

Autumn Break Homework

Class 11th Economics (2022-23)

Q1. Define the following :-

- a) economy
- b) normative and positive economics
- c) Law of diminishing marginal utility
- d) demand and law of demand
- e) PPC and indifference curve
- f) M R T
- g) M R S

Q2. When PPC shifts to: i) rightward
ii) leftward.

Q3. Explain the relationship between M U and T U . Use diagram and schedule.

Q4. Explain consumer equilibrium through indifference curve analysis .Use diagram.

Q5. Differentiate between-

i) Microeconomics and macroeconomics ii) Increase in demand and increase in quantity demanded. Use diagram.

iii) decrease in demand and decrease in quantity demanded. Useb diagram.

Q6. Mention the features of indifference curve .

Q7. Draw Pie diagram, Ogive, Histogram, one for each as per questions (data) given in exercise of the chapters (your statistics book).

Other Activities: 1. Tryout numericals of mean, median and mode given in the chapter:(Measures of Central Tendencies).

2. Plan to complete the project and collect data on your selected topic as given in the CBSE syllabus of 202-23.(shared in group)

3. Prepare a scrap book/ Charts on the different topics of Meghalaya.

Kendriya Vidyalaya Aliganj (Shift 2)

Autumn Break Assignment

Class XII (Economics)

Instructions: Learn the Following questions then answer in your notebook.

Q1. Differentiate between the following–

- i) Flow and stock
- ii) final and intermediate good
- iii) nominal and real GDP
- iv) Fiat money and fiduciary money
- v) citizen and normal resident
- vi) money flow and real flow
- vii) domestic income and national income
- viii) bank rate and repo rate
- ix) GVAm and GDPmp
- x) Revenue receipt and capital receipt
- xi) Revenue expenditure and capital expenditure

Q2. "All capital goods are producer goods but all producer goods are not capital goods" explain with example.

Q3. Differentiated between positive and negative externalities with example.

Q4. "GDP is always indicator of public welfare ". defend or refute the statement.

Q5. What is problem of double counting ? how it can be avoided explain with example.

Q6. What was the two fold motive of colonial government to destroy handicraft industry of India?

Q7. Explain the currency issue function of Central Bank (RBI).

Q8. Explain any two qualitative controls by which RBI controls money supply in the economy.

Q9. Explain the Redistribution of income and wealth as an objective of government budget.

Q10. What is money multiplier?How commercial banks create credit? explain with an example.

Q11. Explain main reasons of stagnation of agriculture during colonial period.

Q12. List out the factors which contribute to human capital formation.

Q13. Explain the role of education in the human capital formation.

Q14. What is Rural development? what are the problems of rural development?

Q15. "Agriculture sector has suffered a lot after reforms in India". Explain.

Q16. Define the following

I) Export substitution ii)self Reliance iii)outsourcing iv)trade surplus v)devaluation vi) labour force
vii) work force viii) disguised unemployment

IX) jobless growth x) informalisation of work force xi) organic farming

Q17. Why less women are employed in regular salaried work than men? Explain.

Q18. What are the financial reforms that have been taken up during reforms in India?

Q19. Explain the implications of growing fiscal deficit?

Q20. What is rural marketing? What efforts have been made to improve the rural marketing?

NOTE: 1.Your test will be conducted on these questions after autumn break.

2.Question paper will have three (3) sets.

3. Maximum marks for this test will be 40 and you will be given 90 minutes to answer.

4. Question paper will also contain numericals from national numerical questions will be supplied later on/ Time to time.

5. Try to complete your project work. Sample project will be forwarded in the group .

PROJECT

Choose one of the topics from the given syllabus of 2022-23 and plan the components which you will be utilising collect information from different sources and keep it ready.

