

	SHARDA VIDYA MANDIR Holiday Homework(2026-27) Class-12 Last date of submission of Holiday homework is 20th June 2026
---	--

** Project/Homework will be assessed based on neatness, creativity, and originality of ideas.*

1. ACCOUNTANCY

Q. No.	Questions
1	From the following information, calculate Opening Trade Receivables and Closing Trade Receivables : Trade Receivables Turnover Ratio – 4 times Closing Trade Receivables were ₹ 20,000 more than that in the beginning. Cost of Revenue from operations – ₹ 6,40,000. Cash Revenue from operations – $\frac{1}{3}$ rd of Credit Revenue from Operations Gross Profit Ratio – 20%
2	From the following information, calculate opening and closing inventory : Gross Profit Ratio – 25% Revenue from operations – ₹ 8,00,000 Inventory turnover ratio – 4 times Opening inventory was 2 times of the closing inventory.
3	Operating ratio of a company is 63%. Its gross profit ratio is 20%. What will be its operating profit ratio ?
4	Calculate Current Assets and Quick Assets of Beeta Ltd. from the following information : Quick Ratio = 0.75 : 1 Current Liabilities = ₹ 6,00,000 Revenue from Operations are ₹ 4,00,000 Gross Profit ratio is 20% of revenue from operations Inventory turnover ratio = 4 times Inventory at the end is ₹ 40,000 more than inventory at the beginning.
5	Under which major heads and sub-heads will the following items be placed in the financial statements of the company as per Schedule III of the Companies Act, 2013?

	1. Prepaid expenses	6. Patents	
	2. Interest accrued and due on debentures	7. Purchase of raw material	
	3. Design	8. Licences and Franchise	
	4. Loss on issue of debentures	9. work in progress	
	5. Provision for tax	10. Bank overdraft	
6.	The Debt Equity ratio is 2.5:1 . Giving reason , state whether the following transactions will improve, reduce or not change the ratio. (A) Purchase of goods on credit (B) Issue of debentures (C) Sale of furniture of the book value of Rs. 4,00,000 at a profit of 10%. (D) Conversion of 9% debentures into equity shares.		

2. ECONOMICS

Q. No.	Questions																								
1.	Identify the correct equation from the following : (A) $GDPMP = NNPFC + \text{Depreciation}$ (B) $NDPFC = NNPFC + \text{Net Indirect Taxes}$ (C) $GNPMP = GDPMP + \text{Net Factor Income from Abroad}$ (D) $NNPFC = NDPMP + \text{Depreciation}$																								
2	Identify the incorrect feature(s) of money supply (M1) from the following : (i) It is measured at a point of time. (ii) It does not include stock of money held by the government. (iii) It is always the currency in the hands of the Central Bank of a nation. Alternatives : (A) (i) and (ii) (B) (ii) and (iii) (C) (ii) only (D) (iii) only																								
3	Find the missing figures and choose the correct alternative : <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>Round</th> <th>Deposits</th> <th>Loans (80%)</th> <th>Reserve Ratio (20%)</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>5000</td> <td>4000</td> <td>..(i)..</td> </tr> <tr> <td>II</td> <td>4000</td> <td>..(ii)..</td> <td>800</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>...</td> <td>...</td> <td>...</td> <td>...</td> </tr> <tr> <td>Total</td> <td>..(iii)..</td> <td>..(iv)..</td> <td>5000</td> </tr> </tbody> </table> Alternatives : (A) 1000, 800, 20000, 25000 (B) 5000, 3200, 25000, 20000 (C) 1000, 3200, 25000, 20000 (D) 1000, 800, 20000, 25000	Round	Deposits	Loans (80%)	Reserve Ratio (20%)	I	5000	4000	..(i)..	II	4000	..(ii)..	800	Total	..(iii)..	..(iv)..	5000
Round	Deposits	Loans (80%)	Reserve Ratio (20%)																						
I	5000	4000	..(i)..																						
II	4000	..(ii)..	800																						
...																						
...																						
Total	..(iii)..	..(iv)..	5000																						
4	Identify the incorrect statement with reference to Cash Reserve Ratio (CRR) : (A) It is a certain percentage of demand and time deposit liabilities that every bank must keep as cash reserves with the Central Bank. (B) It is fixed by the Central Bank. (C) It is not binding on the commercial banks. (D) It is a tool used by the Central Bank to control the credit creation in the economy																								

