DAV PUBLIC SCHOOL, EAST OF LONI ROAD
HOLIDAYS HOMEWORK (2018-2019)
CLASS XII

English

Once again the summer season is here, with its scorching heat & tiring, lazy hours of the holidays. Yet holidays can be fun with some interesting assignments to occupy you usefully & creatively. Here are some activities for you to enjoy :-

1)Visit a nearby marketplace & on the basis of this visit, prepare a photo-feature of the same, giving all the details of the place & the interesting things that you observe, giving suitable captions to the pictures you paste.

2)While you take sips from a glass of chilled lime juice or suck at a sweet ripe mango, get yourself to watch any two of the following English movies & then attempt the assignments based on them :-
(a)Twenty Thousand Leagues Under The Sea. (b)The Omen (c)Jurassic Park
(d)Pride & Prejudice (e)The Guns Of Navaron.

After watching the movies, write in about 200 words an article on, 'A Comparative Appreciation of The Two Movies I Have Seen'. To help you, you may focus on discussing all those things that made you like one movie more than the other, which may involve the theme, characterization, plot, photography or any other aspect of the movies which you think worth mentioning.

3)Reading something interesting will enhance your language skills, widen your knowledge of humanity while letting you be usefully occupied. Try reading any two of the following :-
(a)The Hunchback of Notredam by Victor Hugo
(b)Wuthering Heights by Charlotte Bronte
(c)My Experiments With Truth by M.K Gandhi
(d)Pride & Prejudice by Jane Austin
(e)The Hucklebury Finn by Mark Twain

After reading the two books, select any one interesting character of each novel & write a conversation between the two, in about 250 words, where they critically discuss their authors who have created them & the roles they had to perform in their respective novels.

4)From the daily English Newspaper that you read, select any two sports news of significance (paste the cuttings of these two news along with your letter) and write a letter to the editor of the newspaper expressing your comments & opinions on each.

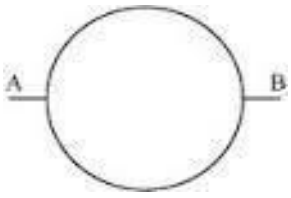
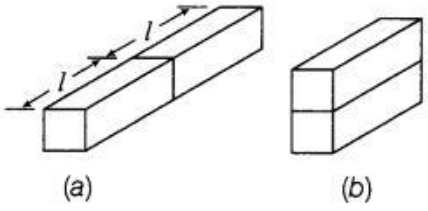
NOTE : DO THE ABOVE WORK ON LOOSE SHEETS IN SPIRAL BINDING.

PHYSICS

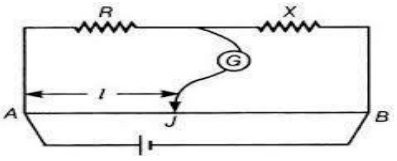
Q.1 Complete all the assignments as provided to you.
Q.2 Complete all the five activity in your activity file.
Q.3 Complete all your project as per the instructions.

Current Electricity

Section A Conceptual and Application Type Questions

S.No.	Question	Mark/Year
1	Two wires of equal length, one of copper and the other of manganin have the same resistance. Which wire is thicker?	1/2012
2	A wire of resistance 8R is bent in the form of a circle. What is the effective resistance between the ends of a diameter AB? 	1/2010
3	When electrons drift in a metal from lower to higher potential, does it mean that all the 'free' electrons of the metal are moving in the same direction?	1/2012
4	Two identical slabs, of a given metal, are joined together, in two different ways, as shown in figures (a) and (b). What is the ratio of the resistances of these two combinations? 	1/2010
5	A cylindrical metallic wire is stretched to increase its length by 5%. Calculate the percentage change in its resistance.	2/2007
6	A steady current flows in a metallic conductor of non-uniform cross-section. Which of these quantities is constant along the conductor: current, current density, electric field, drift speed?	1/2009
7	A low voltage supply from which one needs high currents must have very low internal resistance. Why?	1
8	A high tension (HT) supply of, say, 6 kV must have a very large internal resistance. Why?	1
9	The electron drift speed is estimated to be only a few mm s^{-1} for currents in the range of a few amperes? How then is current established almost the instant a circuit is closed?	1
10	Two conducting wires X and Y of same diameter but different materials are joined in series across a battery. If the number density of electrons in X is twice that in Y, find the ratio of drift velocity of electrons in the two wires?	2/2010

11 In an experiment on metre bridge, if the 2/2011 balancing length *AJ* is ' *l* ', what would be its value, when the radius of the metre bridge wire AB is doubled? Justify your answer.

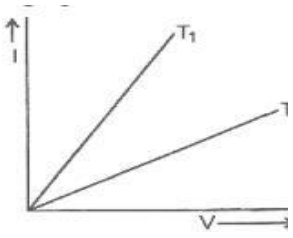


12 The sequence of coloured bands in two carbon resistors R_1 and R_2 is (i) brown, green, blue and (ii) orange, black, green. Find the ratio of their resistances. 2/2010

13 The emf of a cell is always greater than its terminal voltage. Why? 1/2013

14 A (i) series (ii) parallel combination of two given resistors is connected, one-by-one, across a cell. In which case will the terminal potential difference, across the cell, have a higher value? 2/2008

15 V- I graph for a metallic wire at two different temperatures T_1 and T_2 is shown in the figure. Which of the two temperatures is higher and why? 1



16 A cell of emf E and internal reistance r is connected across a variable resistor R. Plot a graph showing the variation of terminal potential difference V with resistance R. Predict from the graph the condition under which V becomes equal of E. Also plot a graph showing the variation of ε with R. 3/2009

17 A heating element is marked 210V, 630W. What is the value of the current drawn by the element when connected to a 210 V DC source? 2/2013

18 Two bulbs of same wattage, one having a carbon filament and the other having a metallic filament, are connected in series to the mains. Which one will glow more? 1

19 Of the bulbs in a house, one glows brighter than the other. Which of the two has a large resistance? 1

20 Two electric bulbs of 50W and 100W are given. When they are (i) connected in series (ii) connected in parallel, which bulb will glow more? 2

21 A cell of emf 'E' and internal resistance 'r' is connected across a variable resistor 'R'. Plot a graph showing variation of terminal voltage 'V' of the cell versus the current 'I'. Using the plot, show how the emf of the cell and its internal resistance can be determined. 2/2014

22 A conductor of length '*l*' is connected to a dc source of potential '*V*'. If the length of the conductor is tripled by gradually stretching it, keeping '*V*' constant, how will (*i*) drift speed of electrons and (*ii*) resistance of the conductor be affected? Justify your answer. 2/2015

23	Two materials Si and Cu, are cooled from 300 K to 60 K. What will be the effect on their resistivity?	1/2013
24	Plot a graph showing the variation of resistance of a conducting wire as a function of its radius, keeping the length of the wire and its temperature as constant.	1/2013
25	Two metallic wire of same material have the same length but cross sectional area in the ratio 1:2. They are connected (i) in series and (ii) in parallel. Compare the drift velocities of electrons in the two wires in both cases.	3/2008
26	A potential difference V is applied to a conductor of length L, diameter D. How are the electric field E, drift velocity v and resistance R are affected when (i) V is doubled, (ii) L is doubled, (iii) D is doubled.	3
27	Answer the following: (i) Why are the connections between resistors in a meter bridge made of thick copper strips? (ii) Why is it generally preferred to obtain the balance point near the middle of the bridge wire in meter bridge experiments? (iii) Which material is used for the meter bridge wire and why?	3/2013
28	A cell of emf (ε) and internal resistance (r) is connected across a variable external resistance (R) Plot graphs to show variation of (i) ε with R, and (ii) terminal potential difference of the cell (V) with R.	