→ अनुच्छेद लेखन -

- 1) रेलवे स्टेशन का पर आधा घंटा
- 2) अभ्यास का अहत्व
- 3) पाठ्य पुस्तक वस्त्र में टी ग्डि तस्वीर पर आधारित प्रश्न - उत्तर
4. झोंझी की राजी का चित्र बनाओ।
5. किन चीजों का रूपर्ण ऐसा होता है →

चिकना	सख्त	द्युरदग
मुलायम	घिपचिपा	भुरझुरा

6. ऐसी चीजों के अद्वासों की तालिका बनाओ जो तुम आपकी चार ईंटियों से महसूस करते हो -
- सुनकर, चखकर, सुचकर, दूकर

काशा - सातवा - ४
शाष्यदीप अवकाश कार्य

→ अनुच्छेद लेखन

- 1) जगत का भव्य
 - 2) ऐलवे से राज पर आधा बटा।
- फास्ट-फूड यानी 'तुँड़त ओजन' के बोर्ड-क्रूजसेल पर केब्बे लिहैं।
→ आपके मेमाल आपके क्षेत्र का पारपरिक ओजन यानि गाढ़ते हैं। उन्हें विलोगे के लिए चार के लोगों वी भद्र
से एक भेद्य बनाइए।
- एक लिङ्गका जागक काविता को लिखें तथा चित्र बनाएं।
→ चार औं पता करके बताइए कि उनके जगाने और आपके
समाज में बाजपाल को क्या परिवर्तन आया है।

शारदाय अवकाश गृह कार्य
काक्षा - नवमी

लघु कथा →

शीर्षक → मेहनत की कामड़ी

ग्रन्थ श्री (कविता) → शब्द संपदा)

पाठ के आधार पर कौलाज़ लगाएँ।

अंलकार की परिभाषा उदाहरण सहित

अनुच्छेद लेखन → समय का महत्व

मन के दो दर हैं, मन के जीवे जीत

अभ्यास का महत्व

बन भरक्षण का भवत्व

उत्तर लेखणी पर आधा घंटा

शारदीय अवकाश घृण कर्ण कक्षा दसवीं छ

→ अनुच्छेद लेखन

1) परीक्षा और पहले बेरी मल्लोट्टा

2) अंत्यास का जहाव

3) मन के लौ दार है, मन के जीति जीत

4) बलो का जहाव

5) ऐतिक शिक्षा की आवश्यकता

→ प्र- लेखन

वाप- विनाय सतिगेगिता में प्रथम उन्होंने चोटे आई की बदाई ढेते हुए प्र- लिखे।

→ संदेश लेखन

→ अपने लिए को दीपावली पर्व पर श्रावकामना संदेश लिखेगा,

→ आपके लिए को विदेश के नौकरी जिल गड़ है, उसे क्षण में संदेश लिखें।

H.w. for class 12thA
MATHS

- 1-Solve 5 years board exam Questions from sample paper
- 2-Write 4 activities of practicals on practical copy which you have done in class
- 3-Working model on mathematics

H.w. for class 11thA

- 1-Solve examples of chapters 1,2,3,5
 - 2-Write 5 activities of practicals on practical copy which you have done in class
 - 3-Working model on mathematics
- H.w. for Class 7B
- 1-Draw 2D & 3D figures on project copy
 - 2- Working model on mathematics conversion of 2D into 3D

KENDRIYA VIDYALAYA ALIGANJ SHIFT-2

AUTUMN BREAK HOLIDAY 2022-23

CLASS-XII (COMPUTER SCIENCE)

Que 1. Write query for 1 to 4 and output for 5-8.

Table: VEHICLE

VCODE	VEHICLETYPE	PERKM
V01	VOLVO BUS	150
V02	AC DELUXE BUS	125
V03	ORDINARY BUS	80
V05	SUV	30
V04	CAR	18

Table : TRAVEL

CNO	CNAME	TRAVELDATE	KM	VCODE	NOP
101	K. Niwal	2015-12-13	200	V01	32
103	Fredrick Sym	2016-03-21	120	V03	45
105	Hitesh Jain	2016-04-23	450	V02	42
102	Ravi Anish	2016-01-13	80	V02	40
107	John Malina	2015-02-10	65	V04	2
104	Sahanubhuti	2016-01-28	90	V05	4
106	Ramesh Jaya	2016-04-06	100	V01	25

