

Mahaveer Public School

SESSION 2021-22

HOLIDAY HOMEWORK

CLASS XII (COMMERCE)

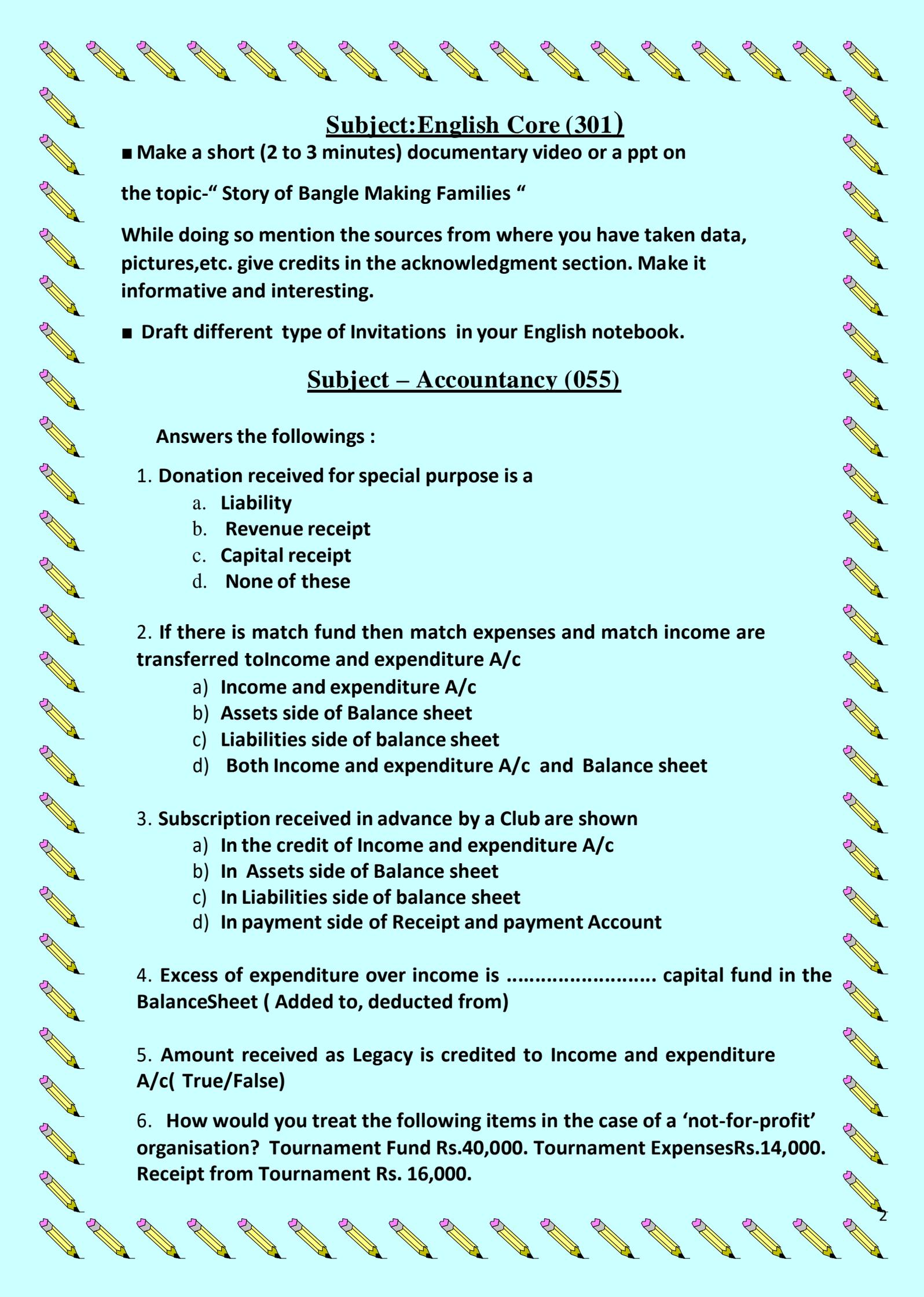
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Point to Remember

- Holiday homework will be assessed on certain parameters and marks will be awarded accordingly
- Last date of submission is **05 July 2021**. No submission will be accepted after the due date.
- Mode of submission:- It must be submitted on the team app only in the assignment tab subject wise
- How to submit-
 1. Take the clear picture of work done
 2. Make a pdf and give the name of the pdf in this form Your scholar no.

Your name _Sub (eg. 2030rohan_maths.pdf) Upload this file on the team app)



Subject:English Core (301)

- Make a short (2 to 3 minutes) documentary video or a ppt on the topic-“ Story of Bangle Making Families “

While doing so mention the sources from where you have taken data, pictures,etc. give credits in the acknowledgment section. Make it informative and interesting.

- Draft different type of Invitations in your English notebook.

Subject – Accountancy (055)

Answers the followings :

1. Donation received for special purpose is a

- Liability
- Revenue receipt
- Capital receipt
- None of these

2. If there is match fund then match expenses and match income are transferred to Income and expenditure A/c

- Income and expenditure A/c
- Assets side of Balance sheet
- Liabilities side of balance sheet
- Both Income and expenditure A/c and Balance sheet

3. Subscription received in advance by a Club are shown

- In the credit of Income and expenditure A/c
- In Assets side of Balance sheet
- In Liabilities side of balance sheet
- In payment side of Receipt and payment Account

4. Excess of expenditure over income is capital fund in the BalanceSheet (Added to, deducted from)

5. Amount received as Legacy is credited to Income and expenditure A/c(True/False)

6. How would you treat the following items in the case of a ‘not-for-profit’ organisation? Tournament Fund Rs.40,000. Tournament ExpensesRs.14,000. Receipt from Tournament Rs. 16,000.

7. Show how you would deal with the following items in the financial statements of a club:

<i>Details</i>	<i>Debit Amount (Rs.)</i>	<i>Credit (Rs.)</i>
Prize Fund		80,000
Prize Fund Investments	80,000	
Income from Prize Fund Investments		8,000
Prizes awarded	6,000	

8. Extract of a Receipt and Payment Account for the year ended on March 31, 2015:

Payments: Stationery Rs. 23,000

Additional Information:

<i>Details</i>	<i>April 1, 2014</i>	<i>March 31, 2015</i>
Stock of stationery	4,000	3,000
Creditors for stationery	9,000	2,500

9. Extracts of Receipt and Payment Account for the year ended March 31, 2017 are given below:

Receipt Subscriptions	Amount (Rs.)
2015-16	2,500
2016-17	26,750
2017-18	1,000
Total	30,250

Additional Information:

Total number of members: 230.

Annual membership fee: Rs.125.

Subscriptions outstanding on April 1, 2016: Rs. 2,750.

Prepare a statement showing all relevant items of subscriptions viz., income, advance, outstanding, etc.

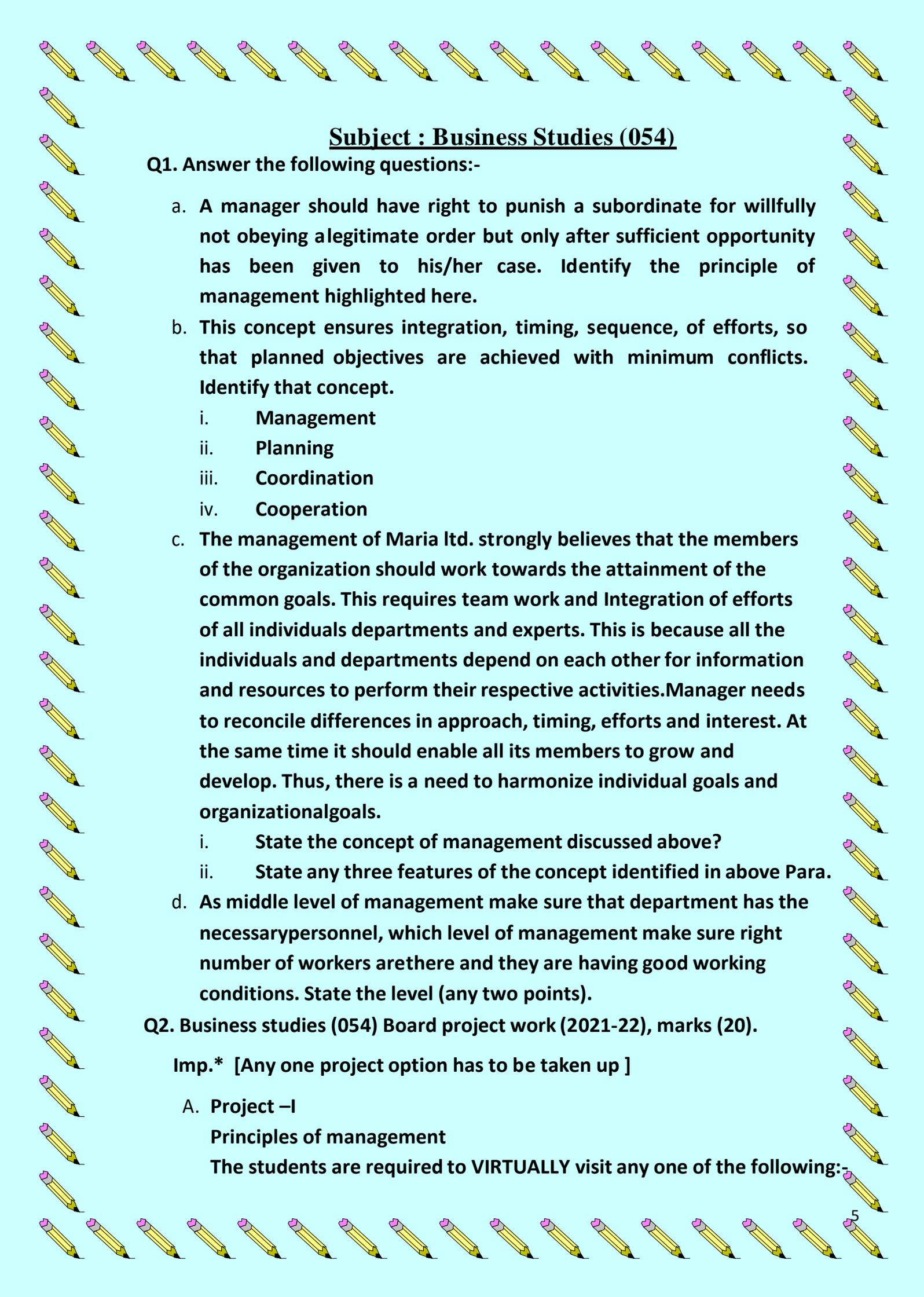
10. Prepare Income and Expenditure Account and Balance Sheet for the year ended March 31, 2015 from the following information.