Section B Numerical Problems

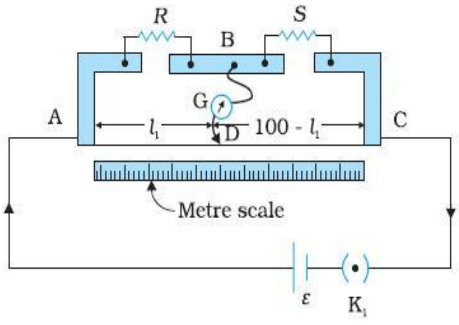
1	Given the resistances of 1 Ω, 2 Ω, 3 Ω, how will be combine them to get an equivalent resistance of (i) (11/3) Ω (ii) (11/5) Ω, (iii) 6 Ω, (iv) (6/11) Ω?	3/2015
2	(a) Six lead-acid type of secondary cells each of emf 2.0 V and internal resistance 0.015 Ω are joined in series to provide a supply to a resistance of 8.5 Ω. What are the current drawn from the supply and its terminal voltage? (b) A secondary cell after long use has an emf of 1.9 V and a large internal resistance of 380 Ω. What maximum current can be drawn from the cell? Could the cell drive the starting motor of a car?	3
3	Two wires of equal length, one of aluminium and the other of copper have the same resistance. Which of the two wires is lighter? Hence explain why aluminium wires are preferred for overhead power cables. (ρ_{Al} = 2.63 × 10–8 Ω m, ρ_{Cu} = 1.72 × 10–8 Ω m, Relative density of Al = 2.7, of Cu = 8.9.)	3
4	At room temperature (27.0 °C) the resistance of a heating element is 100 Ω. What is the temperature of the element if the resistance is found to be 117 Ω, given that the temperature coefficient of the material of the resistor is 1.70×10^{-4} °C^{-1}.	2

5 (a) In a metre bridge, the balance point is found to 3/2011 be at 39.5 cm from the end *A*, when the resistor *Y* is

of 12.5 Ω. Determine the resistance of *X*. Why are the connections between resistors in a Wheatstone or meter bridge made of thick copper strips?

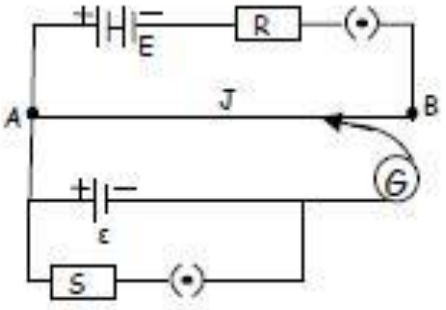
(b) Determine the balance point of the bridge above if *X* and *Y* are interchanged.

(c) What happens if the galvanometer and cell are interchanged at the balance point of the bridge? Would the galvanometer show any current?

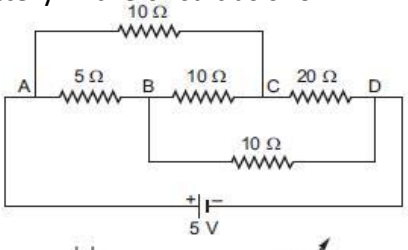


6 Two students '*X*' and '*Y*' perform an experiment on 2/2012 potentiometer separately using the circuit given:

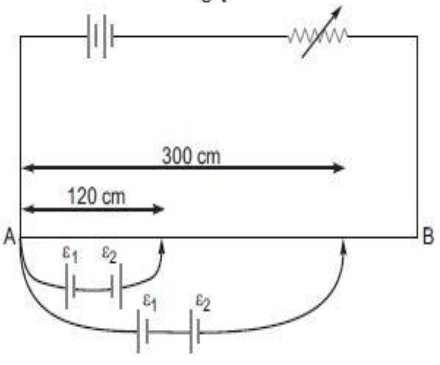
Keeping other parameters unchanged, how will the position of the null point be affected it (*i*) '*X*' increases the value of resistance *R* in the set-up by keeping the key K_1 closed and the key K_2 open? (*ii*) '*Y*' decreases the value of resistance *S* in the set-up, while the key K_2 remain open and the key K_1 closed? Justify. (foreign2015)



7 Calculate the value of the current drawn from a 5 V 2 battery in the circuit as shown.



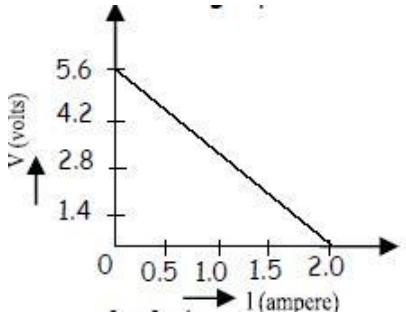
8 In the figure a long uniform potentiometer wire *AB* is having a constant potential gradient along its length. The null points for the two primary cells of emfs $\varepsilon_1$and ε_2 connected in the manner shown are obtained at a distance of 120 cm and 300 cm from the end A. Find (*i*) $\varepsilon_1/\varepsilon_2$ and (*ii*) position of null point for the cell ε_1.
How is the sensitivity of a potentiometer increased? 3/2012



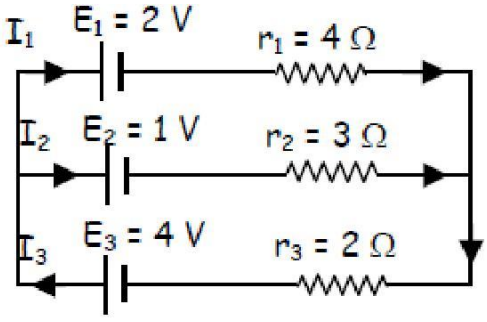
9 A cell of emf *E* and internal resistance *r* is connected to two external resistances R_1 and R_2 3/2012 and a perfect ammeter. The current in the circuit is measured in four different situations:
(*i*) without any external resistance in the circuit.
(*ii*) with resistance R_1 only
(*iii*) with R_1 and R_2 in series combination
(*iv*) with R_1 and R_2 in parallel combination.
The currents measured in the four cases are 0.42 A, 1.05 A, 1.4 A and 4.2 A, but not necessarily in that order. Identify the currents corresponding to the four cases mentioned above.

10 A straight line plot showing the terminal potential 3/2011 difference (V) of a cell as a function of current (I)

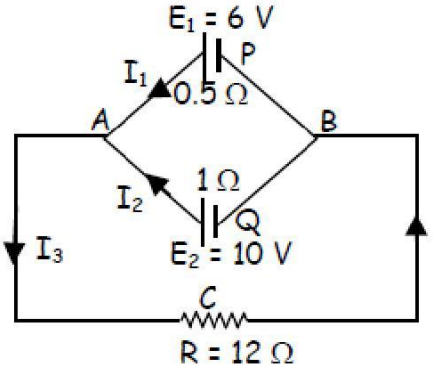
drawn from it is shown in the figure. Using this plot, determine (i) the emf and (ii) internal resistance of the cell.