5	Identify which of the following statements is incorrect with reference to an economy. (A) Excess of GNP over GDP is possible. (B) Excess of GDP over GNP is possible. (C) Equality between GNP and GDP is possible. (D) Sum of GNP and GDP is always equal to zero .
6	In the Indian economy, are issued by the Reserve Bank of India and acts as legal tender money. (i) Coins of all denomination (ii) Currency notes of various denominations, except one rupee note (iii) Demand deposits Alternatives:(a) Only (i) (b) Only (ii) (c) Only (iii) (d) (i) and (ii)
7 formulates the Monetary Policy in the economy. (a) Commercial Banks (b) International Monetary Fund (c) Central Bank (d) Central Government
8	Money is an asset which can be stored for use in future'. Identify the function of money. (a) A measure of value (b) A standard of deferred payment (c) A store of value (d) A medium of Exchange
9	Central Bank as manages public debt of the government. (a) Custodian of Foreign Exchange (b) Agent (c) Financial Advisor (d) Supervisor
10	Process of credit creation by commercial banks comes to an end when (a) Fresh deposits with Banks become zero. (b) Reserve Ratio becomes zero. (c) Money multiplier becomes zero. (d) Total money reserves become equal to initial deposit.
11	Statutory Liquidity Ratio implies to that percentage of (a) total deposits of the commercial banks which must be kept in the current account, with the Reserve Bank of India. (b) total deposits of the commercial banks which must be kept in the form of liquid assets, with the Reserve Bank of India. (c) net time and demand deposit liabilities of the commercial banks which must be kept in the form of cash, with the Reserve Bank of India. (d) net time and demand deposit liabilities of the commercial banks which must be kept with themselves in the form of liquid assets.
12	Which of the following is not a method of calculating national income? (a) Income method (b) Expenditure method (c) Output method (d) Import-export method
13	The Reserve Bank of India uses which of the following tools to control the money supply? (a) Open market operations (b) Direct taxes (c) Public expenditure (d) Subsidies
14	NNP at FC _____ = GDP at MP: (a) + depreciation - NFIA - NIT (b) + depreciation + NFIA + NIT (c) + depreciation - NFIA + NIT (d) + depreciation + NFIA - NIT
15	GNP exceeds NNP by: (a) amount of total taxes (b) government expenditure (c) transfer payments (d) difference between gross and net investments.
16	For a closed economy (with no foreign trade), which one of the following is correct? (a) GDP = GNP (b) GDP > GNP (c) GDP < GNP (d) GDP + GNP=0

17	<p>Giving reasons , state whether the given statements are true or false:</p> <p>(a) Domestic income can never be greater than National income.</p> <p>(b) Gifts by employer to employee on Diwali is a transfer income for employee.</p> <p>(c) NDP at FC is a national aggregate .</p> <p>(d) Population growth rate is a stock concept.</p> <p>(e) Production phase of circular flow of income includes money flow .</p> <p>(f) Citizenship of a country can be availed only by birth in that country .</p>
18	<p>Classify the following as Final goods or intermediate goods with reason:</p> <p>(a) Coal purchased by a factory</p> <p>(b) Milk purchased by a tea stall</p> <p>(c) Chalk and duster purchased by a school</p> <p>(d) Electricity consumption by a business</p> <p>(e) Seeds purchased for kitchen garden .</p>

3.HISTORY

PROJECT TOPICS

Ancient History:

- Indus Valley Civilization: Archaeological excavations and new perspectives
- Mahabharata: A critical analysis through a reader's eye
- Mauryan Empire: History and legacy
- Jainism: A comprehensive study on its philosophy and history
- Buddha Charita: Life and teachings of Buddha

Medieval History:

- Bhakti Movement: Multiple interpretations and commentaries
- Sufism: The mystical dimensions of Sufism
- Vijayanagar Empire: Architectural culture of Hampi
- Mughal Rural Society: Life of women in the Mughal era
- Mughal Paintings: A depiction of life during the Mughal period

Modern & Contemporary History:

- Revolt of 1857: Causes, planning, and leadership
- Gandhian Ideas: Global legacy of Mahatma Gandhi
- Partition of 1947: A division of hearts and territory
- Indian Constitution: The process behind its framing

According to the topic, draw/ paste pictures, paste maps(if necessary).