Receipt and Payment Account for the year ending March 31, 2015

Balance b/d	41,000	Salaries and wages :2013 -14 4800 2014-15 83200	88,000
Subscription 2013-14 7,200 2014-15 3,37,600 2015-16 12,000	3,56,800	Sundry Expenses	37,000
Entrance fees	16,000	Freehold Land	60,000
Locker rent	58,000	Stationery	16,000
Revenue from Refreshment	48,000	Rates	24,000
Income from investment	56,000	Refreshment expenses	37,500
		Telephone charges	4,000
		Investment	2,50,000
		Audit Fee	6,000
		Balance c/d	53,300
Total	5,75800	Total	5,75800

The following additional information is provided to you:

1. There are 1800 members each paying an annual subscription of Rs. 200, Rs.8,000 were, in arrears for 2013-14 as on April 1, 2014.
2. On March 31, 2015 the rates were prepaid to June 2015; the charge paid every year being Rs. 24,000.
3. There was an outstanding telephone bill for Rs. 1,400 on March 31, 2015.
4. Outstanding sundry expenses as on March 31, 2014 totaled Rs. 2,800.
5. Stock of stationery as on March 31, 2014 was Rs. 2000; on March 31, 2015, it was Rs. 3,600.
6. On March 31, 2014 Building stood at Rs. 4,00,000 and it was subject to depreciation @ 2.5% p. a.
7. Investment on March 31, 2014 stood at Rs. 8, 00,000.
8. On March 31, 2015, income accrued on investments purchased during the year amounted to Rs. 1,500.



Subject : Business Studies (054)

Q1. Answer the following questions:-

- a. A manager should have right to punish a subordinate for willfully not obeying a legitimate order but only after sufficient opportunity has been given to his/her case. Identify the principle of management highlighted here.
- b. This concept ensures integration, timing, sequence, of efforts, so that planned objectives are achieved with minimum conflicts. Identify that concept.
 - i. Management
 - ii. Planning
 - iii. Coordination
 - iv. Cooperation
- c. The management of Maria Ltd. strongly believes that the members of the organization should work towards the attainment of the common goals. This requires team work and Integration of efforts of all individuals departments and experts. This is because all the individuals and departments depend on each other for information and resources to perform their respective activities. Manager needs to reconcile differences in approach, timing, efforts and interest. At the same time it should enable all its members to grow and develop. Thus, there is a need to harmonize individual goals and organizational goals.
 - i. State the concept of management discussed above?
 - ii. State any three features of the concept identified in above Para.
- d. As middle level of management make sure that department has the necessary personnel, which level of management make sure right number of workers are there and they are having good working conditions. State the level (any two points).

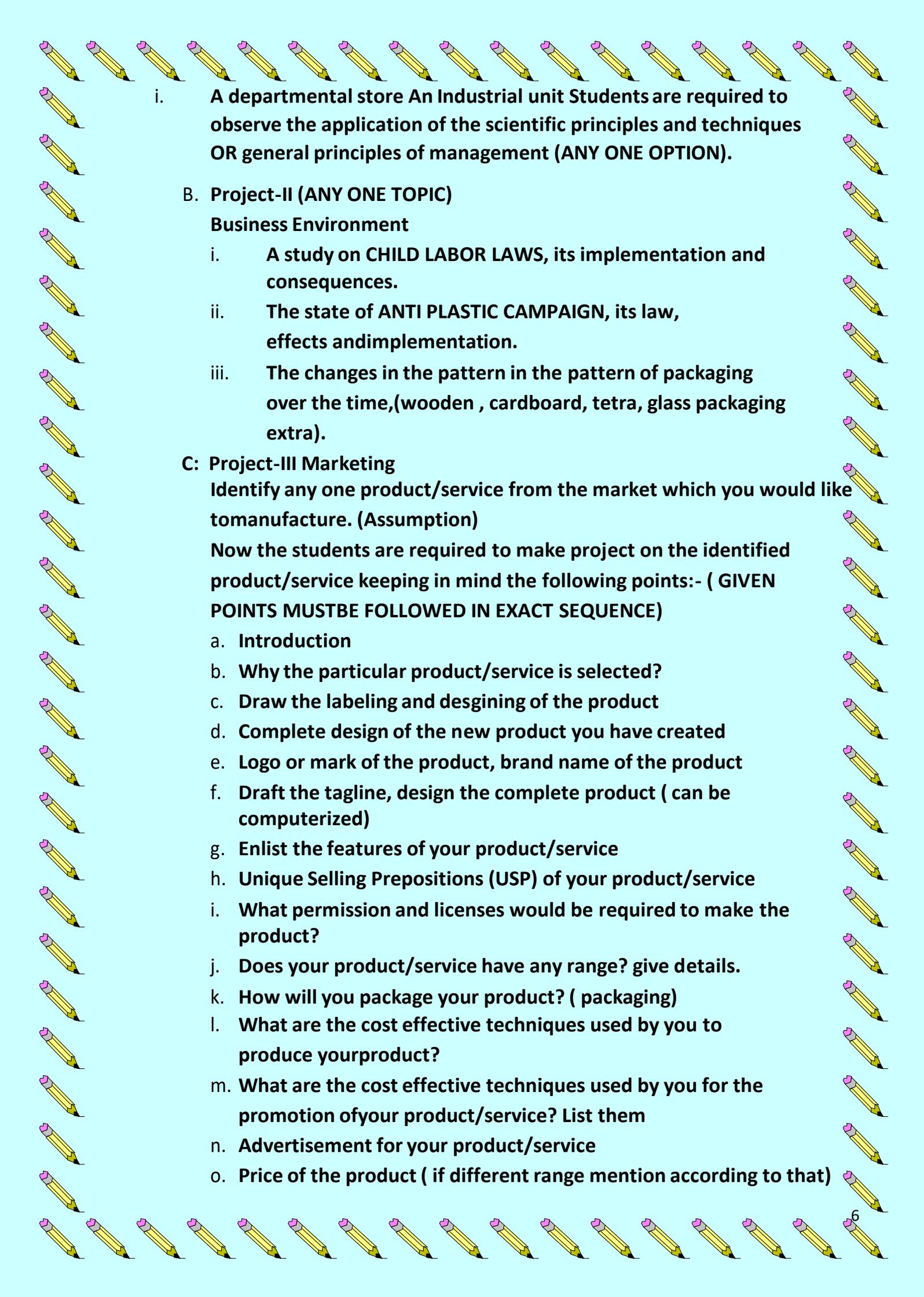
Q2. Business studies (054) Board project work (2021-22), marks (20).

Imp.* [Any one project option has to be taken up]

A. Project –I

Principles of management

The students are required to VIRTUALLY visit any one of the following:-



i. **A departmental store An Industrial unit Students are required to observe the application of the scientific principles and techniques OR general principles of management (ANY ONE OPTION).**