11 Using Kirchoff's rule, find the currents I_1 , I_2 *and* I_3 . 3

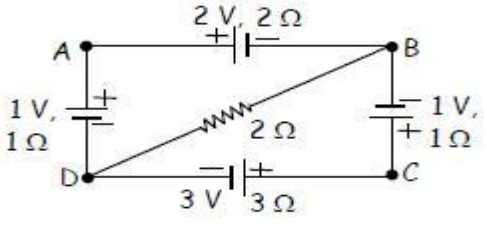


12 State Kirchhoff's rules. Apply Kirchhoff's rules to the loops ACBPA and ACBQA to write the expressions for the currents I_1 , I_2 *and* I_3 . in the network.



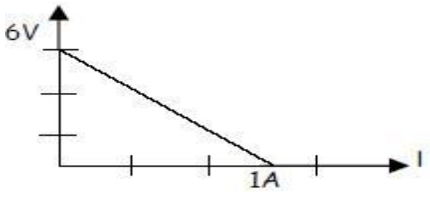
13 For the circuit shown here, calculate the 2 potential difference between the points B and

D.

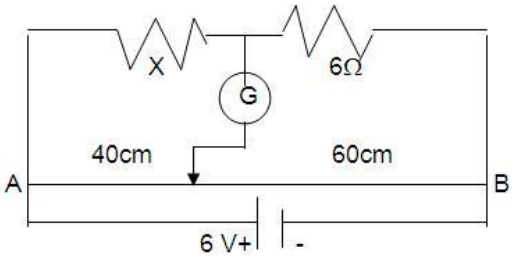


14 The plot of the variation of potential difference 1/2008 across a combination of three identical cells in

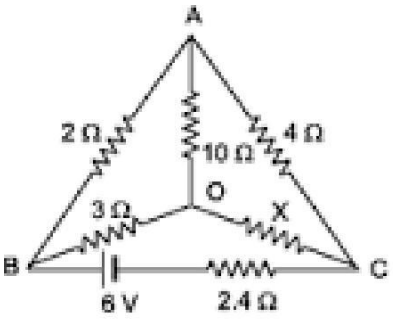
series versus current is as shown below. What is the emf of each cell?



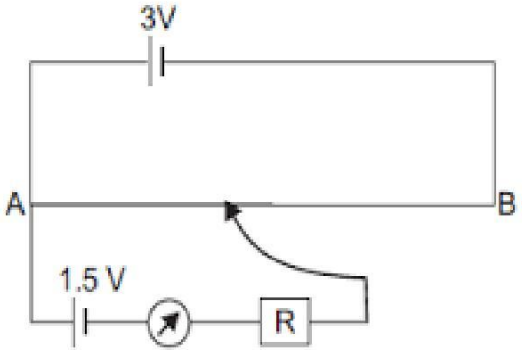
15 In the circuit of fig. a metre bridge is shown in its balanced state. The metre bridge wire has a resistance of 1 ohm/cm. Calculate the value of the unknown resistance X and the current drawn from the battery of negligible internal resistance.



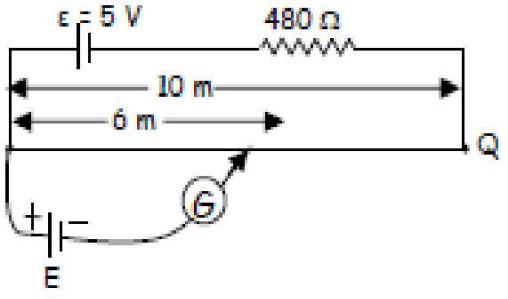
16 Find the value of the unknown resistance X in the circuit of fig. if no current flows through the section AO. Also calculate the current drawn by the circuit from the battery of emf 6 V and negligible internal resistance.



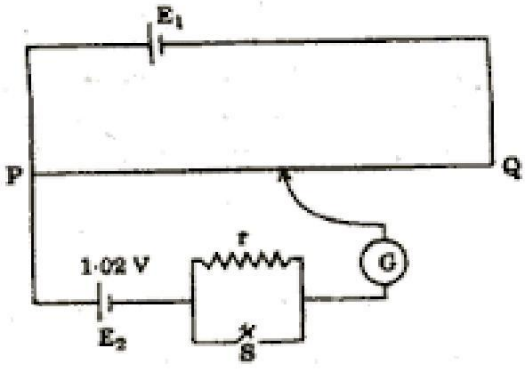
17 A potentiometer wire of length 1 m is connected to a driver cell of emf 3 V as shown in the figure. When a cell of 1.5 V emf is used in the secondary circuit, the balance point is found to be 60 cm. On replacing this cell and using a cell of unknown emf, the balance point shifts to 80 cm.
(i) Calculate unknown emf of the cell.
(ii) Explain with reason, whether the circuit works, if the driver cell is replaced with a cell of emf 1 V.
(iii) Does the high resistance R, used in the secondary circuit affect the balance point? Justify your answer



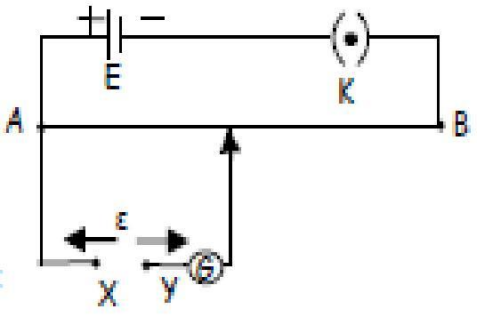
18 A 10 m long wire of uniform cross-section and 20 Ω resistance is used in a potentiometer. The wire is connected in series with a battery of 5 V along with an external resistance of 480 Ω. If an unknown emf E is balanced at 6.0 m length of the wire calculate
(i) the potential gradient of the potentiometer wire, (ii) the value of unknown emf. 3



19 Potentiometer wire PQ of 1 m length is connected to a standard cell E_1. Another cell E2 of emf 1.02 V is connected as shown in the circuit diagram with a resistance 'r' and switch S. With switch S open, null position is obtained at a distance of 51 cm from P. Calculate (i) potential gradient of the potentiometer wire and (ii) emf of the cell E_1. (iii) When switch S is closed, will null point towards P or towards O? Give reason for your answer. 3



20 For the potentiometer circuit shown in the given figure, points X and Y represent the two terminals of an unknown emf ε. A student observed that when the jockey is moved from the end A to the end B of the potentiometer wire, the direction of the deflection in the galvanometer remains in the same direction. What may be the two possible faults in the circuit that could result in this observations? If 3



the galvanometer deflection at the end B is (i) more, (ii) less, than that at the end A which of the two faults, listed above, would be there in the circuit? Give reasons in support of your answer in each case.

21 The storage battery of a car has an emf of 12 V. If the internal resistance of the battery is 0.4 Ω, what is the maximum current that can be drawn from the battery? 1

22 A battery of emf 10 V and internal resistance 3 Ω is connected to a resistor. If the current in the circuit is 0.5 A, what is the resistance of the resistor? What is the terminal voltage of the battery when the circuit is closed? 2

COMPUTER SCIENCE

Note: Complete all the assignments and practical as per instructions

Classes & Object

Q1 What do you mean by Data Abstraction in OOPs? Explain its significance with a suitable example.

Q 2 Differentiate between public and private visibility modes in context of object oriented programming using a suitable example illustrating each.

Q3. Define the term data hiding in the context of object oriented programming. Give a suitable example using a C++ code to illustrate the same.

Q4. Define the term data Encapsulation in the context of object oriented programming. Give a example using a C++ code to illustrate the same.