- PERKS is Freight Charges per kilometer.
 - Km is kilometers Travelled
 - NOP is number of passengers travelled in vechicle.
1. To display CNO, CNAME, TRAVELDATE from the table TRAVEL in descending order of CNO.
 2. To display the CNAME of all customers from the table TRAVEL who are travelling by vechicle with code V01 or V02
 3. To display the CNO and CNAME of those customers from the table TRAVEL who travelled between '2015-12-31' and '2015-05-01'.
 4. To display all the details from table TRAVEL for the customers, who have travel distacne more than 120 KM in ascending order of NOE
 5. SELECT COUNT (*), VCODE FROM TRAVEL GROUP BY VCODE HAVING COUNT (*) > 1;
 6. SELECT DISTINCT VCODE FROM TRAVEL :
 7. SELECT A.VCODE, CNAME, VEHICLETYPE FROM TRAVEL A, VEHICLE B WHERE A. VCODE = B. VCODE and KM < 90;
 8. SELECT CNAME, KM*PERKM FROM TRAVEL A, VEHICLE B WHERE A.VCODE = B.VCODE AND A. VCODE 'V05';

Que 2. Consider the following tables SCHOOL and ADMIN and Give the output the following SQL queries :

1. Select Designation Count (*) From Admin Group By Designation Having Count (*) <2;
2. SELECT max (EXPERIENCE) FROM SCHOOL;
3. SELECT TEACHER FROM SCHOOL WHERE EXPERIENCE >12 ORDER BY TEACHER;
4. SELECT COUNT (*), GENDER FROM ADMIN GROUP BY GENDER;

TABLE: SCHOOL

CODE	TEACHER	SUBJECT	DOJ	PERIODS	EXPERIENCE
1001	RAVI SHANKAR	ENGLISH	12/3/2000	24	10
1009	PRIYA RAI	PHYSICS	03/09/1998	26	12
1203	LIS ANAND	ENGLISH	09/04/2000	27	5
1045	YASHRAJ	MATHS	24/8/2000	24	15
1123	GANAN	PHYSICS	16/7/1999	28	3
1167	HARISH B	CHEMISTRY	19/10/1999	27	5
1215	UMESH	PHYSICS	11/05/1998	22	16

TABLE: ADMIN

CODE	GENDER	DESIGNATION
1001	MALE	VICE PRINCIPAL
1009	FEMALE	COORDINATOR
1203	FEMALE	COORDINATOR
1045	MALE	HOD
1123	MALE	SENIOR TEACHER
1167	MALE	SENIOR TEACHER
1215	MALE	HOD

Question 3:

Write SQL queries for (i) to (iv) and find outputs for SQL queries (v) to (viii), which are based on the tables TRANSPORT and TRIP

TABLE: TRANSPORT

TCODE	TTYPE	PERKM
103	ORDINARY BUS	90
105	SUV	40
104	CAR	20
103	ORDINARY BUS	90
101	VOLVO BUS	160
102	AC DELUXE BUS	140

TABLE: TRIP

NO	NAME	TDATE	KM	TCODE	NOP
11	Tanish Khan	2015-12-13	200	101	32
13	Danish Sahai	2016-06-21	100	103	45
15	Ram Kumar	2016-02-23	350	102	42
12	Fen Shen	2016-01-13	90	102	40
17	Aan Kumar	2015-02-10	75	104	2
14	Veena	2016-06-28	80	105	4
16	Rajpal Kirti	2016-06-06	200	101	25

Note:

- NO is Driver Number
 - KM is Kilometer travelled
 - NOP is number of travellers travelled in vehicle
 - TDATE is Trip Date
1. To display NO, NAME, TDATE from the table TRIP in descending order of NO.
 2. To display the NAME of the drivers from the table TRIP who are traveling by transport vehicle with code 101 or 103.
 3. To display the NO and NAME of those drivers from the table TRIP who travelled between '2015-02-10' and '2015-04-01'.
 4. To display all the details from table TRIP in which the distance travelled is more than 100 KM in ascending order of NOP
 5. SELECT COUNT (*), TCODE From TRIP
GROUP BY TCODE HAVING COUNT (*) > 1;
 6. SELECT DISTINCT TCODE from TRIP;
 7. SELECT A.TCODE, NAME, TTYPE
FROM TRIP A, TRANSPORT B
WHERE A.TCODE = B.TCODE AND KM < 90;
 8. SELECT NAME, KM *PERKM
FROM TRIP A, TRANSPORT B
WHERE A.TCODE = B.TCODE AND A.TCODE = 105';

Que 4. Write SQL query to add a column total price with datatype numeric and size 10, 2 in a table product.

Que 5.

Sonal needs to display name of teachers, who have “0” as the third character in their name. She wrote the following query.

```
SELECT NAME FROM TEACHER WHERE NAME = "$$0?";
```

But the query isn't producing the result. Identify the problem.