B. Project-II (ANY ONE TOPIC)

Business Environment

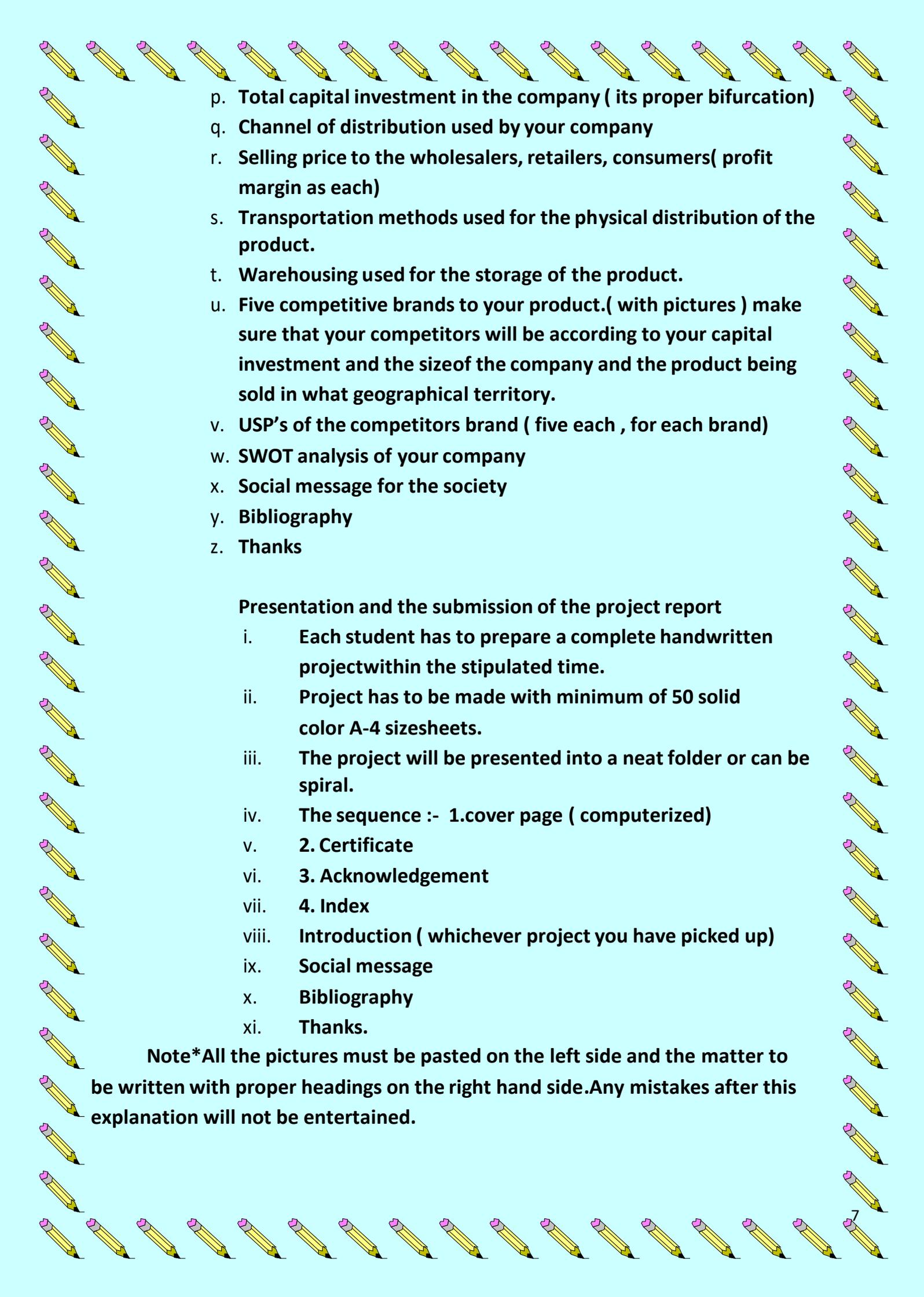
- i. **A study on CHILD LABOR LAWS, its implementation and consequences.**
- ii. **The state of ANTI PLASTIC CAMPAIGN, its law, effects and implementation.**
- iii. **The changes in the pattern in the pattern of packaging over the time,(wooden , cardboard, tetra, glass packaging extra).**

C: Project-III Marketing

Identify any one product/service from the market which you would like to manufacture. (Assumption)

Now the students are required to make project on the identified product/service keeping in mind the following points:- (GIVEN POINTS MUSTBE FOLLOWED IN EXACT SEQUENCE)

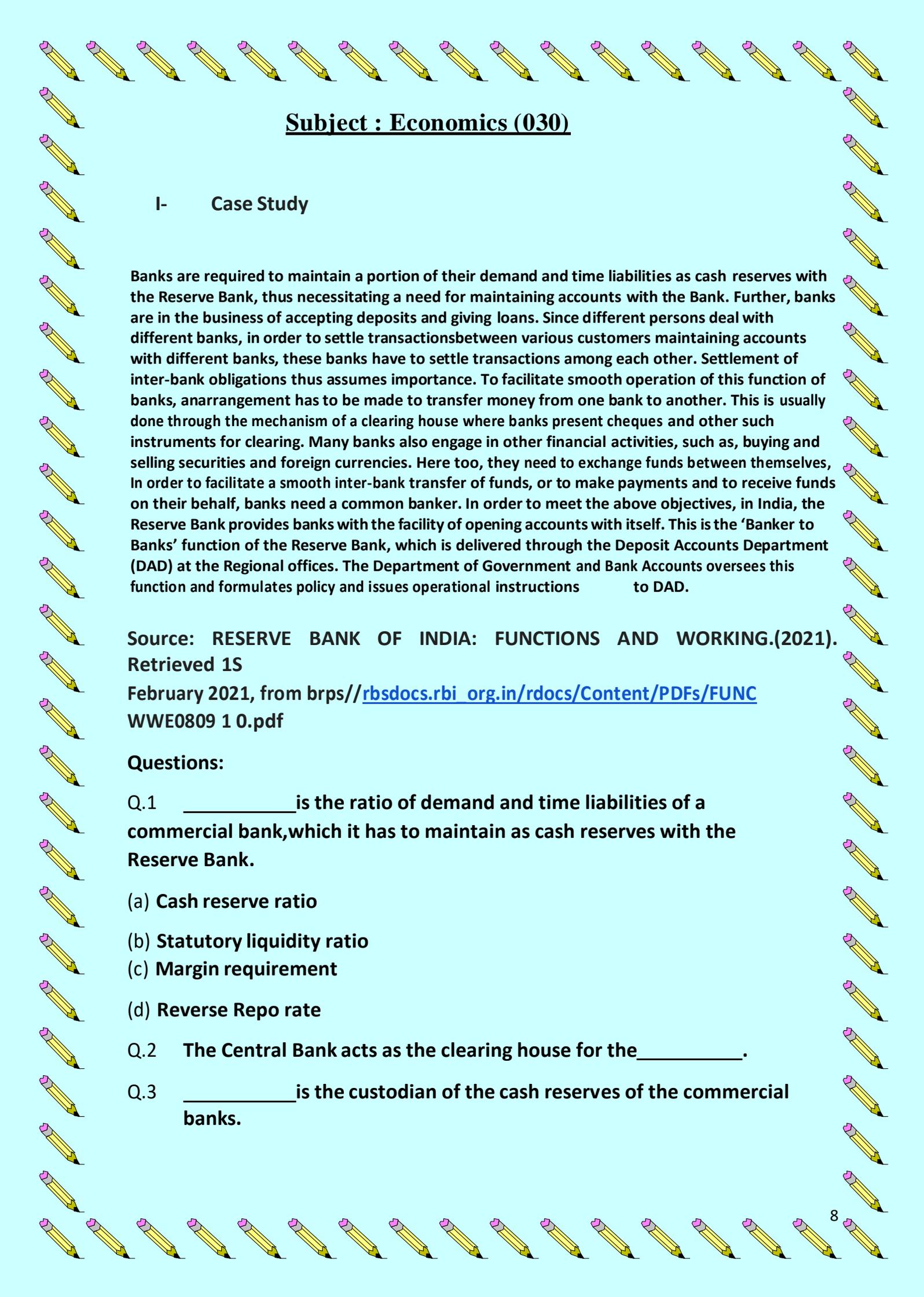
- a. **Introduction**
- b. **Why the particular product/service is selected?**
- c. **Draw the labeling and desgining of the product**
- d. **Complete design of the new product you have created**
- e. **Logo or mark of the product, brand name of the product**
- f. **Draft the tagline, design the complete product (can be computerized)**
- g. **Enlist the features of your product/service**
- h. **Unique Selling Prepositions (USP) of your product/service**
- i. **What permission and licenses would be required to make the product?**
- j. **Does your product/service have any range? give details.**
- k. **How will you package your product? (packaging)**
- l. **What are the cost effective techniques used by you to produce yourproduct?**
- m. **What are the cost effective techniques used by you for the promotion ofyour product/service? List them**
- n. **Advertisement for your product/service**
- o. **Price of the product (if different range mention according to that)**

- 
- p. **Total capital investment in the company (its proper bifurcation)**
 - q. **Channel of distribution used by your company**
 - r. **Selling price to the wholesalers, retailers, consumers(profit margin as each)**
 - s. **Transportation methods used for the physical distribution of the product.**
 - t. **Warehousing used for the storage of the product.**
 - u. **Five competitive brands to your product.(with pictures) make sure that your competitors will be according to your capital investment and the size of the company and the product being sold in what geographical territory.**
 - v. **USP's of the competitors brand (five each , for each brand)**
 - w. **SWOT analysis of your company**
 - x. **Social message for the society**
 - y. **Bibliography**
 - z. **Thanks**

Presentation and the submission of the project report

- i. **Each student has to prepare a complete handwritten project within the stipulated time.**
- ii. **Project has to be made with minimum of 50 solid color A-4 size sheets.**
- iii. **The project will be presented into a neat folder or can be spiral.**
- iv. **The sequence :- 1.cover page (computerized)**
- v. **2. Certificate**
- vi. **3. Acknowledgement**
- vii. **4. Index**
- viii. **Introduction (whichever project you have picked up)**
- ix. **Social message**
- x. **Bibliography**
- xi. **Thanks.**

Note*All the pictures must be pasted on the left side and the matter to be written with proper headings on the right hand side. Any mistakes after this explanation will not be entertained.