Q5. Define the term data Encapsulation in the context of object oriented programming. Give a suitable example using a C++ code to illustrate the same.

Q6 Define a class Bill in OOP with the following specification:-

Private members:

1. Bill_no - type long(bill number)
2. Bill_period - type integer(number of months)
3. No_of_calls - type integer(number of mobile calls)
4. Payment_mode - type string("online" or "offline")
5. Amount - type float(amount of bill)
6. Calculate_Bill() function to calculate the amount of bill given as per the following conditions:

No_of_calls	Calculation Rate/call (in rupees)
<= 500	1
501-1200	2
>1200	4

Also, the value of Amount should be reduced by 5% if Payment_mode is "online".

Public members:

1. A member function New_Bill() that will accept the values for Bill_no, Bill_period, No_of_calls, Payment_mode from the user and invoke Caluclate_Bill() to assign the value of Amount.
2. A member function Print_Bill() that will display all details of a Bill.

Q7. Define a class TEST in C++ with following description:

Private Members :

TestCode of type integer
Description of type string
NoCandidate of type integer
CenterReqd (number of centers required) of type integer

A member function CALCNTR() to calculate and return the number of centers as (NoCandidates/100+1)

Public Members:

A function SCHEDULE() to allow user to enter values for TestCode, Description, NoCandidate & call function CALCNTR() to calculate the number of Centres

A function DISPTEST() to allow user to view the content of all the data members

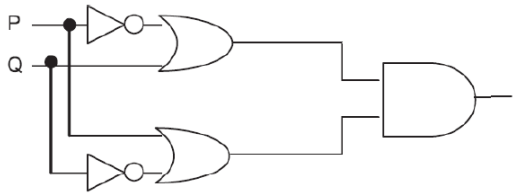
Q 8Differentiate between public and private visibility modes in context of object oriented programming using a suitable example illustrating each.

Q9. Define the term data hiding in the context of object oriented programming. Give a suitable example using a C++ code to illustrate the same.

Q10. Define the term data Encapsulation in the context of object oriented programming. Give a suitable example using a C++ code to illustrate the same.

BOOLEAN ALGEBRA

1. State and verify Absorption law in algebrically.
2. Write the equivalent Boolean Expression R for the following circuit diagram:



3. If F(P,Q,R,S) = π (0,2,4,5,6,7,8,10,11,12,14), obtain the simplified form using K-Map
4. Convert the following Boolean expression into its equivalent Canonical Product of Sum form (POS): A.B'.C + A'.B.C +A'.B.C'
5. Draw a Logical Circuit Diagram for the following Boolean expression: A.(B+C')
6. Prove that XY+YZ+YZ'=Y algebraically
7. If F(a,b,c,d)=Σ(0,2,4,5,7,8,10,12,13,15), obtain the simplified form using K-Map.
8. If F(a,b,c,d) =Σ(0,3,4,5,7,8,9,11,12,13,15), obtain the simplified form using KMap
9. State and verify Demorgan's law in algebricall
10 State and verify in algebrically.
11. Prove XY + YZ + Y'Z =XY + Z , algebraically.
12. Represent the Boolean expression (X+Y)(Y+Z)(X+Z) with help of NOR gates only.

SQL

1. (a) Define the following terms : (i) Candidate Key (ii) Alternate Key
   (b) Differentiate between DDL and DML
   (c) What is relational data model?
   (d)What are views? How are they useful?

Consider the tables given below and answer the questions that follow :

Table : EMP

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7839	REA	MANAGER	67	12-DEC-98	5000	0	10
1234	PREM	CLERK	87	11-FEB-77	12000	1500	20
6754	SITA	MANAGER	89	12-MAR-99	10000	1000	20
6574	GITA	SALESMAN	98	11-JUN-99	9000	0	30
9876	HONEY	CLERK	65	12-JUN-00	12000	800	20

(e) Display names of employees whose names include either of the substring “TH” or “LL”.

(f) Display data of all employees sorted by their department, seniority and salary.

(g) Find all the employees who have no manager.

(h) To display all employees who were hired during 1995.

(i) Show the average salary for all departments with more than 3 people for a job.

(j) Find out number of employees having ‘MANAGER’ as job.

(k) Create view DEPT20 with name and the salary of employees for dept 20.

(l) Display department no. and number of employees in each department.

(m) Find the output of the following :

1. SELECT COUNT(DISTINCT JOB) FROM EMP.

2. SELECT ENAME,SAL FROM EMPLOYEE WHERE DEPTNO=20;

3. SELECT COUNT(*) FROM EMP;

4. SELECT AVG(SAL) FROM EMP;

2. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii)

WORKERS

W_ID	FIRSTNAME	LASTNAME	ADDRESS	CITY
102	Sam	Tones	33 Elm St.	Paris
105	Sarah	Ackerman	440 U.S. 110	New York
144	Manila	Sengupta	24 Friends Street	New Delhi
210	George	Smith	83 First Street	Howard
255	Mary	Jones	842 Vine Ave.	Losantiville
300	Robert	Samuel	9 Fifth Cross	Wasington
335	Henry	Williams	12Moore Street	Boston
403	Ronny	Lee	121 Harrison St.	New York
451	Pat	Thompson	11 Red Road	Paris

DESIG

W_ID	SALARY	BENEFITS	DESIGNATION
102	75000	15000	Manager
105	85000	25000	Director
144	70000	15000	Manager
210	75000	12500	Manager
255	50000	12000	Clerk
300	45000	10000	Clerk
335	40000	10000	Clerk
400	32000	7500	Salesman
451	28000	7500	Salesman

i. To display w_id, firstname, address and city of all employees living in new york from the table workers.
ii. To display the content of workers table in ascending order of lastname.
iii. To display the firstname, lastname and total salary of all alerks from the tables workers and design, where total salary is calculated as salary + benefits.
iv. To display the minimum salary among Managers and Clerks from the table DESIG.
v. SELECT FIRSTNAME, SALARY FROM WORKERS, DESIG WHERE DESIGNATION = 'Manager' AND WORKERS.W_ID = DESIG.W_ID
vi. SELECT COUNT(DISTINCT DESIGNATION) FROM DESIG.
vii. SELECT DESIGNATION, SUM(SALARY FROM DESIGNATION GROUP BY DESIGNATION HAVING COUNT(*)<3;
viii. SELECT SUM(BENEFITS) FROM WORKERS WHERE DESIGNATION = 'Salesman';

3. (a)Write SQL commands for (a) to (j) and write output for (h) on the basis of Teacher relation given below.

No	Name	Age	Department	Date of Join	Salary	Sex
1.	Jugal	34	Computer	10/01/97	12000	M
2.	Sharmila	31	History	24/03/98	20000	F
3.	Sandeep	32	Maths	12/12/96	30000	M
4.	Sangeeta	35	History	01/07/99	40000	F
5.	Rakesh	42	Maths	05/09/97	25000	M

6.	Shyam	50	History	27/02/97	30000	M
7.	Shiv Om	44	Computer	25/02/97	21000	M
8.	Shalakha	33	Maths	31/07/97	20000	F

1. To show all information about the teacher of history department.
2. To list the names of female teachers who are in Maths department
3. To list names of all teachers with their date of joining in ascending order.
4. To display students name, fee,age for male teacher only
5. To count the number of teachers with age>23.
6. To insert a new row in the TEACHER table with the following data:

9,"Raja",26,"Computer",13/05/95,2300,"M".