Project must be of minimum 25 pages inclusive of Acknowledgement and Bibliography.

4. GEOGRAPHY

Practical file completion of the following chapters:

1. Data- Its Source and Compilation
2. Data processing
3. Graphical representation of Data

4. Spatial Information Technology

5. HINDI

प्र. 1 दिए गए विषयों पर लगभग 120 शब्दों में रचनात्मक लेखन कीजिये-

1 आवश्यक सुविधाओं से वंचित भारत के गाँव

2 धनोपार्जन के मूल्यहीन तरीके

प्र. 2 पाठ के आधार पर भक्तिन की चारित्रिक विशेषताओं की व्याख्या कीजिये। (100 शब्दों में)

प्र. 3 "जूझ " कहानी के लेखक के जीवन - संघर्ष के उन बिंदुओं पर प्रकाश डालिए, जो आपके लिए प्रेरणादायक हैं।

प्र. 4 बाजार जाते समय हमें किन- किन बातों का ध्यान रखना चाहिए ? " बाजार दर्शन " पाठ के आधार पर उत्तर दीजिए।

6.SANSKRIT

1. संस्कृत साहित्य के इतिहास का सामान्य परिचय दीजिए।

जैसे महाकाव्य , गद्य काव्य , चंपू काव्य इत्यादि।

2. नाट्य तत्वों की मुख्य विशेषताएं ।

3. भास्वती पाठ्यपुस्तक के पाठों के संदर्भ ग्रंथ रचनाकार व उनकी रचनाएं।

7.APPLIED MATHEMATICS

- Plot the graphs of functions on excel and study the graph to find out the point of maxima/minima
- Probability and dice roll simulation
- Matrix multiplication and the inverse of a matrix
- Stock Market data sheet on excel
- Collect the data on weather, price, inflation, and pollution analyze the data and make meaningful inferences
- Collect data from newspapers on traffic, sports activities and market trends and use excel to study future trends.

8.PAINTING

1) Make two traditional art (Warli, Kalamkari)

2) Make one doodle art

Note :- Use A2 size sheet for Traditional art and Doodle art

9.PHYSICAL EDUCATION

Important Instructions

- Ruled pages should be used for written work.

2. Plain pages should be used for diagrams or pictures.
3. Every topic should contain relevant diagrams or pictures.

Project Components

1. Fitness Test: SAI Khelo India Test in school, covering various age groups and tests (e.g., BMI, speed, flexibility, strength).
2. Yoga as Preventive Measure: Focus on lifestyle diseases (obesity, diabetes, asthma, hypertension, back pain, arthritis) with:
 - Two asanas per disease
 - Procedure, benefits, and contraindications
3. Main Game: In-depth exploration of a chosen sport, including:
 - Introduction
 - History
 - Rules and regulations
 - Measurement
 - Skills and terminology
 - Injury prevention and management
 - Specific exercises
 - Sports personalities
 - Venues and tournaments
 - Bibliography

Follow the guidelines carefully

- Research thoroughly
- Organize your project neatly
- Include visual aids (diagrams, images, charts) to enhance understanding
- Cite sources properly in the bibliography

10. PHYSICAL ACTIVITY TRAINER

UNIT 1: OVERVIEW OF PHYSICAL EDUCATION AND SPORTS SECTOR

LEARNING OUTCOME	THEORY	PRACTICAL
1. Describe the job profile and career opportunities of a Physical Education Assistant	<ol style="list-style-type: none"> 1. Teaching Physical Education 2. Coaching 3. Sports Management 4. Fitness sector 5. Equipment managers 6. Sports journalism 7. Photography 8. Sports Medicine 9. Sports Psychologists 10. Sports Nutritionists 	<ol style="list-style-type: none"> 1. List the skills required for teaching physical education 2. Discussion on various occupations in physical education and sports
2. Differentiating between Physical Activity, Games, Sports and Recreation	<ol style="list-style-type: none"> 1. Physical activity 2. Games 3. Sports 4. Recreation 	<ol style="list-style-type: none"> 1. Demonstrate the knowledge of difference between physical activities, games, sports and recreation for different age groups