Subject : Economics (030)

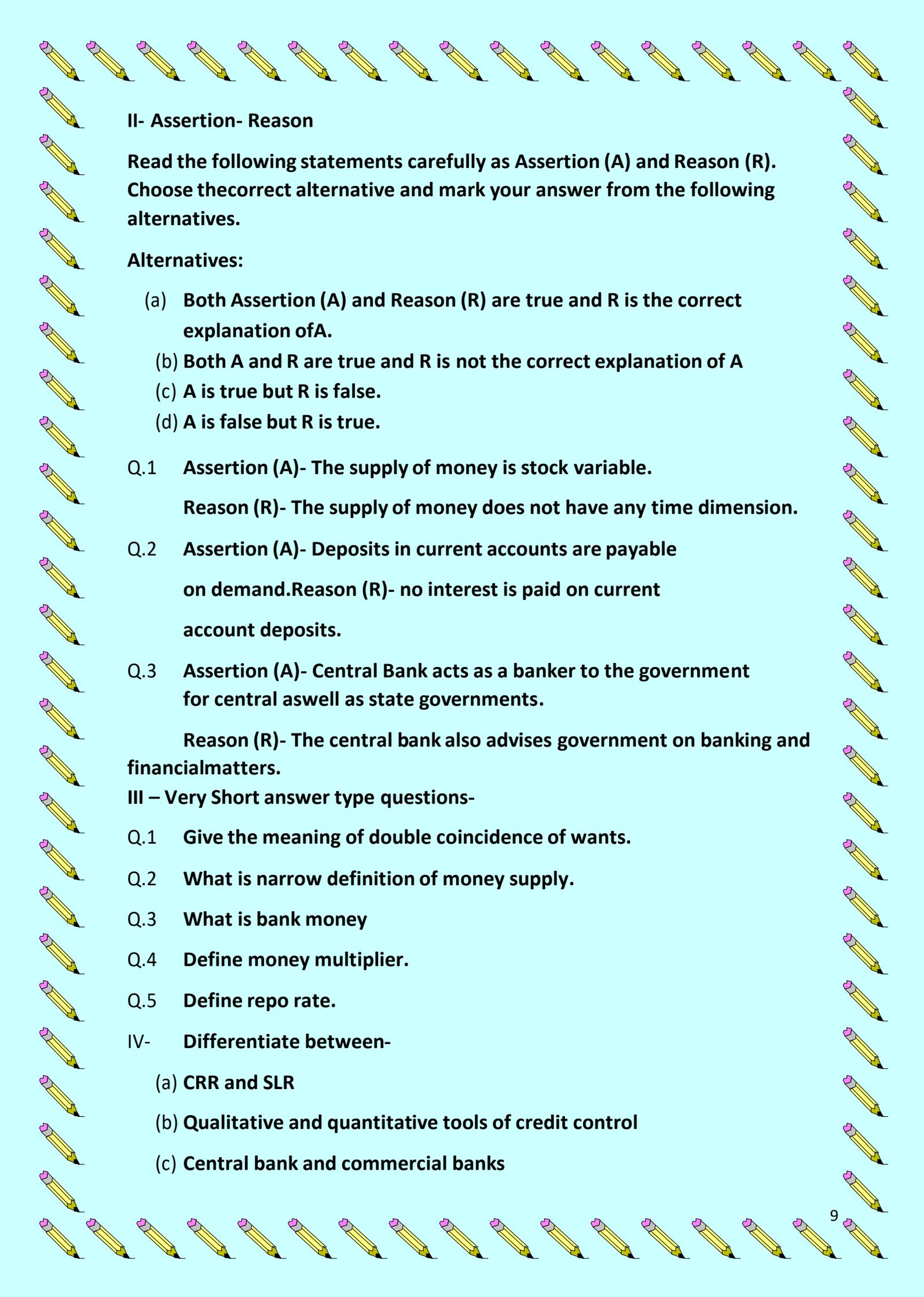
I- Case Study

Banks are required to maintain a portion of their demand and time liabilities as cash reserves with the Reserve Bank, thus necessitating a need for maintaining accounts with the Bank. Further, banks are in the business of accepting deposits and giving loans. Since different persons deal with different banks, in order to settle transactions between various customers maintaining accounts with different banks, these banks have to settle transactions among each other. Settlement of inter-bank obligations thus assumes importance. To facilitate smooth operation of this function of banks, an arrangement has to be made to transfer money from one bank to another. This is usually done through the mechanism of a clearing house where banks present cheques and other such instruments for clearing. Many banks also engage in other financial activities, such as, buying and selling securities and foreign currencies. Here too, they need to exchange funds between themselves, In order to facilitate a smooth inter-bank transfer of funds, or to make payments and to receive funds on their behalf, banks need a common banker. In order to meet the above objectives, in India, the Reserve Bank provides banks with the facility of opening accounts with itself. This is the 'Banker to Banks' function of the Reserve Bank, which is delivered through the Deposit Accounts Department (DAD) at the Regional offices. The Department of Government and Bank Accounts oversees this function and formulates policy and issues operational instructions to DAD.

Source: RESERVE BANK OF INDIA: FUNCTIONS AND WORKING.(2021).
Retrieved 1S
February 2021, from [brps//rbsdocs.rbi.org.in/rdocs/Content/PDFs/FUNCWWE080910.pdf](https://rbsdocs.rbi.org.in/rdocs/Content/PDFs/FUNCWWE080910.pdf)

Questions:

- Q.1 _____ is the ratio of demand and time liabilities of a commercial bank, which it has to maintain as cash reserves with the Reserve Bank.
- (a) Cash reserve ratio
 - (b) Statutory liquidity ratio
 - (c) Margin requirement
 - (d) Reverse Repo rate
- Q.2 The Central Bank acts as the clearing house for the _____.
- Q.3 _____ is the custodian of the cash reserves of the commercial banks.



II- Assertion- Reason

Read the following statements carefully as Assertion (A) and Reason (R). Choose the correct alternative and mark your answer from the following alternatives.

Alternatives:

- (a) Both Assertion (A) and Reason (R) are true and R is the correct explanation of A.
- (b) Both A and R are true and R is not the correct explanation of A
- (c) A is true but R is false.
- (d) A is false but R is true.

Q.1 Assertion (A)- The supply of money is stock variable.

Reason (R)- The supply of money does not have any time dimension.

Q.2 Assertion (A)- Deposits in current accounts are payable

on demand. Reason (R)- no interest is paid on current account deposits.

Q.3 Assertion (A)- Central Bank acts as a banker to the government for central as well as state governments.

Reason (R)- The central bank also advises government on banking and financial matters.

III – Very Short answer type questions-

Q.1 Give the meaning of double coincidence of wants.

Q.2 What is narrow definition of money supply.

Q.3 What is bank money

Q.4 Define money multiplier.

Q.5 Define repo rate.

IV- Differentiate between-

(a) CRR and SLR

(b) Qualitative and quantitative tools of credit control

(c) Central bank and commercial banks

Subject : Informatics Practices (065)

Topic: Function

1. Fill in the blanks:

- _____ functions are those functions that works on each row of table and produces same number of outputs as may rows affected.
- _____ functions are those functions that works on group of rows and produce one output for each group.
- Single row functions are categorized in _____, and _____.
- Trim function is an example of _____.
- Round function takes _____ or _____ argument(s).
- To extract the year part of the date use _____ function.
- Count(*), counts _____ in a table.
- All aggregate functions ignore _____ values.
- _____ function is used to extract the characters from a string/text.
- _____ function is used to search text into another text.

2. State True or False

- Single row functions may be used in WHERE clause.
- Multirow functions may be used in WHERE clause.
- Count(*) and Count(fieldname) may produce different results.
- Nesting of functions is not possible.
- Left, Right and Mid all functions are used to extract the characters from the text.

3. Consider the EMP as show below:

```
mysql> select * from emp;
```

empno	ename	post	sal	comm	deptno	doj
1001	Amit	Manager	50000	10000	10	2020-10-01
1002	Ashok	Manager	30000	NULL	10	2019-05-20
1003	Anurag	Manager	30000	3000	10	2019-06-12
1004	Arjun	Admin	123000	10000	20	2020-06-12
1005	Bhavya	Admin	100000	NULL	30	2018-01-12
1006	Priya	Clerk	20000	0	10	2020-06-12

```
5 rows in set (0.00 sec)
```


Q2. State True or False:

1. Group by clause and having clause may be used together in any order.
2. It is compulsory to use group by functions while using group by clause.
3. It compulsory to use group by function in having clause.
4. To filter grouped records, we should use where clause.
5. While grouping the records on the basis of a column, it ignores the null values for grouped column.