Que 6.

Write SQL commands for the queries (i) to (iv) and output for (v) & (viii) based on a table COMPANY and CUSTOMER.

COMPANY

CID	NAME	CITY	PRODUCTNAME
111	SONY	DELHI	TV
222	NOKIA	MUMBAI	MOBILE
333	ONIDA	DELHI	TV
444	SONY	MUMBAI	MOBILE
555	BLACKBERRY	MADRAS	MOBILE
666	DELL	DELHI	LAPTOP

CUSTOMER

CUSTID	NAME	PRICE	QTY	CID
101	ROHAN SHARMA	70,000	20	222
102	DEEPAK KUMAR	50,000	10	666
103	MOHAN KUMAR	30,000	5	111
104	SAHIL BANSAL	35,000	3	333
105	NEHA SONI	25,000	7	444
106	SONAL AGGARWAL	20,000	5	333
107	ARUN SINGH	50,000	15	666

1. To display those company name which are having prize less than 30000.
2. To display the name of the companies in reverse alphabetical order.
3. To increase the prize by 1000 for those customer whose name starts with „S?
4. To add one more column totalprice with decimal] 10,2) to the table customer
5. SELECT COUNT(*) , CITY FROM COMPANY GROUP BY CITY;
6. SELECT MIN(PRICE), MAX(PRICE) FROM CUSTOMER WHERE QTY>10;
7. SELECT AVG(QTY) FROM CUSTOMER WHERE NAME LIKE "%r%";
8. SELECT PRODUCTNAME,CITY, PRICE
FROM COMPANY, CUSTOMER WHERE
COMPANY.CID=CUSTOMER.CID AND
PRODUCTNAME="MOBILE";

Que 7.

Consider the following tables SCHOOL and ADMIN and answer the questions :

Table : SCHOOL

CODE	TEACHER NAME	SUBJECT	DOJ	PERIODS	EXPERIENCE
1001	Ravi Shankar	English	12/3/2000	24	10
1009	Priya Rai	Physics	03/09/1998	26	12
1203	Lisa Anand	English	09/04/2000	27	5
1045	Yashraj	Maths	24/08/2000	24	15
1123	Ganan	Physics	16/07/1999	28	3
1167	Harish B	Chemistry	19/10/1999	27	5
1215	Umesh	Physics	11/05/1998	22	16

Table: Admin

Code	Gender	Designation
1001	Male	Vice Principla
1009	Female	Co-ordinator
1203	Female	Co-ordinator
1045	Male	HOD
1123	Male	Senior Teacher
1167	Male	Senior Teacher
1215	Male	HOD

Write SQL statements for the following:

1. To display TEACHERNAME, PERIODS of all teachers whose periods are more than 25.
2. To display all the information from the table SCHOOL in descending order of experience.
3. To display DESIGNATION without duplicate entries from the table ADMIN.
4. To display TEACHERNAME, CODE and corresponding DESIGNATION from tables SCHOOL and ADMIN of Male teachers.

Que 8.

Consider the following tables EMPLOYEE and DEPARTMENT and answer (a) and (b) parts of this question.

Table : EMPLOYEE

TCode	TName	DepCde	Salary	Age	JoinDate
15	Sameer Sharma	123	75000	39	01-Apr-2007
21	Ragvinder K	101	86000	29	11-Nov-2005
34	Rama Gupta	119	52500	43	03-Mar-2010
46	C R Menon	103	67000	38	12-Jul-2004
77	Mohan Kumar	103	63000	55	25-Nov-2000
81	Rajesh Kumar	119	74500	48	11-Dec-2008
89	Sanjeev P	101	92600	54	12-Jan-2009
93	Pragya Jain	123	32000	29	05-Aug-2006

Table: DEPARTMENT

DepCde	DepName	DepHead
101	ACCOUNTS	Rajiv Kumar
103	HR	P K Singh
119	IT	Yogesh Kumar
123	RESEARCH	Ajay Dutta

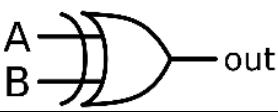
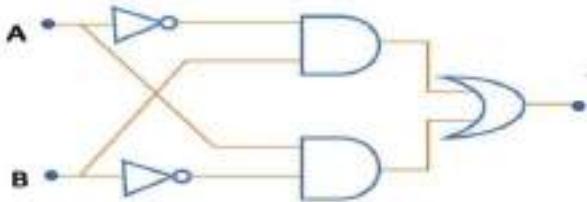
1. Write SQL commands for the following statements:

- o To display all DepName along with the DepCde in descending order of DepCde.
- o To display the average age of Employees in DepCde as 103.
- o To display the name of DepHead of the Employee named “Sanjeev P”
- o To display the details of all employees who has joined before 2007 from EMPLOYEE table.