(g)To show all information about the teachers in this table
(h)Add a new column named "Address".
(i)Arrange the whole table in the alphabetical order to name
(j)Display the age of the teachers whose name starts with 'S,.
(k)Give the output of following statement.

i. Select COUNT(distinct department) from TEACHER.
ii. Select MAX(Age)from Teacher where sex="F"
iii. Select AVG(Salary) from Teacher where Dateofjoin< '12/07/96'
iv. Select SUM(Salary) from teacher where Dateofjoin< '12/07/96'

4. Consider the following tables PRODUCT and CLIENT. Write SQL commands for the following statements.

Table: PRODUCT

P_ID	Product Name	Manufacturer	Price
TP01	Talcom Powder	LAK	40
FW05	Face Wash	ABC	45
BS01	Bath Soap	ABC	55
SH06	Shampoo	XYZ	120
FW12	Face Wash	XYZ	95

Table: CLIENT

C_ID	Client	City	P_ID
01	Cosmetic Shop	Delhi	FW05
06	Total Health	Mumbai	BS01
12	Live Life	Delhi	SH06
15	Pretty Women	Delhi	FW12
16	Dreams	Bangalore	TP01

1. To display the details of those Clients whose City is Delhi.
2. To display the details of Products whose price is in the range of 50 to 100 (both values included)
3. To display the Client Name, City from the table Client, and Product Name and price from the table Product, with their corresponding matching P_ID.
4. To Increase the price of all Product by 10
5. 5Write the SQL commands for (a) to (d) and write the output for (e) on the basis of table **Hospital** :

No	Name	Age	Department	Dateofadmin	Charge	Sex
1	Arpit	62	Surgery	21-01-2016	300	M
2	Zayana	18	ENT	12-12-2015	250	F
3	Kareem	22	Orthopedic	19-02-2016	450	M
4	Abhilash	26	Surgery	24-11-2016	300	M
5	Dhanya	24	ENT	20-10-2016	350	F
6	Siju	23	Cardiology	10-10-2016	800	M
7	Ankita	66	ENT	13-04-2016	100	F
8	Divya	55	Cardiology	10-11-2016	500	F
9	Nitin	25	Orthopedic	12-05-2016	700	M
10	Hari	28	Surgery	19-03-2016	450	M

1. To show all information about the patients of cardiology department.
2. To list the name of female patients who are in ENT department.
3. To list names of all patients with their date of admission in ascending order.
4. To count the no of patients with age > 20.
5. Give the output of the following SQL commands:

i. Select COUNT(DISTINCT charges) from hospital;
ii. Select MIN(age) from hospital where Sex=’M’;
iii. Select SUM(charges) from hospital where Sex =’F’;
iv. Select avg(charges) from hospital where dateofadm>12/05/06

CHEMISTRY

EXPLAIN THE FOLLOWING USING APPROPRIATE REASONS:

1. Chlorobenzene is less reactive than chloromethane.
2. Haloalkanes react with KCN to form alkyl cyanide as main product while AgCN form isocyonide.
3. Grignard Reagent is prepared under anhydrous conditions.
4. Wurtz Reaction is carried in dry ether.
5. SN1 reactions are favoured in protic solvent.
6. Tertiary halides donot undergo SN2 mechanism
7. Phenol is acidic in nature
8. Which is more acidic, *p*-nitrophenol or phenol? Explain why?
9. Cresol ($C_6H_5OCH_3$) is less acidic than phenol.
10. Ethers are insoluble in water.
11. Boiling points of ethers are lower than isomeric alcohols.
12. Ethers are polar in nature even if both alkyl groups are identical.
13. *o*-nitrophenol is steam volatile while *p*-nitrophenol is not.
14. Phenyl methyl ether reacts with HI to form phenol and methyl iodide not iodobenzene and methanol.
15. Aldehydes are more reactive towards nucleophiles than ketones.
16. Cyclohexanone forms cyanohydrin in good yield but 2,2,6-trimethyl cyclohexanone does not.
17. There are two - NH_2 groups in semicorbazide but only one is involved in the formation of semicorbozones
18. During the preparation of an ester from a carboxylic acid and an alcohol in the presence of an acid catalyst, ester is removed as fast as it is formed.
19. pKa of chloroacetic acid is less than that of acetic acid or chloroacetic acid is a stronger acid than acetic acid.
20. Amines are higher boiling compounds than hydrocarbons but lower boiling than alcohols of comparable molecular masses.
21. Boiling point of isomeric tertiary amines are lower than those of primary amines.
22. Observed K_b order is :

    $(C_2H_5)_2NH<(C_2H_5)_3N<C_2H_5NH_2<NH_3$

    $(CH_3)_2NH>CH_3NH_2>(CH_3)N>NH_3$
23. Aniline is a weaker base than CH_3NH_2.
24. Methylamine in water react with ferric chloride to precipitate hydrated ferric oxide.
25. $–NH_2$ is ortho and para directing in aromatic electrophilic substitution reactions but aniline on nitration give a substantial amount of meta-nitro aniline
26. Aniline does not undergo Friedel–Craft reaction.
27. Aromatic primary amines cannot be prepared by Gabriel's phthalamide synthesis.
28. Although chlorine atom is an electron withdrawing group yet it is ortho and para directing in electrophilic aromatic substitution reactions.
29. Phenoxide ion has more number of resonating structure than carboxylate ion but carboxylic acid is a stronger acid than phenol..
30. Although phenoxide ion ($C_6H_5O^-$) has more number of resonating structure than carboxylate ion, carboxylic acids is a stronger acid than phenol.
31. 4-Nitrobenzoic acid is stronger acid than benzoic acid but 4-ethoxybezoic acid is weaker acid than benzoic acid.
32. Formic acid is stronger acid than benzoic acid.
33. FCH_2COOH is stronger acid than $ClCH_2COOH$.

34. Aniline is weaker base than cylohexylamine or an alkylamine.

35. $CH_3 NH_2$ or RNH_2 reacts with aq. $FeCl_3$ to precipitate hydrated ferric oxide ($Fe_2O_3 xH_2O$).

36. CH_3NH_2 or $CH_3CH_2NH_2$ is soluble in water but aniline is not.

37. The decreasing order of basic strength in gas phase is $(C_2H_5)_3N$ > $(C_2H_5)_2NH$ > $C_2H_5NH_2$ but in aqueous medium the correct decreasing order is $(C_2H_5)_2NH$ > $(C_2H_5)_3N$ > $C_2H_5NH_2$

38. The decreasing order of basic strength in aqueous medium is $(CH_3)_2NH$ > CH_3NH_2 > $(CH_3)_3N$

39. pKb of aniline is more than that of methylamine.

40. CH_3NH_2 has more boiling point than $(CH_3)_3N$ but has less boiling point than CH_3OH.

HOW WILL YOU DINTINGUISH BETWEEN THE FOLLOWING PAIR OF COMPOUNDS? WRITE THE EQUATION FOR THE POSITIVE TESTS.