Q3. Tick the correct answer:

1. What is the correct order of using clauses while executing the SELECT command?
 - a. Select, From, Where, Order by, Group By, Having
 - b. Select, Where, From, Group By, Having, Order By
 - c. Select, From Where, Group By, Having, Order By
 - d. Select, From, Where, Having, Group By, Order By
2. Consider table ITEM. Which query is correct to get the total sales brand wise.
 - a. Select sum(sales) from item;
 - b. Select brand, sum(sales) from item;
 - c. Select brand, sum(sales) from item group by brand;
 - d. Select sum(sales) from item where group by brand;
3. Table ITEM has 30 rows. A user applies the following query. `SELECT count(discount) from item;`
He gets the answer as 26. What is the possible reason?
 - a. Query is wrong.
 - b. May be column discount have zero value.
 - c. May be column discount have null value.
 - d. May be column discount have zero or null value.

```
mysql> select * from emp;
+-----+-----+-----+-----+-----+-----+
| empno | ename  | post   | sal   | comm  | deptno | doj       |
+-----+-----+-----+-----+-----+-----+-----+
| 1001  | Amit   | Manager | 50000 | 10000 | 10      | 2020-10-01 |
| 1002  | Ashok  | Manager | 30000 | NULL  | 10      | 2019-05-20 |
| 1003  | Anurag | Manager | 30000 | 3000  | 10      | 2019-06-12 |
| 1004  | Arjun  | Admin   | 123000 | 10000 | 20      | 2020-06-12 |
| 1005  | Bhavya | Admin   | 100000 | NULL  | 30      | 2018-01-12 |
| 1006  | Priya  | Clerk   | 20000  | 0     | 10      | 2020-06-12 |
+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

Consider the table emp and identify which query is correct to get following output:

- a) Select post noofpost from emp;
 - b) Select distinct post noofpost from emp;
 - c) Select count(distinct post) from emp;
 - d) Select distinct count(post) from emp;
4. Which query is correct to get departmentwise total number of employees inwhich more than 3 employees are working?
- a. Select deptno, count(*) from emp where count(*)>3 group by deptno;
 - b. Select deptno, count(*) from emp having count(*)>3 group by deptno;
 - c. Select deptno, count(*) from emp group by deptno where count(*)>3;
 - d. Select deptno, count(*) from emp group by deptno having count(*)>3;

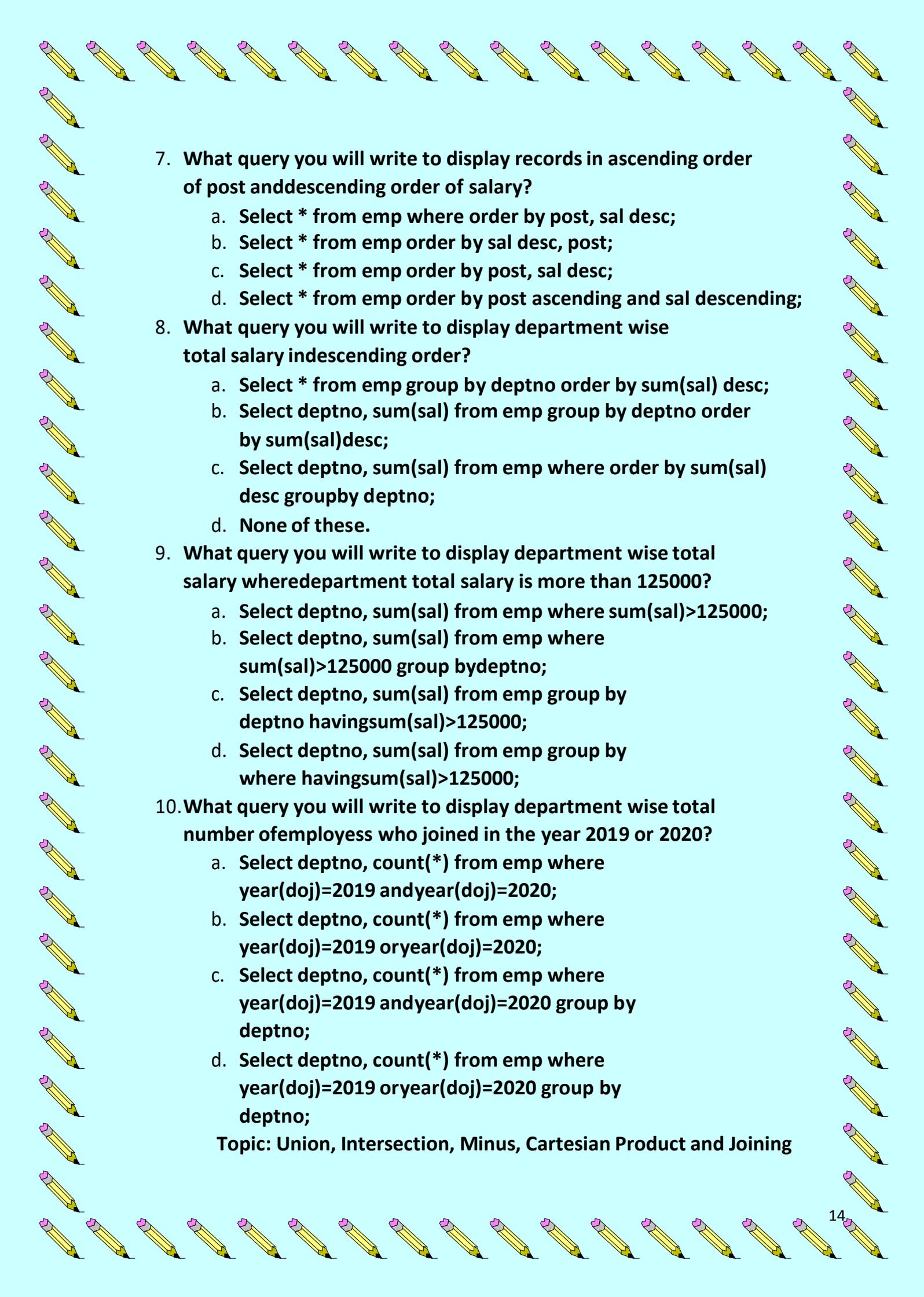
5. What will the output of the following query?

SELECT deptno, sum(sal) from emp where comm is not null group by deptno;

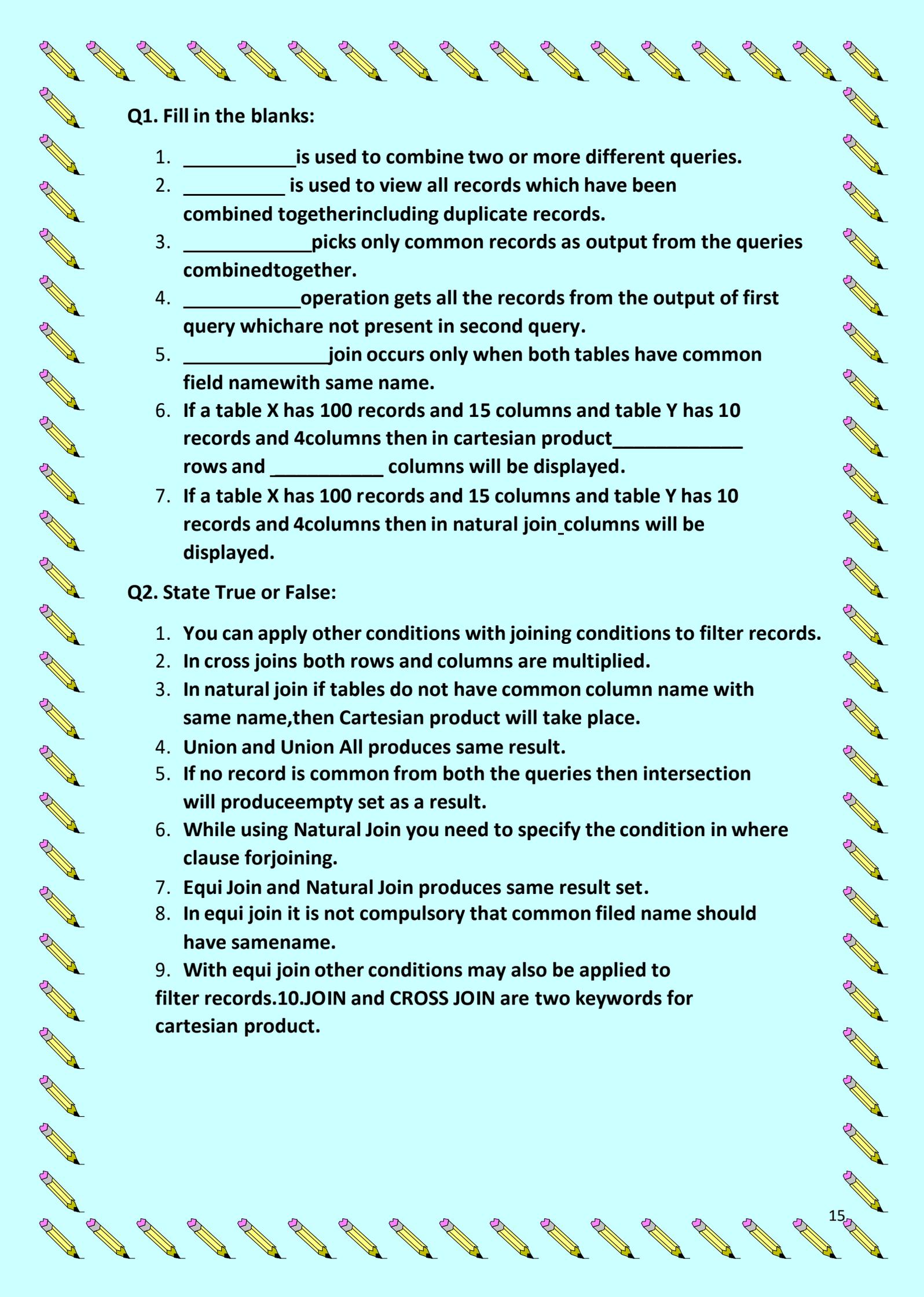
A		B		C		D
Deptno	Sum(sal)	Deptno	Sum(sal)	Deptno	Sum(sal)	
10	130000	10	100000	10	100000	None of these
20	123000	30	100000	30	100000	
30	100000					

6. What will be the output of the following query?Select count(comm) from emp group by comm;

A		B		C		D
Comm	Count(*)	Comm	Count(*)	Comm	Count(*)	
3000	1	3000	1	NULL	5	Query is wrong
10000	2	10000	2			
NULL	2	0	3			
0	1					

- 
7. What query you will write to display records in ascending order of post and descending order of salary?
- Select * from emp where order by post, sal desc;
 - Select * from emp order by sal desc, post;
 - Select * from emp order by post, sal desc;
 - Select * from emp order by post ascending and sal descending;
8. What query you will write to display department wise total salary in descending order?
- Select * from emp group by deptno order by sum(sal) desc;
 - Select deptno, sum(sal) from emp group by deptno order by sum(sal) desc;
 - Select deptno, sum(sal) from emp where order by sum(sal) desc group by deptno;
 - None of these.
9. What query you will write to display department wise total salary where department total salary is more than 125000?
- Select deptno, sum(sal) from emp where sum(sal)>125000;
 - Select deptno, sum(sal) from emp where sum(sal)>125000 group by deptno;
 - Select deptno, sum(sal) from emp group by deptno having sum(sal)>125000;
 - Select deptno, sum(sal) from emp group by where having sum(sal)>125000;
10. What query you will write to display department wise total number of employees who joined in the year 2019 or 2020?
- Select deptno, count(*) from emp where year(doj)=2019 and year(doj)=2020;
 - Select deptno, count(*) from emp where year(doj)=2019 or year(doj)=2020;
 - Select deptno, count(*) from emp where year(doj)=2019 and year(doj)=2020 group by deptno;
 - Select deptno, count(*) from emp where year(doj)=2019 or year(doj)=2020 group by deptno;

Topic: Union, Intersection, Minus, Cartesian Product and Joining



Q1. Fill in the blanks:

1. _____ is used to combine two or more different queries.
2. _____ is used to view all records which have been combined together including duplicate records.
3. _____ picks only common records as output from the queries combined together.
4. _____ operation gets all the records from the output of first query which are not present in second query.
5. _____ join occurs only when both tables have common field name with same name.
6. If a table X has 100 records and 15 columns and table Y has 10 records and 4 columns then in cartesian product _____ rows and _____ columns will be displayed.