2. Give the output of the following SQL queries:

- o SELECT COUNT (DISTINCT DepCde) FROM EMPLOYEE;
- o SELECT MAX(JoinDate), MIN (JointDate) FROM EMPLOYEE;
- o SELECT TName, DepHead FROM EMPLOYEE E, DEPARTMENT D
WHERE E.DepCde = D.DepCde;
- o SELECT COUNT (*) FROM EMPLOYEE WHERE Salary > 60000 AND Age > 30;

AUTUMN BREAK HOME WORK
CLASS-11 CS

1	Base number of Hexa-Decimal is - (a) 2 (b) 8 (c) 10 (d) 16
2	What is the ASCII equivalent decimal no. for 'A' ? (a) 64 (b) 63 (c) 65 (d) 66
3	MS-Office is a - a) Operating Software b) Utility program c) Programming language d) Application Software
4	It is a _____ Logical Gate  (a) XOR (b) NAND (c) AND (d) OR
5	State output of the binary addition $(101+011)$ (Show calculation) (a) 1000 (b) 1001 (c) 0011 (d) 1100
6	Hexa-Decimal of $(346)_{10} = (?)_{16}$ (Show calculation) (a) 14B (b) 1A5 (c) 15A (d) 5A1
7	144 MB = _____ bits (Please calculate it) (a) $1024*1024*8$ (b) $1024*1024*8*144$ (c) $1024*1024*1024*8$ (d) $1024*8*144$
8	Write Boolean expression of the given logical gate? 
9	Convert the following: (Show calculations) i) $(11111110101110.1101101111)_2 = (?)_{16}$ ii) $(47.35)_{10} = (?)_8$ iii) $(10111011.1101)_2 = (?)_{10}$
10	Draw Logical Diagram & Truth Table for Boolean Expression $F = (X+Z).(Y'+Z).(X'+Y+Z)$
PYTHON	
11	What is the difference between 3 and '3' ?
12	What is the output produce by the following code fragment ? <pre>x = 10 x = x + 10 x = x - 5 print(x) x, y = x-2, 22 print(x, y)</pre>

13	What will be the output produced by these statements : a) $14 \% 4$ b) $23 // 5$ C) $-43//11$ d) $-37\%12$
14	What will the output produced by the following code ? State reason. <pre>a = 5 - 4 - 3 b = 3**2**3 print(a) print(b)</pre>

केंद्रीय विद्यालय अलीगंज द्वितीय पाली

शरद कालीन अवकाश गृह कार्य

विषय -संस्कृत

कक्षा- आठवीं

1. शब्द रूप मति और गुरु लिखें और याद करें
2. संधि और प्रत्यय (पाठ 8 से 14 तक के अभ्यास प्रश्न में से)
3. संख्या वाची शब्द 51 से 100 तक लिखें और याद करें
4. 20 अव्यय पद लिखें(अर्थ सहित)लिखें और याद करें
5. संस्कृत भाषा में एक कहानी लिखें
6. संस्कृत के कोई 50 शब्द हिंदी अर्थ के साथ लिखें और याद करें।

कक्षा- सप्तमी

1. शब्द रूप मति और गति लिखें और याद करें
2. संख्या वाची शब्द 1 से 50 तक लिखें और याद करें
3. कोई 5 श्लोक लिखें और याद करें
4. संस्कृत भाषा में एक कहानी लिखें
5. संस्कृत के कोई 50 शब्द हिंदी अर्थ के साथ लिखें और याद करें।

कक्षा- षष्ठी

1. शब्द रूप बालक और राम लिखें और याद करें
2. संख्या वाची शब्द 1 से 20 तक लिखें और याद करें
3. कोई 5 श्लोक लिखें और याद करें
4. संस्कृत भाषा में कोई गीत या एक कहानी लिखें
5. संस्कृत के कोई 50 शब्द हिंदी अर्थ के साथ लिखें और याद करें।

