmatrix} \cos \alpha & \sin \alpha \\ -\sin \alpha & \cos \alpha \end{bmatrix}$, then prove that (i) $A_\alpha A_\beta = A_{\alpha+\beta}$
(ii) $(A_\alpha)^n = \begin{bmatrix} \cos n \alpha & \sin n \alpha \\ -\sin n \alpha & \cos n \alpha \end{bmatrix}$ for every positive integer n. (CBSE2004)
2. If $A = \begin{bmatrix} 2 & 1 & 2 \\ 2 & 2 & 1 \\ 3 & 2 & 0 \end{bmatrix}$, then prove that $A^2 - 4A - 5I = 0$. (CBSE2008)
3. If $A = \begin{bmatrix} 1 & 4 & 0 \\ 0 & 0 & 5 \\ -1 & & \end{bmatrix}$, then prove that $A^2 - 7A - 10I = 0$. (CBSE)
4. If $A = \begin{bmatrix} 2 \\ 3 \end{bmatrix}$ and $B = \begin{bmatrix} -2 & -1 & -4 \end{bmatrix}$, Verify that $(AB)^T = B^T A^T$. (CBSE 2005)

5. Express the following matrices as the sum of symmetric and skew symmetric matrix-

$$(i) \begin{bmatrix} 3 & 2 & 7 \\ 1 & 4 & 3 \\ -2 & 5 & 8 \end{bmatrix} (ii) \begin{bmatrix} 4 & 2 & -1 \\ 5 & 7 & 1 \\ -2 & 1 & 1 \end{bmatrix} (iii) \begin{bmatrix} 3 & -2 & 4 \\ -2 & -5 & 2 \\ -1 & 1 & 2 \end{bmatrix} \text{ (CBSE2007,08,10)}$$

6. Using properties of determinants prove

$$(i) \begin{vmatrix} x & y & z \\ x^2 & y^2 & z^2 \\ x^3 & y^3 & z^3 \end{vmatrix} = xyz(x-y)(y-z)(z-x). \text{ (CBSE2010,11)}$$

$$(ii) \begin{vmatrix} x & y & z \\ x^2 & y^2 & z^2 \\ y+z & z+x & x+y \end{vmatrix} = (x-y)(y-z)(z-x)(x+y+z). \text{ (CBSE2007,08,10)}$$

$$(iii) \text{ If } x \neq y \neq z \text{ and } \begin{vmatrix} x & x^2 & 1+x^3 \\ y & y^2 & 1+y^3 \\ z & z^2 & 1+z^3 \end{vmatrix} = 0, \text{ then prove that } xyz = -1. \text{ (CBSE2011)}$$

$$(iv) \text{ For any scalar } p \text{ prove that } \begin{vmatrix} x & x^2 & 1+px^3 \\ y & y^2 & 1+py^3 \\ z & z^2 & 1+pz^3 \end{vmatrix} = (1+pxyz)(x-y)(y-z)(z-x).$$

$$(v) \text{ Without expanding prove that } \begin{vmatrix} 1 & a & a^2-bc \\ 1 & b & b^2-ca \\ 1 & c & c^2-ab \end{vmatrix} = 0. \text{ (CBSE 2002)}$$

$$(vi) \text{ Without expanding prove that } \begin{vmatrix} 1 & 1+p & 1+p+q \\ 2 & 3+2p & 1+3p+2q \\ 3 & 6+3p & 1+6p+3q \end{vmatrix} = 1. \text{ (CBSE2009)}$$

$$(vii) \text{ Show that } \begin{vmatrix} b+c & c+a & a+b \\ q+r & r+p & p+q \\ y+z & z+x & x+y \end{vmatrix} = 2 \begin{vmatrix} a & b & c \\ p & q & r \\ x & y & z \end{vmatrix}. \text{ (CBSE2004,06,10,12)}$$

$$(viii) \begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix} = abc \left(1 + \frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right) = abc + bc + ca + ab. \text{ (CBSE2004,09,12)}$$

$$(ix) \begin{vmatrix} (b+c)^2 & a^2 & a^2 \\ b^2 & (c+a)^2 & b^2 \\ c^2 & c^2 & (a+b)^2 \end{vmatrix} = 2abc(a+b+c)^3. \text{ (CBSE2006,10)}$$

$$(x) \begin{vmatrix} (b+c)^2 & ba & ca \\ ab & (c+a)^2 & cb \\ ac & bc & (a+b)^2 \end{vmatrix} = 2abc(a+b+c)^3. \text{ (CBSE2006,10)}$$

$$(xi) \begin{vmatrix} 1+a^2-b^2 & 2ab & -2b \\ 2ab & 1-a^2+b^2 & 2a \\ 2b & -2a & 1-a^2-b^2 \end{vmatrix} = (1+a^2+b^2)^3. \text{ (CBSE2009,10C)}$$

$$(xii) \begin{vmatrix} 3a & -a+b & -a+c \\ -b+a & 3b & -b+c \\ -c+a & -c+b & 3c \end{vmatrix} = 3(a+b+c)(ab+bc+ca). \text{ (CBSE2006C, 13)}$$