7. If a table X has 100 records and 15 columns and table Y has 10 records and 4 columns then in natural join _____ columns will be displayed.

Q2. State True or False:

1. You can apply other conditions with joining conditions to filter records.
2. In cross joins both rows and columns are multiplied.
3. In natural join if tables do not have common column name with same name, then Cartesian product will take place.
4. Union and Union All produces same result.
5. If no record is common from both the queries then intersection will produce empty set as a result.
6. While using Natural Join you need to specify the condition in where clause for joining.
7. Equi Join and Natural Join produces same result set.
8. In equi join it is not compulsory that common field name should have same name.
9. With equi join other conditions may also be applied to filter records.
10. JOIN and CROSS JOIN are two keywords for cartesian product.

Q3. Consider the following tables and write the query based on it.

Table : Item

ItemID	Item Name	Price	Date of manufacturing	DateofExpiry	Supplier ID
1001	Kitkat	20	2021-01-25	2023-01-25	S001
1002	Silk	60	2021-03-02	2022-03-02	S001
1003	Temptation	50	2020-12-15	2022-12-15	S003
1004	5 Star	25	2020-11-25	2021-02-25	S001
1005	Fruit & Nuts	30	2019-02-05	2020-02-05	S002
1006	Perk	5	2021-02-10	2024-02-10	S002
1007	Dairy Milk	20	2021-02-10	2021-06-10	S001

Table : Supplier

SupplierID	SupplierName	SupplierCity
S001	Rahul	Jaipur
S002	Vijay	Ajmer
S003	Vinay	Udaipur

Q1. Write queries for the followings:

1. Write a query to display all records from item and supplier table.
2. Write a query to display supplier name and item name.
3. Write a query to display item name of supplier "Vijay".
4. Write a query to display the name of supplier whose products expired.
5. Write a query display those records which are supplied from "Jaipur" whose price is less than more than 20.
6. Write a query to display supplier name and total items being supplied by supplier.
7. Write a query to display supplier name with maximum price of item.
8. Write a query to display the average price of each supplier.
9. Write a query to display Itemname, price, suppliername using natural join of those items which were manufactured in the year 2021.
10. Write a query to display itemname, suppliername and total number of days for which the item is usable.
11. Write a query to display all the records using natural join in ascending order of supplier name and descending order of price

Subject : Computer Science (083)

1. Create an Employee Table with the fields Empno, Empname, Desig, Dept, Age and Place. Enter five records into the table

Empno	Empname	Desig	Dept	Age	Place
1221	Sidharth	Officer	Accounts	45	Salem
1222	Naveen	Manager	Admin	32	Erode
1223	Ramesh	Clerk	Accounts	33	Ambathur
1224	Abinaya	Manager	Admin	28	Anna Nagar
1225	Rahul	Officer	Accounts	31	Anna Nagar

- Add two more records to the table.
 - Modify the table structure by adding one more field namely date of joining.
 - Check for Null value in doj of any record.
 - List the employees who joined after 2018/01/01.
2. Create Student table with following fields and enter data as given in the table below

Field	Type	Size
Reg_No	char	5
Sname	varchar	15
Age	int	2
Dept	varchar	10
Class	char	3

Data to be entered

Reg_No	Sname	Age	Dept	Class
M1001	Harish	19	ME	ME1
M1002	Akash	20	ME	ME2
C1001	Sneha	20	CSE	CS1
C1002	Lithya	19	CSE	CS2
E1001	Ravi	20	ECE	EC1
E1002	Leena	21	EEE	EE1
E1003	Rose	20	ECE	EC2

Then, query the followings:

- (i) List the students whose department is CSE.'
- (ii) List all the students of age 20 and more in ME department.
- (iii) List the students department wise.
- (iv) Modify the class

ME2 to ME1. Check for the uniqueness of Register no

3. Consider the following tables DRESS and MATERIAL. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii).

Table : DRESS

DCODE	DESCRIPTION	PRICE	MCODE	LAUNCHDATE
10001	FORMAL SHIRT	1250	M001	12-JAN-08
10020	FROCK	750	M004	09-SEP-07
10012	INFORMAL SHIRT	1450	M002	06-JUN-08
10019	EVENING GOWN	850	M003	06-JUN-08
10090	TULIP SKIRT	850	M002	31-MAR-07
10023	PENCIL SKIRT	1250	M003	19-DEC-08
10089	SLACKS	850	M003	20-OCT-08
10007	FORMAL PANT	1450	M001	09-MAR-08
10009	INFORMAL PANT	1400	M002	20-OCT-08
10024	BABY TOP	650	M003	07-APR-08

Table : MATERIAL

MCODE	TYPE
M001	TERELENE
M002	COTTON
M004	POLYESTER
M003	SILK

- (i) To display DCODE and DESCRIPTION of an each dress in ascending order of DCODE.
- (ii) To display the details of all the dresses which have LAUNCHDATE inbetween 05-DEC-07 and 20-JUN-08 (inclusive of both the dates).
- (iii) To display the average PRICE of all the dresses which are made up of material with MCODE as M003.
- (vi) To display material wise highest and lowest price of dresses from DRESS table. (Display MCODE of each dress along with highest and lowest price)

- (v) **SELECT SUM (PRICE) FROM DRESS WHERE MCODE='M001';**
- (vi) **SELECT DESCRIPTION, TYPE FROM DRESS, MATERIAL
WHERE DRESS.DCODE=MATERIAL. MCODE AND DRESS.
PRICE>=1250;**

- (vii) **SELECT MAX(MCODE) FROM MATERIAL;**
- (viii) **SELECT COUNT(DISTINCT PRICE) FROM DRESS**