1Q. Find a unit vector parallel to the vector $3\mathbf{i} + 7\mathbf{j} + 4\mathbf{k}$. [Ans = $\frac{3\mathbf{i} + 7\mathbf{j} + 4\mathbf{k}}{\sqrt{74}}$]

2Q. What is the magnitude of the vector $2\mathbf{i} - 3\mathbf{j} + \sqrt{3}\mathbf{k}$? [Ans = 4]

3Q. If A, B and C are mutually perpendicular vectors, then what is the value of $\mathbf{A} \cdot (\mathbf{B} + \mathbf{C})$?

4Q. What is the angle between $(\mathbf{i} + \mathbf{j})$ and $(\mathbf{i} - \mathbf{j})$?

5Q. For what value of m, the vector $\mathbf{A} = 2\mathbf{i} + \mathbf{j} - 4\mathbf{k}$ is perpendicular to $\mathbf{B} = 4\mathbf{i} - m\mathbf{j} + 6\mathbf{k}$. [Ans: m = -16]

6Q. Find the angle between the vectors $\mathbf{A} = \mathbf{i} + 2\mathbf{j} - \mathbf{k}$ & $\mathbf{B} = -\mathbf{i} + \mathbf{j} - 2\mathbf{k}$. [Ans: $\theta = 60^\circ$]

7Q. If $\mathbf{A} = 4\mathbf{i} + 3\mathbf{j}$ and $\mathbf{B} = 5\mathbf{i} + \mathbf{j}$, find a vector having the same magnitude as \mathbf{B} and parallel to \mathbf{A} .

8Q. Two equal forces are acting at a point with an angle of 60° between them. If the resultant force is equal to $20\sqrt{3}$ N, find the magnitude of each force. [Ans = 20 N]

9Q. What is the angle between velocity and acceleration at the peak point of the projectile motion?

10Q. State the parallelogram law of vector addition and find the magnitude and direction of the resultant of the two vectors \mathbf{P} and \mathbf{Q} inclined at an angle θ with each other.

11Q. If a particle's position is given by $x = 6 - 12t + 4t^2$ (where t is in seconds, and x is in meters),

(a) what is its velocity at t=1s? [Ans: -4 m/s]

(b) what is its speed at t=1s? [Ans: -4 m/s]

(c) Is there ever an instant when the velocity is 0? If so, give the time. [Ans: t = 1.5 s]

12Q. The position of a particle is given by, $r = (4t\mathbf{i} - 2t^2\mathbf{j} + \mathbf{k})$ m ; where t is in seconds and the coefficients have the proper units for r to be in meters. (a) Find the velocity and the acceleration of the particle? (b) What is the magnitude and direction of velocity of the particle at t = 2 sec.?

13Q. A particle starts from origin at t = 0 sec with a velocity $10\mathbf{j}$ m/s and moves in the x-y plane with a constant acceleration of $(8\mathbf{i} + 2\mathbf{j})$ m/s².

(a) At what time is the x – coordinate of the particle 16 m? What is the y - coordinate of the particle at that time? [Ans: t = 2 s, y = 24 m]

(b) What is the speed of the particle at this time?

14Q. The escape velocity v of a body depends on–

(i) the acceleration due to gravity 'g' of the planet, (ii) the radius R of the planet. Establish dimensionally the relation for the escape velocity.

15Q. State triangle law of vector addition. Show that the resultant R of two vectors A and B is given by $R = \sqrt{A^2 + B^2 + 2AB\cos\theta}$.

XII PHYSICS AUTUMN BREAK HOME WORK

UNIT-1 (Electrostatics)

1. Derive the expression for electric field intensity at axial and equitorial point of an electric dipole.
2. Derive the expression for the torque acting on an electric dipole, held in uniform electric field, when the axis of the dipole makes an angle θ with the electric field.
3. Using Gauss's theorem, derive an expression for electric field intensity due to an infinitely long, straight wire of linear charge density λ C/m.
4. Using Gauss's theorem, derive an expression for electric field intensity at a point near a thin infinite plane sheet of charge density σ C/m².
5. Derive an expression for electric potential due to an electric dipole.
6. Derive expressions for the potential energy of a system of (i) two point charges, (ii) three point charges.
7. Derive an expression for the potential energy of a dipole in a uniform electric field. Hence write the condition for Stable & Unstable equilibrium. ($U = -pE\cos\theta$)
8. Derive an expression for the Capacitance of parallel plate capacitor.