LEARNING OUTCOME	THEORY	PRACTICAL
3. Describe the importance of life skills in sports	<ol style="list-style-type: none"> 1. Life skills 2. Learn on how to deal with failure 3. Importance of working hard 4. Sports will teach you how to be a team member 5. Learning how to make sacrifices 6. Learning discipline 7. Time management 	<ol style="list-style-type: none"> 1. Divide teams in your class to conduct a competition for the following sports and observe <ol style="list-style-type: none"> a. Foot Ball b. Kho – Kho

SHARDA VIDYA

UNIT 2: ASSESSMENT OF STUDENTS

LEARNING OUTCOME	THEORY	PRACTICAL
1. Compare the various types of assessment and purpose of evaluation	<ol style="list-style-type: none"> 1. Meaning of assessment 2. Types of assessment – <ul style="list-style-type: none"> • Self-assessment, • Peer assessment • Teacher Observation • Homework 3. Factors influencing assessment <ul style="list-style-type: none"> • Physical factors • School factors • Teacher factors 4. Assessment tools <ul style="list-style-type: none"> • Checklist • Rubrics • Benchmark 5. Types of evaluation <ul style="list-style-type: none"> • Formative evaluation • Summative Evaluation • Diagnostic Evaluation 	<ol style="list-style-type: none"> 1. Discussion on the importance of assessment and evaluation 2. Group discussion on factors influencing assessment 3. Preparation of chart on types of assessment
2. Identify the steps of qualitative and quantitative assessment	<ol style="list-style-type: none"> 1. Meaning and steps in qualitative assessment 2. Meaning and steps in quantitative assessment 	<ol style="list-style-type: none"> 1. Draw a chart showing the steps of qualitative assessment 2. Group discussion on qualitative and quantitative assessment
3. Organize assessment and evaluation of students	<ol style="list-style-type: none"> 1. Elements of teaching process 2. Ongoing evaluation 3. Key success factors for imparting high quality Physical Education 4. Organizing an evaluation plan 	<ol style="list-style-type: none"> 1. Prepare a chart for the four elements that make up the whole process of teaching. 2. List four key success factors which show that high quality physical education has been imparted to students
4. Demonstrate the knowledge of organizing interaction with parents	<ol style="list-style-type: none"> 1. Parent-Teacher Meeting 2. Managing Parent-Teacher meeting 3. Interaction with parents post assessments 4. Explanation of performance evaluation 5. Steps to improve performance of slow learners 	<ol style="list-style-type: none"> 1. Identify methods of reaching out to the parents 2. Role play for explanation of student's report to parents

UNIT 3: EMERGENCY MANAGEMENT

LEARNING OUTCOME	THEORY	PRACTICAL
1. Identify the importance of emergency response	1. Meaning of emergency response 2. Need and importance of emergency response <ul style="list-style-type: none"> • dealing with heat stroke • allergies • asthma attacks • sudden cardiac arrest 3. CPR	1. Group discussion on emergency response 2. Preparation of a plan for emergency response 3. Create a poster showing the steps of CPR
2. Identify and respond to emergencies in play field	1. First Aid 2. DRABC of First Aid 3. First Aid - Purpose and Basic principles 4. Basic sports injuries <ul style="list-style-type: none"> • Sprain • Strain 5. Instructions for R.I.C.E. 6. Concept of First Aid kit 7. Area inspection for safety 8. Roles and responsibilities of first responder 9. Equal opportunities 10. First Aid procedures	1. Group discussion on importance of first responder 2. Demonstration of first aid procedures. 3. Preparation of an emergency plan

UNIT 4: HEALTH AND HYGIENE IN PLAY AREA

LEARNING OUTCOME	THEORY	PRACTICAL
1. Demonstrate knowledge about players' health and hygiene	1. Maintenance of player's health and hygiene 2. General Hygiene and Sanitation rules 3. Hygiene tips	1. Prepare chart on general hygiene and sanitation rules
2. Describe the hygiene and health in play area	1. Inspection and maintenance of sports facilities and kits <ul style="list-style-type: none"> • Low frequency inspections • High frequency inspections 2. Personal items and kits inspections 3. Maintenance of Hygiene in play area	1. Write a paragraph about importance of play area inspection

11. ENGLISH

Q. Rewrite a scene from the last lesson as a screenplay, set in modern India. CLUE: This screenplay adapts Alphonse Daudet's *The Last Lesson* to a modern Indian setting. The theme focuses on the imposition of a new language policy in a regional school, rendering the local mother tongue (e.g., Marathi or Bengali) forbidden in favor of a dominant national language (Hindi or English), reflecting the themes of loss, identity, and regret.