1. Chloroethane and Chlorobezene
2. Cyclohexyl Chloride and Chlorobenzene
3. Benzyl Chloride and Chlorobenzene
4. Allyl Chloride and Vinyl chloride.
5. Chloroethane and bromoethane
6. Chloroform and carbon tetrachloride
7. Ethanol and propanol
8. Primary, secondary and tertiary alcohols.
9. Ethyl alcohol (ethanol) and isopropyl alcohol (propan-2-ol)
10. Isopropyl alcohol and *tert*-butyl alcohol.
11. Phenol and ethyl alcohol.
12. Phenol and cyclohexyl alcohol.
13. Acetaldehyble and acetone.
14. Formaldehyde and acetaldehyde
15. Ethanal and benzaldehyde
16. Phenol and benzoic acid
17. Acetophenone and benzophenone
18. Pentan-2-one and penton-3-one
19. Formic acid and formadehyde.
20. Formic acid and acetic acid.
21. Acetone and acetic acid.
22. Primary, secondary and tertiary amines.
23. Methylamine and dimethylamine
24. Dimethylamine and trimethylamine
25. Aniline and cyclohexylamine
26. Aniline and benzylamine
27. Phenol and aniline.
28. Acetic acid and ethylacetate
29. Methylacetate and ethylacetate

WRITE THE CHEMICAL EQUATION FOR THE FOLLOWING REACTIONS

1. Finkelstien reaction
2. Swart's reaction
3. Wurtz reaction
4. Wurtz Fittig reaction
5. Fittig Reaction
6. Sandmeyer Reaction
7. Hydroboration Oxidation

8. Kolbe's Reaction
9. Reimer Tiemann Reaction
10. Williamson Synthesis
11. Rosenmund Reaction
12. Stephen Reaction
13. Etard Reaction
14. Gatterman-Koch reaction
15. Formation of hemiacetals and acetals
16. 2,4 DNP test
17. Tollen's test
18. Fehling's Test
19. Schiff's test
20. Aldol condensation
21. Aldol reaction
22. Cross aldol reaction
23. Canizzaro reaction
24. Clemmenson Reduction
25. Wolf- Kishner reduction
26. Formation of Pthalimide from Pthalic acid
27. Decarboxylation
28. Kolbe's Electrolysis
29. Hell-Volhard Zelinsky Reaction
30. Ammonolysis
31. Gabriel Pthalimide reaction
32. Hoffmann bromamide degradation reaction
33. Carbylamine Reaction
34. Diazotisation
35. Gattermann reaction

BIOLOGY

Chapter 6
MOLECULAR BASIS OF INHERITANCE

1mark each

1. Why is the ADA enzyme required in our body?
2. Which is not required for polypeptide synthesis: Termination codon, mRNA, peptidyl tranferase, rRNA?
3. Due to a mistake during transcription, ATG forms UAG in mRNA. What change would occur in the polypeptide chain translated by this mRNA?
4. What are introns?
5. Name the enzyme that can break and seal one strand of DNA.
6. Give the full form of YAC and BAC.

LONG ANSWER QUESTIONS

1. What is aneuploidy? Give an example from human genetics which shows this problem.
2. In *Drosophila*, why do genes for white eyes and yellow body show less % recombination than white eyes and miniature wings?

3. The base sequence of a strand of DNA is TACTATTGCATAATT - - - -anti sense strand ATGATAACGTATTAA- - - - sense strand

   a) Give the sequence of mRNA formed from this DNA.

   b) What is the significance of the ATT sequence?

   c) What would happen if base C (underlined) is deleted?

4. State the central Dogma. Give the features of a DNA helix.
5. Identify the protocol shown below and describe it briefly.
6. Describe the 2 processes unique to eukaryotic transcription.
7. State the role of DNA Polymerase in DNA replication
8. State the role of RNA polymerase in transcription, DNA replication.
9. Why the lac operon is called the inducible system?
10. What is a genetic code? Who proposed the triplet nature of Genetic Code. State any 2 other characteristics of the genetic code.
11. How can an XXY individual be born to a human?
12. What acts as the inducer in lac operon? How does it switch on the operon?
13. What are the components of an operon? State their functions.
14. Name the initiation and the termination codons.
15. Explain what happens in frame shift mutations. Name 1 disease that is caused by this kind of mutation.
16. What are Okazaki fragments? Name 2 enzymes necessary for DNA replication. Enlist the functions of DNA polymerase.
17. List the steps involved in the elongation of polypeptide chain during protein synthesis.
18. What was the purpose of Griffith's experiment? Describe his protocol.
19. An mRNA strand has a series of codons out of which three are mentioned below. (i) AUG, (i) UUU, (iii) UAG.
    (a) What will these codons translated to?
    (b) What are the DNA sequences that would have transcribed these RNA codons?
20. What do you understand by an inducible system? Describe an inducible system that is operative in bacteria. What is another name for this kind of regulation?
21. Explain the principle of DNA fingerprinting.
22. A segment of DNA, GCCAGGGGATG was translated into the oligopeptide arg-ser-pro-thr.
    What was the base sequence in the mRNA transcribed from the DNA segment?
    What are the codons for these amino acids?
    If the first adenine in the DNA gets substituted by guanine what will the mRNA be, the anticodons on the tRNA be?
23. Describe any 6 features of human genome.
24. Explain the following experiments along with the discovery that they were responsible for

a) Hershey and Chase
b) Griffith
c) Avery McLeod and McCarty

ECONOMICS

A START WORKING ON THE PROJECT ASSIGNED.
B .COMPLETE THE FOLLOWING ASSIGNMENT IN YOUR.
C REVISE THE CONCEPTS THOUROUGHLY

1. Pick up the variable of Macroeconomics.
   a. Income of a family b. Production of wheat by a farmer
   c. General price level d. Salary of a computer engineer
2. The central problem of 'For whom to produce?' concerns with
   a. Whether rich or poor will purchase the commodities
   b. Who will purchase the commodities
   c. The distribution of National Income
   d. Equity and growth
3. Scarcity arises because_____
   a. Wants are unlimited
   b. Resources are limited
   c. Resources have alternative uses
   d. All the above
4. The government has started promoting foreign capital, what will happen to the PPC?
   a. Growth of resources b. Underutilization of resources
   c. Mismanagement of resources d. Resources along the PPC

5. Why is PPC concave? Explain

6. The economic problem is concern with …….. 1
a. production
b. growth
c. scarcity
d. equity

7. 'Efficiency' arises when:
a. Wastage is the least
b. Resources have alternative uses
c. Reallocation of resources without wastage
d. Choosing production technique
8. Due to the implementation of employment schemes, what will happen to the PPC
a. Under utilization of PPC
b. Along the PPC
c. Growth of PPC
d. All the above
10. Explain any three characteristic of the PPC?
11. The table below shows PPC. What is the pattern in the table that gives rise to the concave shape of the PPC?