UNIT-2(Current Electricity)

9. Derive the relation between current and drift velocity.
10. Define the term current density of a metallic conductor. Deduce the relation connecting current density (J) and the conductivity (σ) of the conductor, when an electric field E , is applied to it. [$J = \sigma E$]
11. Define terminal potential difference of a cell. When a battery of emf E and internal resistance r is connected to a resistance R , a current I flows through it. Write the relation between E , I , r and R .
12. Kirchhoff's law (Statement of junction and loop law). On which conservation principle, these laws are based?
13. What is a wheatstone bridge? Deduce the condition for which the wheatstone bridge is balanced.

UNIT-3(Magnetic effects of current and magnetism)

14. State Bio-Savart's law. Using this law deduce an expression for the magnetic field on the axis of a circular current carrying loop. Draw the magnetic field lines due to the circular current carrying loop.
15. State Ampere's circuital law and derive an expression for magnetic field due to a straight conductor at a point (a) outside the conductor (b) inside the conductor. Draw a graph of magnetic field Vs distance from the axis of the conductor.
16. Derive an expression for force acting between two parallel, long, straight current carrying conductors. Hence define 1 Ampere.
17. Derive an expression for the torque on a rectangular coil of area A , carrying a current 'I' and placed in a uniform magnetic field 'B'. The angle between the direction of B and vector perpendicular to the plane of the coil is ' θ '.
18. With the help of a labelled diagram, explain the underlying principle, construction and working of a moving coil galvanometer. What is the function of: (i) Uniform radial field (ii) soft iron core; in such a device ?

UNIT-4 (EMI & AC)

19. Statement of Faraday law of electromagnetic induction and Lenz's law.
20. Derive an expression for emf induced across a metallic rod of length 'R' rotating with an angular frequency ' ω ', with one end hinged at the centre and the other end at the circumference of a circular metallic ring kept in a perpendicular magnetic field 'B'. ($E = \frac{1}{2} B\omega R^2$).
21. Define self inductance. Write its SI unit. Derive an expression for self inductance of a long solenoid of length l , cross sectional area A having N no. of turns.
22. Define mutual inductance between two long coaxial solenoids. Derive an expression for the mutual inductance for two long coaxial solenoid of same length wound over the other.
23. With the help of a labelled diagram, explain the principle, construction and working of an a.c. generator. Derive the expression for induced emf.
24. Ac voltage applied to (a) capacitor (b) inductor.(Derivation for expression for current and power dissipated in each case).

25. In a series LCR circuit connected to an a.c. source of voltage $v = v_m \sin\omega t$, use phasor diagram to derive an expression for the current in the circuit. Hence obtain the expression for the power dissipated in the circuit. Show that power dissipated at resonance is maximum.(CBSE 16) [5]
26. What do you mean by sharpness of resonance in a series resonant circuit? Write an expression for Quality factor of the circuit ($Q = \omega_0 L / R$).
27. Explain with the help of a labelled diagram, the principle, construction and working of a transformer. Why is its core laminated?

UNIT-5 (Electromagnetic Waves)

28. EM spectrum (Wavelength range and applications/uses of each wave i.e Radio, micro, infra, visible, U V, X ray & Gamma Ray)

UNIT-6 (Optics- Ray & Wave)

29. Derive mirror formula for a concave mirror, when it forms a real image of an object of finite size.
30. Explain the phenomenon of total internal reflection. State two conditions that must be satisfied for total internal reflection to take place. Derive the relation between the critical angle and the refractive index of the medium.
31. Derive the relation between distance of object (u), distance of image (v) and the radius of curvature (R) of a convex spherical surface, when refraction takes place from a rarer medium of refractive index n_1 to a denser medium of refractive index n_2 and the image produced is real.
32. Derive Lens maker's formula for a biconvex lens.
33. Derive the relation; $n_{21} = \frac{\sin(A+Dm)/2}{\sin A/2}$ for a glass prism of refracting angle A.