7. Solve (i) $\begin{vmatrix} a-x & a+x & a-x \\ a-x & a-x & a+x \\ a+x & x & x \end{vmatrix} = 0$ (CBSE2004,05,11)

$$(ii) \begin{vmatrix} x & a+x & x \\ x & x & a+x \end{vmatrix} = 0 \text{ (CBSE2011)}$$

8. If the points $(2, -3)$, $(\lambda, -1)$ and $(0, 4)$ are collinear, find the value of λ .
9. Find the equation of line joining the points $A(1, 3)$ and $B(0, 0)$ using determinants and find k if $D(k, 0)$ is a point such that the area of ΔABC is 3sq. Units. (CBSE 2013)
10. Show that $A = \begin{bmatrix} 2 & -3 \\ 3 & 4 \end{bmatrix}$ satisfies the equation $x^2 - 6x + 17 = 0$. Hence find A^{-1} . (CBSE2007)
11. Show that the matrix $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ satisfies the equation $A^2 - 4A - 5I = 0$ and hence find A^{-1}
12. If $A = \begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}$, find the value of λ so that $A^2 = \lambda A - 2I$. Hence find A^{-1} . (CBSE2007)
13. If $A^{-1} = \begin{bmatrix} 3 & -1 & 1 \\ -15 & 6 & -5 \\ 5 & -2 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$, find $(AB)^{-1}$. (CBSE2012)
14. Using elementary operations find the inverse of the following matrices
- (i) $\begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$ (ii) $\begin{bmatrix} 2 & -1 & 4 \\ 4 & 0 & 2 \\ 3 & -2 & 7 \end{bmatrix}$ (iii) $\begin{bmatrix} 1 & 3 & -2 \\ -3 & 0 & 1 \\ 2 & 1 & 0 \end{bmatrix}$ (iv) $\begin{bmatrix} -1 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$

15. Solve the following system of linear equations by matrix method (every year one question of 6 marks)

(i) $8x + 4y + 3z = 18, 2x + y + z = 5, x + 2y + z = 5.$

(ii) $\frac{2}{x} + \frac{3}{y} + \frac{10}{z} = 4, \frac{4}{x} - \frac{6}{y} + \frac{5}{z} = 1, \frac{6}{x} + \frac{9}{y} + \frac{-20}{z} = 2.$

- (ii) If $A = \begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$ are two square matrices, find AB and hence solve the system of linear equations: $x - y = 3$, $2x + 3y + 4z = 17$, $y + 2z = 7$.
- (iii) If $A = \begin{bmatrix} 2 & -3 & 5 \\ 3 & 2 & -4 \\ 1 & 1 & -2 \end{bmatrix}$, find A^{-1} and hence find the system of linear equations: $2x - 3y + 5z = 11$, $3x + 2y - 4z = -5$, $x + y + 2z = -3$.
- (iv) A school wants to award its students for the values of honesty, regularity and hard work with a total cash award of ₹ 6000. Three times the award money for hard work added to that given for honesty amounts to ₹ 11000. The award money given for honesty and hard work together is double the one given for regularity. Represent the above situation algebraically and find the award for each value, using matrix method. Apart from these values, namely, honesty, regularity and hard work, suggest one more value which the school must include for award.

Two institutions decided to award three employees for the three values of resourcefulness, competence and determination in the form of prizes at the rate of ₹x, ₹y and ₹z respectively per person. The first institution decided to award respectively 4, 3 and 2 employees with a total prize money of ₹ 37000 and the second institution decided to award respectively 5, 3 and 4 employees with a total prize money of ₹ 47000. If all the three prizes per person together amount to ₹ 12000, then using matrix method find the values of x, y and z. What values are described in these equations?