Possibilities	Green chilli	sugar
A	100	0
B	95	1
C	85	2
D	70	3
E	50	4
F	25	5

12. The technique of 'How to Produce', can …….
a. Increase production
b. Solve the problem of distribution
c. Growth and equity
d. Profits of the firm
13. The natural calamity in a country will place the PPC:
a. Outside b. Inside
c. on
d. away

14. Opportunity Cost is defined as:
a. Cost incurred b. Cost forgone
c. Additional cost d. Negative cost
15. What are the three central problems of an economy? Why do they arise?
16. Capital Intensive technique would be chosen in an economy in which :
a. Rate of interest is high b. Mechanization is available
c. Population is in surplus d. Capital formation is taking place

17. 'Means' in a problem which is faced by all economies. What are means?
a. Methods. b. Solution
c. Resources. d. Techniques

18. PPC shift to the right when there is ……in the economy.
a. Growth of resources and improvement in technology
b. Underutilization of resources
c. Improvement in technology
d. Efficient utilization of resources

19. Production in an economy is below its potential due to unemployment. Government starts employment generation scheme. Explain its effect using PPC? 3

20. How many chocolates will you consume if these are free of cost, to achieve equilibrium
a. MU is positive b. MU is negative
c. MU is zero d. MU is equal to

21. The equation for budget constraint: 1
a. P1X1 + P2X2 = M b. P 1X1 > P2X 2 = M
c. P1X1 + P2X2 > M d. P1X1 + P2X2 < M

22. When MRS > MRE = Px/Py then the consumer: 1
a. Values X more than what market value
b. Values Y more than what market value
c. Values X less than what market value
d. Values Y less than what market value
23. Explain the three properties of Indifference Curve?
24. With a hypothetical example explain the Consumer's Equilibrium in two commodity case?
25. Which of the following statements is correct? 1
a. BL is a downward sloping straight line
b. Bundles which cost less than consumer's money income lies outside the BL
c. If there is an increase in consumer's income and no change in prices of goods, then the BL will shift to the left.
d. A decrease in the price of good measured along X-axis makes the BL steeper.
26. When MUx/Px > MUy/Py, as a result: 1
a. Consumption of Y rises,& X falls b. Consumption of X rises, & Y falls
c. Consumption of X &Y rises d. Consumption of X &Y falls

27 . Starting from an initial situation of C's E, suppose the MU of money increases. How will it affect the QD of the product? 1

a. It will increase b. It will decrease
c. It will remain unchanged d. It will fall to zero

28. The slope of the Indifference curve is measured by
a. Marginal rate of transformation b. Marginal rate of substitute
c. Marginal rate of utility d. Marginal rate of technical substitute
29. At the point of Equilibrium, IC must be convex to the origin. Why?
30. State the condition of consumer's equilibrium by Utility Analysis and explain it?
31. The Law of Diminishing MU states:

a. Successive units give more satisfaction.
b. Successive units give lesser satisfaction
c. Successive units give higher value
d. Successive units given satisfaction.

32. Which of the of the following condition of consumer's equilibrium is correct in case of a single commodity: 1
a. MU of good / Price of good = MUm
b. Price of good / MU of good = Mum
c. MU of good / MU of money = Px
d. MUm / Price of good = MU of good

33. …….. shows different possible combination of two goods that a consumer can buy with given income and price of goods:
a. Budget set b. Budget line
c. Indifference set d. Indifference curve
34. The shape of the Indifference curve is :

a. Concave to the origin b. Convex to the origin
c. Rectangular hyperbola d. Straight line

35. What would be the impact on the Budget Line when:
(i) Price of good X increases:
(ii) Income of the consumer decreases:

36. If the consumer is in a position when MUx / Px < MUy / Py, what should he do to be in equilibrium?

Assignment -2

1. When does a commodity possess utility?
a. When the consumer requires the commodity
b. When the commodity satisfies a want
c. When the consumer has a income d. When MRS = price ratio
2. Budget ratio indicates:
a. Price ratio b. Income ratio
c. Cost ratio d. MRS ratio
3. Which of the following equation is incorrect: 1
a. MU = TUn+2 – TUn+1 b. MU = TU / Q
c. MU = TUn – TUn-1 d. TU = ΣMU
4. When TU is increasing at a diminishing rate, MU must be:
a. increasing b. decreasing
c. constant d. negative
5. A consumer consumes only two goods X and Y. Aswini's money income is Rs.24 and the prices of Good X and Y are Rs. 4 & 2 respectively. Answer the following questions? 6
(i) Can the consumer afford a bundle 4X and 5? Explain. ……
……
……

(ii) What will be the MRSxy when the consumer is in equilibrium? Explain. ……
……
……

(iii) What is the equation of BL and its slope? ……
……
……
(iv) Give examples of two bundles on the BL? ……
……
……
(v) How much of X &Y will he buys spending his entire income? ……
……
……
(vi) How does the BL change (a) if consumer's income increase to Rs.48 (b) if price of good X falls by Rs.1 but price of good Y and income remains unchanged? ……

ASSIGNMENT 3

1. Suppose a consumer can afford to buy 6 units of good X and 8 units of good Y if Pooja spends her entire income. The price of two goods is Rs. 6 & 8 respectively. How much is the consumer's income? 1
e. Rs. 110 f. Rs. 64
g. Rs. 36 h. Rs. 100
2. What can lead to a change in the Budget Set of a consumer? 1
a. Change in the income b. Change in the price of good X
c. Change in the price of good Y d. All the above
3. Marginal Utility of money is: 1
a. diminishing b. increasing
c. constant d. negative
4. Starting from initial situation of consumer equilibrium, suppose that MU of money increases. How will it affect the quantity demanded of the product?

a. it will increase b. it will decrease
c. it will remain unchanged d. it will fall to zero
5. Explain the two properties of BL? 3
6. With a hypothetical data explain consumer's equilibrium in case of one commodity? 3

1. A consumer's satisfaction from a commodity is maximum when MU is : 1
a. Less than price b. More than price
c. Equal to price d. Equal to quantity
2. An increase in of the price good X will make the Budget Line: 1
a. slanting b. constant
c. steeper d. curve
3. Slope of the Indifference Curve is : 1
a. MRE b. MRExy
c. MRSxy d. Px /Py

4. What will happen to MU, when TU falls: 1
a. MU is constant b. MU is falling but positive
c. MU is negative d. MU is rising
5.
(i) Why is an Indifference Curve convex to the origin?
(ii) Why does a higher Indifference Curve represent a higher level of satisfaction?

6.. The upward movement of the Demand Curve is due to:
a. Increase in the income of the consumer
b. Increase in the price of related good
c. Increase in the price of the good.
d. Increase in the price of normal good
7. Exception to the law of demand is: 1
a. Giffen's good b. Normal good
c. Complementary good d. Substitute good
8. The graphic representation of a table showing price & demand relationship for a commodity in the market is called: 1
a. Individual demand curve b. Producer's demand curve
c. Market demand curve d. Consumer's demand curve
9. Demand can also be a positively sloping curve? Refute or defend this statement.
10. Explain the different degrees of Ed on a sing

MATHEMATICS

- Solve the following worksheet enclosed below in your mathematics notebook after revising the chapters done in the class.
- Revise continuity and differentiation.

Ch.3- Matrices

Q.1. Construct a 3×4 matrix, whose elements are given by $a_{ij} = \frac{1}{2}|-3i + j|$

Q.2. Construct a 2×3 matrix A = $[a_{ij}]$ whose elements are given by $a_{ij} = \frac{(j-2i)^3}{4j}$, i ≠ j

= $|i + 2j|$, i = j

Q.3. If $A = \begin{bmatrix} 8 & 0 \\ 4 & -2 \\ 3 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -2 \\ 4 & 2 \\ -5 & 1 \end{bmatrix}$, then find the matrix X, such that 2A + 3X = 5B.

Q.4. If $A = \begin{bmatrix} 0 & -\tan\alpha/2 \\ \tan\alpha/2 & 0 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, then show that $I+A = (I-A)\begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$

Q.5. Express the matrix $A = \begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$ as the sum of symmetric and skew-symmetric matrix

Q.6. Obtain the inverse of the matrix $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$ using elementary transformations.