Scene: A Modern Indian Classroom

Materials needed:

1. A4-sized paper
2. Pen
3. Ruler

Formatting :

1. Scene Heading
2. Action lines
3. Character names
4. Dialogues

Tips :

1. Read and analyse the scene
2. Use simple language

12.MATHEMATICS

TO BE DONE IN MATHS LAB FILE

1. To verify that the relation R in the set L of all lines in a plane, defined by $R = \{(l, m) : l \parallel m\}$ is an equivalence relation.
2. To demonstrate a function which is not one-one but is onto?
3. To sketch the graphs of a^x and $\log_a x$, $a > 0$, $a \neq 1$ and to examine that they are mirror images of each other.
4. To find analytically the limit of a function $f(x)$ at $x = c$ and also to check the continuity of the function at that point.
5. To understand the concepts of decreasing and increasing functions.'
6. To understand the concepts of absolute maximum and minimum values of a function in a given closed interval through its graph.
7. To verify that amongst all the rectangles of the same perimeter, the square has the maximum area.
8. To verify geometrically that:.
9. To locate the points to given coordinates in space, measure the distance between two points in space and then to verify the distance using distance formula.
10. To explain the computation of conditional probability of a given event A , when event B has already occurred, through an example of throwing a pair of dice.

⁷ P																				
						⁸ P														⁶ T

CLUES		
	ACROSS	DOWN
1.	Just take the universe, subtract from it the subset that represents the organization, and the reminder is .	Administrative orders issued by government authorities is an important element of this dimension of business environment.
2.	It is very difficult to predict future happenings in business environment.	Integration of the various economies of the world leading to worth the emergence of a cohesive global economy.
3.	changes in disposal income of people is an important element of this dimension of business environment.	Customs and traditions are an important element of this dimension of business environment.
4.	The economic reforms that aimed at deregulating the Indian business and industry from all unnecessary controls and restrictions.	This dimension of business environment includes forces relating to scientific improvements and innovations which provide new ways of producing goods and services.
5.	It refers to the positive external trends or changes that will help affirm to improve its performance.	These forces have impact on all business enterprises and thus may affect an individual firm only indirectly.
6.	Business environment keeps on changing.	It refers to the external environment trends and changes that will hinder a firm's performance.
7.	General stability and peace in the country is an important element of this dimension of business environment.	These forces affect individual enterprises directly and immediately in their day to day working.
8.	Drastically reduce the role of the public sector.	Business environment differs from country to country and even region to region.

15. CHEMISTRY

<u>LIST OF TOPICS FOR CHEMISTRY INVESTIGATORY PROJECT</u>	
S. NO.	PROJECT NAME
1.	Analysis Of Honey
2	Sterilization of Water Using : Sterilization of water using bleaching powder.
3	Preparation of an Alum from scrap Aluminium .
4	To study the presence of Oxalate Ions in Guava Fruit at different Stages of Ripening:
5	Effect of Potassium Bisulphate as a Food Preservative:
6	Quantity of Casein present in Different Samples of Milk:

7	Comparative Study of commercial Antacids:	
8	Determination of Vitamin C Content in Various Fruits:	
9	Analysis of Soft Drinks:	
10	Study of Buffer Solutions:	
11	Investigation of pH Levels in Soil Samples:	
12	Determination of Hardness of Water:	
13	Analysis of Food Adulterants: Study of Adulterants in food -stuffs.	
14	Synthesis of Soap:	
15	Study of presence of insecticides and pesticides in fruits and vegetables.	
16	Study the effect of metal coupling on the rusting of iron.	
17	Study of the factors affecting the rate of a reaction	
18	Determination of the pH of different household products:	
19	Studying the influence of dietary factors on blood sugar levels:	
20	Study of constituents of an alloy.	
21	Measuring the Amount of Acetic Acid in Vinegar by Titration with an Indicator solution.	
22	Study of the effect of metal coupling on the rusting of iron.	
23	Determination of contents of cold drinks.	
24	Study of diffusion of solids in liquids .	
25	Determination of contents of Tooth paste .	
26	To find out the presence of proteins, fats ,sugar ,Ca ,Fe , Mg and Ni in different samples of Chocolates.	
27	Comparing rate of evaporation of certain materials and study the effect of surface area on the rate of evaporation of diethyl ether.	
28	To study of content of Ascorbic acid present in Citrus fruits.	
29	Evaluation of drinking water from various sources.	
30	Effect of sodium carbonate on foaming capacity of a soap.	
31	Investigation of foaming capacity of different washing soaps.	
32	Neutralizing ability of Anta acid tablets.	
33	Comparison of the citric acid concentration in different Citrus fruits .	
34	Extraction of various essential oils present in Ajwain (Carum), Illaichi (Cardamom) and Saunf (Fennel Seeds)	
35	Common food adulterants in fat, butter, oil, turmeric powder, pepper, chilli powder, sugar, etc.	
36	To determine which added material will make ice melt fastest.	