Q-4 Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to(viii), which are basedon the tables.

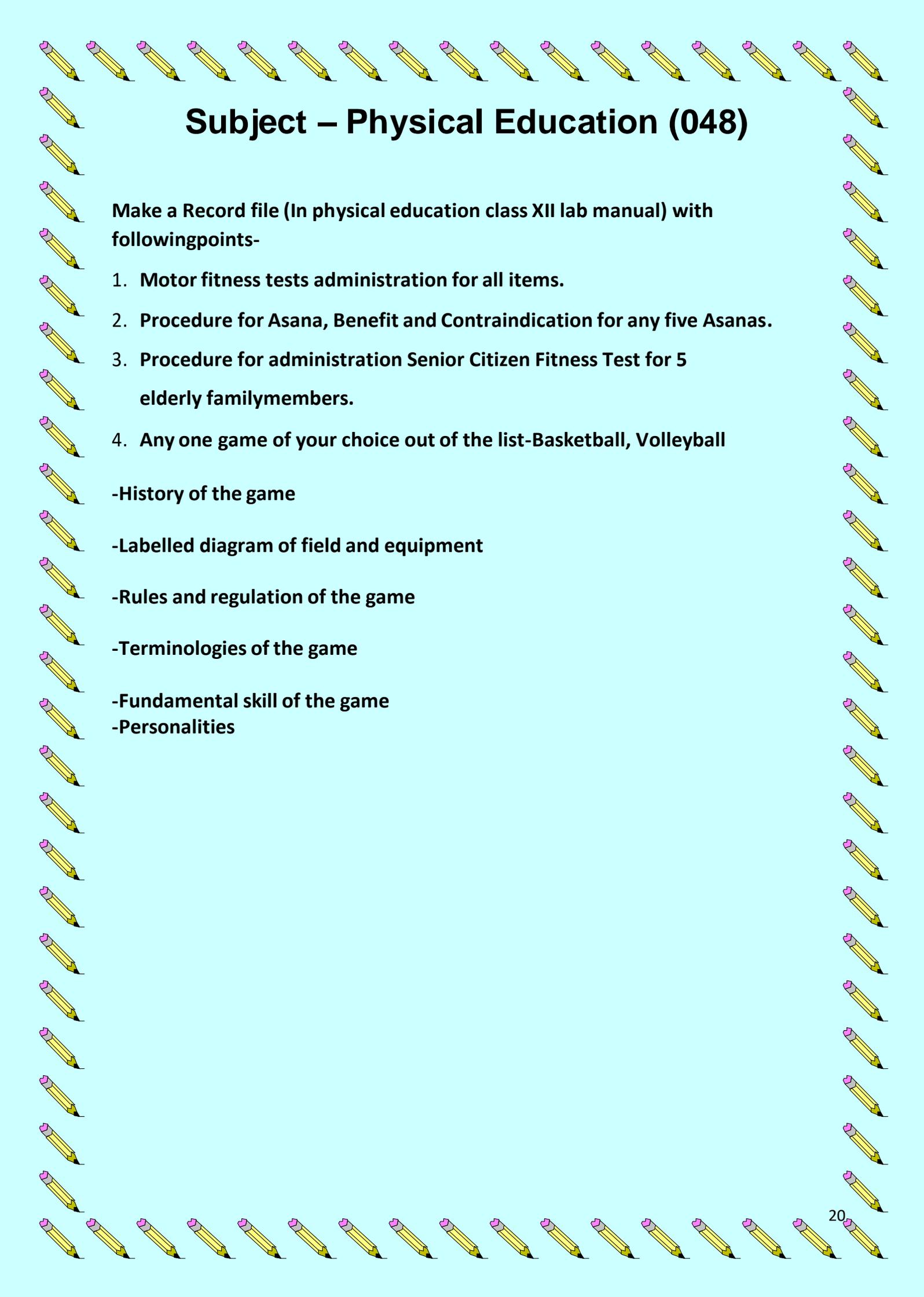
TRAINER

TID	TNAME	CITY	HIREDATE
101	SUNAINA	MUMBAI	1998-10-15
102	ANAMIKA	DELHI	1994-12-24
103	DEEPTI	CHANDIGARG	2001-12-21
104	MEENAKSHI	DELHI	2002-12-25
105	RICHA	MUMBAI	1996-01-12
106	MANIPRABHA	CHENNAI	2001-12-12

COURSE

CID	CNAME	FEES	STARTDATE
C201	AGDCA	12000	2018-07-02
C202	ADCA	15000	2018-07-15
C203	DCA	10000	2018-10-01
C204	DDTP	9000	2018-09-15
C205	DHN	20000	2018-08-01
C206	O LEVEL	18000	2018-07-25

- (i) **Display the Trainer Name, City & Salary in descending order of their Hiredate.**
- (ii) **To display the TNAME and CITY of Trainer who joined the Institute in the month of December 2001.**
- (iii) **To display TNAME, HIREDATE, CNAME, STARTDATE from tables TRAINER and COURSE of all those courses whose FEES is less than or equal to 10000.**
- (iv) **To display number of Trainers from each city.**
- (v) **SELECT TID, TNAME, FROM TRAINER WHERE CITY NOT IN('DELHI', 'MUMBAI');**
- (vi) **SELECT DISTINCT TID FROM COURSE;**
- (vii) **SELECT TID, COUNT(*), MIN(FEES) FROM COURSE GROUP BY TID HAVING COUNT(*)>1;**
- (viii) **SELECT COUNT(*), SUM(FEES) FROM COURSE WHERE STARTDATE< '2018-09-15';**



Subject – Physical Education (048)

Make a Record file (In physical education class XII lab manual) with following points-

1. Motor fitness tests administration for all items.
2. Procedure for Asana, Benefit and Contraindication for any five Asanas.
3. Procedure for administration Senior Citizen Fitness Test for 5 elderly family members.
4. Any one game of your choice out of the list-Basketball, Volleyball

-History of the game

-Labelled diagram of field and equipment

-Rules and regulation of the game

-Terminologies of the game

-Fundamental skill of the game

-Personalities

Subject : Applied Art (052)

***Topics for posters(half imperial size)**

a) Social issues(any 2) :

Child Labour ,Domestic Violence . Covid Etiquette Aids

b) International/national : Terrorism , Population , Global warming

c) Travel and tourism d)

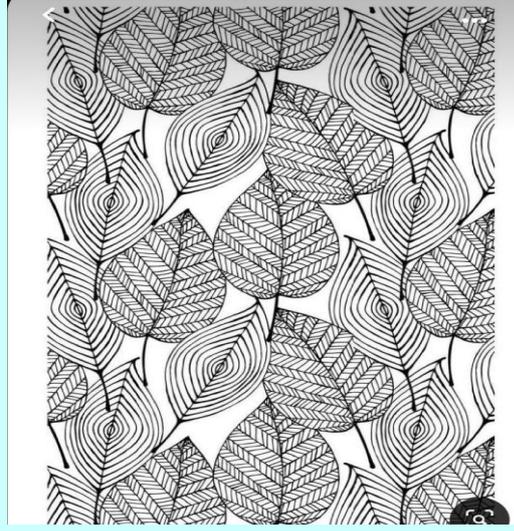
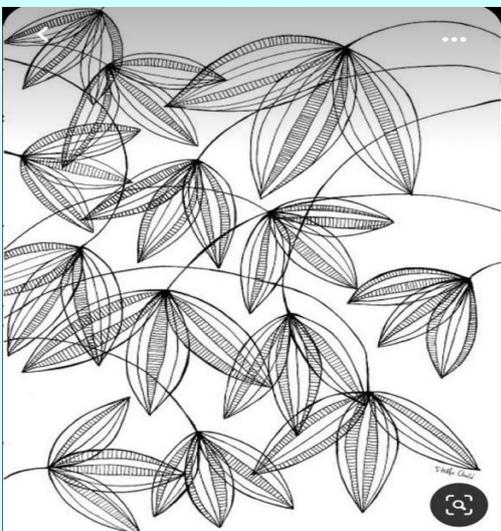
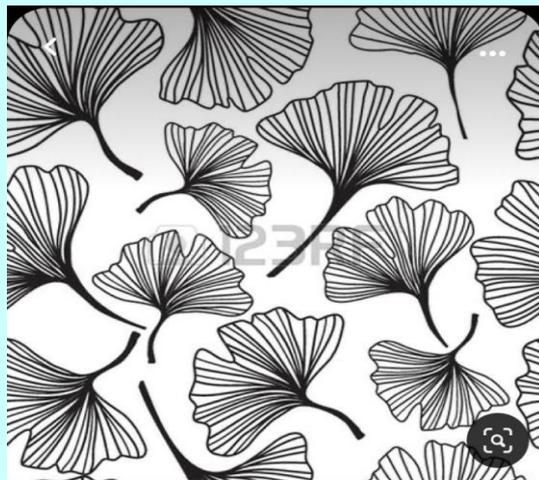
Commercial Product

***Topics for illustrations(22 x30 cms)+1 inch border**

a) Linear techniques in black and white (Follow linear techniques samples) Any 2

b) Culture- Dance, Theatre, Art, Music

c) Professional/Profession



Subject : Mathematics (041)

CONTINUITY AND DIFFERENTIABILITY

Q.1

If $x \sin(a + y) + \sin a \cos(a + y) = 0$, prove that $\frac{dy}{dx} = \frac{\sin(a+y)}{\sin a}$

Q.2

$\frac{1 - \cos 4x}{x^2}$ _____ if $x < 0$

Let $f(x) = a$

_____ if $x = 0$

$\frac{\sqrt{x}}{\sqrt{16 + \sqrt{x-4}}}$ if $x > 0$

Determine the value of a for which the function $f(x)$ is continuous at $x = 0$.

Q.3

If $e^x + e^y = e^{x+y}$, prove that $\frac{dy}{dx} + e^{y-x} = 0$

Q.4

Differentiate $\tan^{-1}(\sqrt{1-x^2})$ w.r.t. $\cos^{-1}(2x\sqrt{1-x^2})$, when $x \neq 0$

Q.5

If $y = \sin^{-1} x$, show that $(1 - x^2)^{-\frac{1}{2}} \frac{d^2y}{dx^2} - x \frac{dy}{dx} = 0$.

Q.6

If $y = x^3 \log(x)$, then prove that $xy'' - 2y' + 3x^2 = 0$.

Q.7

If $x = \cos t (3 - 2 \cos^2 t)$ and $y = \sin t (3 - 2 \sin^2 t)$, then find the value of $\frac{dy}{dx}$ at $t = \frac{\pi}{4}$

Q.8

Differentiate the function $(\sin x)^x + \sin^{-1} \sqrt{3x}$ with respect to x

Q.9

Find the values of a and b , if the function f is defined by

$f(x) = \begin{cases} x^2 + 3x + a & , x \leq 1 \\ bx + 2 & , x > 1 \end{cases}$ is differential at $x = 1$.

Q.10

a. Differentiate $\tan^{-1}(\frac{1+\cos x}{\sin x})$ w.r.to x .

b. For what value of "k" is the function

$f(x) = \begin{cases} \sin 5x + \cos x & \text{if } x \neq 0 \\ k & \text{if } x = 0 \end{cases}$ is continuous at $x = 0$

APPLICATION OF DERIVATIVE

Q.1 Prove that $(x^n + y^n)^{1/n}$ touches the straight line $x/a + y/b = 2$, for all $n \in \mathbb{N}$ at point (a, b)

Q.2 Find the equation of the normal to the curves $y = x \log x$ which is parallel to the line $2x - 2y + 3 = 0$

Q.3 Find the equation to the tangent to the curve $3x^2 - y^2 = 8$, which pass through the point $(\frac{4}{3}, 0)$

Q.4 Show that $f(x) = \tan^{-1}(\cos x + \tan x)$ is strictly increasing on interval $(0, \pi)$

Q.5 An open box with a square base is to be made out of a given quantity of cardboard of area c^2 square units. Show that the maximum volume of the box is $\frac{6}{3} c^3$ cubic units.

Q.6 Show that the equation of normal at any point t on the curve $x = 3 \cos t - \cos^3 t$ and $y = 3 \sin t - \sin^3 t$ is $4(y \cos^3 t - x \sin^3 t) = 3 \sin 4t$

Q.7 Find the coordinates of a point of the parabola $y = x^2 + 7x + 2$ which is closest to the straight line $y = 3x - 3$

Q.8 Tangent to the circle $x^2 + y^2 = a^2$ at any point on it in the first quadrant makes intercepts OA and OB on x and y axes respectively, O being the centre of the circle. Find the minimum value of $(OA + OB)$.

Q.9 Show that curves $xy = a^2$ and $x^2 + y^2 = 2a^2$ touch each other.