PHYSICAL EDUCATION :

1. 1 game and sports - history of game, skill, court, diagram, specification and record.
2. sports award, Arjuna award, Khel, Dhyanchand award.
3. 10 signs of lifestyle disease, pranayam, draw (diagram draw or paste, merits, procedure and contradiction).
4. 5 types of disorder, characteristics, causes, cure.
5. posture deformities - pictures, short note, reasons, treatments/remedies.
6. Test and measurement in sports - APhertest/motor fitness test, cardiovascular test - Harvard step test and Rockport test, Ricky and Jonas senior citizen fitness test.
7. classification sport injuries - soft tissues and joint injuries.
8. Types of movement, right about all of types of movement and paste pictures.
9. BMI test of 10 students.
10. Athletics - draw 400 meter track with all specifications, shortcut and long jump.

INFORMATICS PRACTICES:

DATA HANDLING USING PANDAS –1

Short Answers Question

1. Write the syntax and description for min, sum, describe and idxmax functions in python pandas series?
2. What is NaN in Pandas?
3. Let us assume, we want to import data from the CSV file to data frame. While importing data we don't want first two rows to be imported. Write a python program to satisfy this requirement?

CSV file name is 'sample.csv', it is present in the same directory.

4. What is difference between `reindex()` and `rename()`?
5. What is the use of `pipe()` in python pandas?
6. What are the difference between matplotlib and pyplot?
7. How does dataframe object specify indexes to its data rows?
8. Give difference between `pivot()` and `pivot_table()`?
9. Mention at least four functions for aggregation in Pandas.
10. Give difference between `apply()` and `applymap()` functions in Pandas?
11. How can we fill in Missing values in DataFrame?
12. What is the difference between Series and DataFrame?
13. List some advantages of CSV file format?
14. Write commands to print the following details of a series object
 - (a) empty series
 - (b) indexes of the series
 - (c) data type of the data elements of the series
 - (d) To display whether the series has NaN values
15. Distinguish between `head()` and `tail()` functions?
16. Find the output of the following code:

```
import pandas as pd
data = [{'a': 10, 'b': 20}, {'a': 6, 'b': 32, 'c': 22}]#with
two column indices, values same as dictionary keys
df1 = pd.DataFrame(data, index=['first', 'second'], columns=['a', 'b'])#With two
column indices with one index with other name
df2 = pd.DataFrame(data, index=['first', 'second'], columns=['a', 'b1'])
print(df1)
print(df2)
```


LONG ANSWER QUESTIONS

1. A dictionary grade contains the following data:

```
Grade = {'name':['rashmi', 'harsh', 'john', 'ram', 'soni', 'vicky', 'tom'],  
        'grades':['A1', 'A2', 'B1', 'A1', 'B2', 'A2', 'A1']}
```

Write the statements for the followings:–

- Create a dataframe called GR.
 - Find the output of GR.
 - Add a column called percentage with the data (92,89,None,95,68,None,93)
 - Rearrange the columns as name, percentage and grade
2. Write a Python code to create a dataframe with appropriate headings from the list given below:
L1=['s101', 'amy', 70]
L2=['s102', 'akshat', 69]
L3=['s104', 'akshay', 75]
L4=['s105', 'cathy', 82]
3. Write a Python code to create a dataframe with headings(a and b) from the list given below:
L1=[[1,2],[3,4],[5,6],[7,8]]
4. What is a quartile? How is it related to a quantile? How do you generate it in Pandas?
5. Given the dataset for Employee:

```
Data=['rajiv', 28, 'accountant'], ['sam', 34, 'cashier'], ['ram', 33, 'clerk'], ['mona', 43, 'manager']
```

Write a program to convert this dataset into dataframe and then perform pivoting on the dataframe. Also draw a histogram based on Employee data.

6. How are agg() and transform() functions similar and different?
7. WAP to illustrate re-indexing rows in Pandas Dataframe as shown in the table:–

	Name	Age	Weight	Runs
0	Amar	16	52	66
1	Devraj	17	45	70
2	Mayor	16	46	80
3	Anil	18	50	90

8. What is the function of groupby() in Pandas Dataframe? How many steps are involved in it?
9. Write a python program to create a dataframe from the list of dictionaries by mentioning index and columns?
10. Write the code in pandas to create the following dataframes :

df1		
	Mark1	Mark2
0	10	15
1	40	45
2	15	30
3	40	70

df2		
	Mark1	Mark2
0	30	20
1	20	25
2	20	30
3	50	30

Write the commands to do the following operations on the dataframes given above :

- To add dataframes df1 and df2.
- To subtract df2 from df1
- To rename column mark1 as marks1 in both the dataframes df1 and df2.
- To change index label of df1 from 0 to zero and from 1 to one.