All the children are requested to select the topic of their choice out of the topics given above. Not more than 3 students can choose the same topic. So, after choosing the topic, children are requested to inform me in my personal desk to get the approval.
Project should be prepared in A4 size ruled sheets. Project should be prepared under the following headings:

- Cover Page
- Certificate

- Acknowledgement
- Index
- Aim
- Introduction
- Apparatus
- Theory
- Experimental Procedure
- Observations
- Observation table-
- Calculation-
- Result
- Precautions
- Bibliography-

The whole project work should be compiled within 15 pages.

☑ Cover Page, Acknowledgement and Certificate should be printed.

☑ Rest all the pages should be hand written

Cover Page

Cover Page should contain the following informations:

Name of school

Session 2026–27

- Monogram of the School
- Chemistry Investigatory Project
- Topic of the Project
- Submitted to : Mrs. Rani Purohit
- Submitted by : (Your name)
- Class and Section
- Board Roll No (leave it blank. Once you get it , you will enter)

CERTIFICATE

After the contents of the certificate, following informations are necessary in the given format:

External's Signature

Internal's Signature

Principal's Signature

School Seal

ACKNOWLEDGMENT

I would like to convey my heartfelt gratitude to _____, my _____ teacher for his/her tremendous support and assistance in the completion of my project. I would also like to thank our Principal, Shefali Gautam , for providing me with this wonderful

opportunity to work on an assignment/a project which covers most aspects of this domain. The completion of this project would not have been possible without their help and insights.

Name : _____

Note: All of you need to submit your project on 27th June 2026 in a transparent stripped file. Once it is checked and approved it would be returned back. Then it has to be spiral binded after correcting the given remarks.

16 Biology

- Complete Investigatory project and practical file
- Prepare question paper (2 sets) with marking scheme (syllabus ch-1,12,13)
- Solve these questions in a homework copy

SEXUAL REPRODUCTION IN FLOWERING PLANTS

1. Name the product of fertilization that forms the kernel of coconut. How does the Kernel differ from coconut water ?
2. (a) Mention the similarity between autogamy and geitonogamy.
3. (b) How does geitonogamy differ from xenogamy ?
4. Differentiate perisperm and endosperm giving one example of each .
5. How does pollen mother cell develop into a mature pollen grain ? Illustrate the stages with labelled diagrams.
6. (a) Draw a labelled diagram of a mature embryo sac.
b) Why does a pollen grain possess two male gametes ?
7. (a) Trace the development of embryo after synagmy in a dicot plant.
(b) Endosperm development precedes embryo development. Explain.
(c) Draw a diagram of a mature dicot embryo and label cotyledons, plumule, radicle, hypocotyl in it.
8. Describe in sequence the events that lead to the development of a 3-celled pollen grain from microspore mother cell in angiosperms.
9. (a) Draw a labelled sectional view of an albuminous seed ?
(b) How are seeds advantageous to flowering plants ?
10. Explain double fertilization and trace the post fertilization events in sequential order leading to seed formation in a typical dicotyledonous plant.
11. Give reasons why
 - (i) Most zygotes in angiosperms divide only after certain amount of endosperm is formed.
 - (ii) Groundnut seeds are exalbuminous and Castor seeds are albuminous.
 - (iii) Micropyle remains as a small pore in the seed coat of a seed.
 - (iv) Integuments of an ovule harden and the water content is highly reduced as the seed matures.
 - (v) Apple and Cashew are not called true fruits