Q.10 Prove that the volume of the largest cone that can be inscribed in a sphere of radius R is $\frac{8}{27}$ of the volume of the sphere.

MATRIX

Q1. Construct a matrix $A = [a_{ij}]_{2 \times 2}$ whose elements a_{ij} are given by $a_{ij} = e^{2ix} \sin$.

Q2. Express the matrix A as the sum of a symmetric and a skew symmetric matrix, where

$$A = \begin{bmatrix} 2 & 4 & 6 \\ 7 & 3 & 5 \\ 1 & 2 & 4 \end{bmatrix}$$

Q3. If $A = \begin{bmatrix} 1 & 3 & 2 \\ 2 & 0 & 1 \\ 0 & 1 & 3 \end{bmatrix}$, then show that A satisfies the equation $A^3 - 4A^2 - 3A + 11I = 0$.

Q4. If $A^T = \begin{bmatrix} 3 & 4 \\ -1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 2 & 1 \\ 1 & 2 & 3 \end{bmatrix}$, find $A^T - B^T$.

Q5. Find the value of x and y , if $2 \begin{bmatrix} 0 & 1 \\ 0 & x \end{bmatrix} + \begin{bmatrix} y & 1 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} y & 1 \\ 1 & 8 \end{bmatrix}$.

Q6. If matrix $A = \begin{bmatrix} 1 & 2 & 3 \end{bmatrix}$, write AA^T .

Q7. If $A = \begin{bmatrix} \cos \alpha & -\sin \alpha \\ \sin \alpha & \cos \alpha \end{bmatrix}$ is identity matrix, then write the value of α .

Q8. If a matrix has 28 elements, what are the possible order it can have? What if it has 13 elements?

Q9. Find the matrix X and Y , if $2X - Y = \begin{bmatrix} 6 & -6 & 0 \\ -4 & 2 & 1 \end{bmatrix}$ and $X + 2Y = \begin{bmatrix} 3 & 2 & 5 \\ -2 & 1 & -7 \end{bmatrix}$.

Q10. Let $f(x) = x^2 - 5x + 6I$, find $f(A)$ if $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$.

Q11. If $A = \begin{bmatrix} a & b \\ 0 & 1 \end{bmatrix}$, Prove that $A^n = \begin{bmatrix} a^n & b(a^n - 1) \\ 0 & a^n - 1 \end{bmatrix}$.

Q12. If $A = \text{diag}(a \ b \ c)$, show that $A^n = \text{diag}(a^n \ b^n \ c^n)$ for all positive integer n .

Q.13 If $A = \begin{bmatrix} \cos \alpha + \sin \alpha & \sqrt{2} \sin \alpha \\ -\sqrt{2} \sin \alpha & \cos \alpha - \sin \alpha \end{bmatrix}$, prove that
 $A^n = \begin{bmatrix} \cos n\alpha + \sin n\alpha & \sqrt{2} \sin n\alpha \\ -\sqrt{2} \sin n\alpha & \cos n\alpha - \sin n\alpha \end{bmatrix}$

Q.14 If $A = \begin{bmatrix} k & 1 \\ 0 & k \end{bmatrix}$, prove that $A^n = \begin{bmatrix} k^n & nk^{n-1} \\ 0 & k^n \end{bmatrix}$ where $n \in \mathbb{N}$

Q.15 If $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$, show that
 $(aA + bB)(aA - bB) = (a^2 + b^2)A$

Q.16 Find the inverse of the matrix using elementary row (column) transformations

i. $A = \begin{bmatrix} 3 & -1 & -2 \\ 2 & 0 & -1 \\ 3 & -5 & 0 \end{bmatrix}$

Ans. $A^{-1} = \begin{bmatrix} -\frac{5}{8} & \frac{5}{4} & \frac{1}{8} \\ \frac{3}{8} & \frac{3}{4} & -\frac{1}{8} \\ \frac{5}{4} & \frac{3}{4} & \frac{1}{4} \end{bmatrix}$

ii. $A = \begin{bmatrix} 3 & 0 & -1 \\ 2 & 3 & 0 \\ 0 & 4 & 1 \end{bmatrix}$

Ans. $A^{-1} = \begin{bmatrix} -2 & 3 & -2 \\ 8 & -12 & 9 \end{bmatrix}$

iii. $A = \begin{bmatrix} 2 & -1 & 4 \\ 4 & 0 & 2 \\ 3 & -2 & 7 \end{bmatrix}$

Ans. $A^{-1} = \begin{bmatrix} -2 & 1/2 & 1 \\ 11 & -1 & -6 \\ 4 & -1/2 & -2 \end{bmatrix}$

iv. $A = \begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 3 & -2 & 1 \end{bmatrix}$

Ans. $A^{-1} = \begin{bmatrix} 3 & 2 & 6 \\ 1 & 1 & 2 \\ 2 & 2 & 5 \end{bmatrix}$

INVERSE TRIGONOMETRIC FUNCTION

1. Prove that $\tan^{-1} \frac{1}{5} + \tan^{-1} \frac{1}{7} + \tan^{-1} \frac{1}{3} + \tan^{-1} \frac{1}{8} = \frac{\pi}{4}$
2. Evaluate : $\tan \left[2 \tan^{-1} \left(\frac{1}{5} \right) + \frac{\pi}{4} \right]$ - - -
3. Prove that $2 \tan^{-1} \left(\frac{1}{5} \right) + \sec^{-1} \left(\frac{5\sqrt{2}}{7} \right) + 2 \tan^{-1} \left(\frac{1}{8} \right) = \frac{\pi}{4}$
4. Write the value of $\cos^{-1} \left(-\frac{1}{2} \right) + 2 \sin^{-1} \left(\frac{1}{2} \right)$
5. Prove that : $\cot^{-1} 7 + \cot^{-1} 8 + \cot^{-1} 18 = \cot^{-1} 3$

DETERMINANT

- Q.1 Evaluate the determinant $\Delta = \begin{vmatrix} 1 & \sin \theta & 1 \\ -\sin \theta & 1 & \sin \theta \\ -1 & -\sin \theta & 1 \end{vmatrix}$. Also prove that $2 \leq \Delta \leq 4$.
- Q.2 Without expanding show that $\Delta = \begin{vmatrix} \operatorname{cosec}^2 \theta & \cot^2 \theta & 1 \\ \cot^2 \theta & \operatorname{cosec}^2 \theta & -1 \end{vmatrix} = 0$ 42 40 2
- Q.3 Evaluate $\begin{vmatrix} 1 & \log_b \\ \log_a & b & 1 \end{vmatrix}$
- Q.4 If $x = -4$ is a root of $\begin{vmatrix} 1 & x & 1 \\ x & 2 & 3 \\ 3 & 2 & x \end{vmatrix} = 0$, then find the other two roots.
- Q.5 Without expanding show that $\begin{vmatrix} 0 & b-a & c-a \\ a-b & 0 & c-b \\ a-c & b-c & 0 \end{vmatrix} = 0$
- Q.6 Determine the value of x for which the matrix is singular

$$A = \begin{bmatrix} x+1 & -3 & 4 \\ -5 & x+2 & 2 \\ 4 & 1 & x-6 \end{bmatrix}$$
- Q.7 Show that $\begin{vmatrix} a & b-c & c+b \\ a+c & b & c-a \\ a-b & b+a & c \end{vmatrix} = (a+b+c)(a^2+b^2+c^2)$
- Q.8 Show that:

$$\begin{vmatrix} 1+a^2-b^2 & 2ab & -2b \\ 2ab & 1-a^2+b^2 & 2 \\ 2b & -2a & 1-a^2-b^2 \end{vmatrix} = (1+a^2+b^2)^3$$
- Q.9 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 equation: $x - y = 3$ $2x + 3y + 4z = 17$, $y + 2z = 7$