12. (a) Draw a labelled diagram of L.S. on an embryo of grass (any six labels).
(b) Give reasons for each of the following
13. (a) Draw a diagram of an enlarged view of T.S. one microsporangium of an angiosperm and label the following parts :
(i) Tapetum (iii) middle layer
(ii) Endothecium (iv) Microspore mother cells
14. (b) Mention the characteristic features and functions of tapetum.
15. (c) Explain the following giving reasons :
(i) Pollen grains are well preserved as fossils
(ii) Pollen tablets are in use by people these days.
16. (a) Why is the process of fertilization in angiosperms termed as double fertilization. Explain.
(b) Draw a diagram of an angiospermic embryo sac where fertilization is just completed. Label the following (i) Micropylar and of embryo sac (ii) Part that develops into an embryo (iii) Part that develops into an endosperm (iv) The degenerating cells at chalazal end.
(c) Draw a labelled diagram of globular embryonic stage of an angiosperm
17. (a) Explain the characteristic features of wind pollinated flowers. How are insect pollinated flowers different from them ?
(b) Explain the mutually rewarding relationship between Yucca plant and species of moth.
18. How does the megaspore mother cell develop into 7-celled, 8 –nucleate embryo sac in an angiosperm ?
19. Draw labelled diagram of a mature embryo sac.
20. (a) Why is fertilization in an angiosperm referred to as double fertilization ? Mention the policy of the cells involved.
(b) Draw a neat labelled sketch of L.S. of an endospermous monocot seed.
21. (a) How does microspore mother cell develop into mature pollen grain in angiosperms ?
(b) Describe the structure of a mature pollen grain and draw a labelled diagram of its two celled stage.
22. Why are beehives kept in a crop field during flowering period? Name any two crop fields where this is practised.
23. Explain any three advantages that seeds offer to angiosperms.
24. (a) Why does endosperm development precede embryo development in angiosperm seeds? State the role of endosperm in mature albuminous seeds. (b) Describe with the help of three labelled diagrams the different embryonic stages that include mature embryo of dicot plants

ECOSYSTEM

1. Construct a pyramid of biomass starting with phytoplankton. Label three trophic levels. Is the pyramid upright or inverted? Why ?
2. What is primary productivity? Give the range of primary productivity in different ecosystems of the world.
3. Name the type of food chains responsible for the flow of larger fraction of energy in an aquatic and a terrestrial ecosystem respectively. Mention one difference between the two food chains.
4. Why are herbivores considered similar to predators in the ecological context? Explain.
5. List the features that make a stable biological community.

6. Explain with the help of two examples, how the pyramid of numbers and pyramid of biomass can look inverted.

LONG ANSWER TYPE QUESTIONS:

7. Describe the process of decomposition of detritus under the following heads: Fragmentation, reaching, catabolism, humification and mineralization.
8. (a) Explain primary productivity and the factors that influence it.
(b) Describe how do oxygen and chemical composition of detritus control decomposition.
9. (a) Explain the significance of ecological pyramids with the help of an example.
(b) Why are the pyramids referred to as upright or inverted Explain
10. (i) What is primary productivity ? Why does it vary in different types of ecosystems?
(ii) State the relation between gross and net primary productivity.
11. Apart from being a part of the food chain, predators play other important roles. Mention any two such roles supported by examples.
12. How is 'stratification' represented in a forest ecosystem?

BIODIVERSITY AND CONSERVATION

1. In the biosphere immense biological diversity exists at all levels of biological organization. Explain any two levels of biodiversity.
2. Biodiversity must be conserved as it plays an important role in many ecosystem services that nature provides. Explain any two services of the ecosystem
3. Why certain regions have been declared as biodiversity "hot spot" by environmentalists of the world ? Name any two "hot spot" regions of India
4. Giving two reasons explain why there is more species biodiversity in tropical latitudes than in temperate ones.
5. Alien species are a threat to native species. Justify taking examples of an animal and a plant alien species.
6. Justify with the help of an example where a deliberate attempt by humans had led to the extinction of a particular species
7. State the use of biodiversity in modern agriculture.
8. Differentiate between in situ and ex situ approaches of conservation of biodiversity.
9. Explain giving an example how extinction is one of the causes of loss of biodiversity.
10. Explain 'rivet popper' hypothesis. Name the ecologist who proposed it.
11. Alien species are highly invasive and are threat to indigenous species. Substantiate this statement with any three examples.
12. Identify 'a' and 'b' in the figure given below representing proportionate number of major vertebrate