Q.7. If $f(x) = \begin{bmatrix} \cos x & -\sin x & 0 \\ \sin x & \cos x & 0 \\ 0 & 0 & 1 \end{bmatrix}$ Prove that f(x). f(y) = f(x + y)

Q.8. Show that the matrix $B'AB$ is symmetric or skew-symmetric according as A is symmetric or skew symmetric.

Q.9. If A and B are invertible matrices of the same order, then prove that $(AB)^{-1} = B^{-1}A^{-1}$

Q.10. Let $f(x) = x^2 - 5x + 6$. Find f(A) If $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$

Q.11. If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ Show that $A^2 - 5A + 7I = 0$, Use this to find A^4.

Q.12. Express the matrix $A = \begin{bmatrix} 4 & 2 & -1 \\ 3 & 5 & 7 \\ 1 & -2 & 1 \end{bmatrix}$ as the sum of a symmetric and a skew-symmetric matrix.

Q.13.Find the values of x, y, z if the matrix A = $\begin{bmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{bmatrix}$ satisfy the equation A'A = I_3.

Q.14. Show that : $\begin{bmatrix} 1 & -\tan\theta/2 \\ \tan\theta/2 & 1 \end{bmatrix} \begin{bmatrix} 1 & \tan\theta/2 \\ -\tan\theta/2 & 1 \end{bmatrix}^{-1} = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$

Q.15. Find the inverse of $\begin{bmatrix} a+ib & c+id \\ -c+id & a-ib \end{bmatrix}$, if $a^2 + b^2 + c^2 + d^2 = 1$.

Q.16. Using the method of reduction (i.e elementary row transformations),find the inverse of

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 1 & 2 & -1 \end{bmatrix}$$

Q.17. For what value of k the matrix A = $\begin{bmatrix} 2 & k \\ 3 & 5 \end{bmatrix}$ has no inverse.

Q.18 Prove that the product of matrices

$$\begin{bmatrix} \cos^2\theta & \cos\theta.\sin\theta \\ \cos\theta.\sin\theta & \sin^2\theta \end{bmatrix} \text{ and } \begin{bmatrix} \cos^2\phi & \cos\phi.\sin\phi \\ \cos\phi.\sin\phi & \sin^2\phi \end{bmatrix}$$

is the null matrix, when θ and ϕ differ by an odd multiple of $\frac{\pi}{2}$.

Q.19 A matrix X has a + b rows and a + 2 columns while the matrix Y has b + 1 rows and a + 3 columns. Both matrices XY and YX exist. Find a and b. Can you say XY and YX are of the same type? Are they equal.

Q.20. Find the matrix A satisfying the matrix equation

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

Ch.4- Determinants

Q.1. Prove that : $\begin{vmatrix} 1 & x & x^2 \\ x^2 & 1 & x \\ x & x^2 & 1 \end{vmatrix} = (1- x^3)^2$

Q.2. Find the equation of the line joining A(1,3) and B(0,0) using determinants and find if D (K, 0) is a point such that area of a triangle ABD is 3 square units.

Q.3. If A = $\begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$ Verify that $A^3 - 6A^2 + 9A - 4I = 0$ and hence find A^{-1}

Q.4. Prove that : $\begin{vmatrix} a+bx & c+dx & p+qx \\ ax+b & cx+d & px+q \\ u & v & \omega \end{vmatrix} = (1-x^2)\begin{vmatrix} a & c & p \\ b & d & q \\ u & v & \omega \end{vmatrix}$

Q.5. Solve by matrix method:

$2x + y + z = 1$

$x - 2y - z = 3/2$

$3y - 5z = 9$

Q.6. Prove that :

$$\begin{vmatrix} a & a+b & a+b+c \\ 2a & 3a+2b & 4a+3b+2c \\ 3a & 6a+3b & 10a+6b+3c \end{vmatrix} = a^3$$

Q.7. Prove that : $\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix}$ = abc + bc + ca + ab.

Q.8. Solve : $\begin{vmatrix} x-2 & 2x-3 & 3x-4 \\ x-4 & 2x-9 & 3x-16 \\ x-8 & 2x-27 & 3x-64 \end{vmatrix} = 0$

Q.9 Using determinants, find the area of the triangle whose vertices are (1, 4), (2, 3), (-5, 3). Are the given points collinear.

Q.10. If the points (a_1, b_1), (a_2, b_2) and $(a_1 + a_2, b_1 + b_2)$ are collinear, Show that $a_1b_2 = a_2b_1$.

Q.11. If a, b, c are all positive and are p^{th} , q^{th} and r^{th} terms of G.P., then show that

$$\Delta = \begin{vmatrix} \log a & p & 1 \\ \log b & q & 1 \\ \log c & r & 1 \end{vmatrix} = 0$$

Q.12. If $\begin{vmatrix} a & b & ax+by \\ b & c & bx+cy \\ z-y & x-y & 0 \end{vmatrix} = 0$, then Prove that

a, b, c are in G.P or x, y, z are in G.P

Q.13. If x, y, z are different and

$$\Delta = \begin{vmatrix} x & x^2 & 1+x^3 \\ y & y^2 & 1+y^3 \\ z & z^2 & 1+z^3 \end{vmatrix} = 0,$$ then show that 1+xyz = 0

Q.14. Show that points A $(a, b + c)$, B $(b, c + a)$, C $(c, a + b)$ are collinear.

Q.15. The sum of three numbers is 6. If we multiply third number by 3 and add second number to it, we get 11. By adding first and third numbers, we get double of the second number. Represent it algebraically and find the numbers using matrix method.

Q.16. Show that the following system of equations is consistent $2x - y + 3z = 5$, $3x + 2y - z = 7$, $4x + 5y - 5z = 9$. Also, find the solution.

Q.17. Using matrix method, solve the following system of equations for x, y and z :

$$\frac{2}{x} - \frac{3}{y} + \frac{3}{z} = 10, \quad \frac{1}{x} + \frac{1}{y} + \frac{1}{z} = 10, \quad \frac{3}{x} - \frac{1}{y} + \frac{2}{z} = 13$$

Q.18. Find whether the following system of equations is consistent or not, find the solution of the system also.

$3x-y+2z=3$, $x-2y-z = 1$, $2x+y + 3z = 5$.

Q.19. Determine the product $\begin{bmatrix} -4 & 4 & 4 \\ -7 & 1 & 3 \\ 5 & -3 & -1 \end{bmatrix}\begin{bmatrix} 1 & -1 & 1 \\ 1 & -2 & -2 \\ 2 & 1 & 3 \end{bmatrix}$ and use it solve the system of equations :

$x-y+z=4$
$x-2y-2z=9$
$2x+y+3z=1$

Q.20. If $A = \begin{bmatrix} 2 & -1 & 1 \\ 3 & 0 & -1 \\ 2 & 6 & 0 \end{bmatrix}$, find A^{-1}, using A solve the following system of linear equations.

$2x - y + z + 3 = 0$
$3x - z + 8 = 0$
$2x + 6y - 2 = 0$

. Q.21 $\text{Prove that } \begin{vmatrix} x & x^2 & yz \\ y & y^2 & zx \\ z & z^2 & xy \end{vmatrix} = (x-y)(y-z)(z-x)(xy+yz+zx)$

Q.22. Show that $\begin{vmatrix} (y+z)^2 & xy & zx \\ xy & (x+z)^2 & yz \\ xz & yz & (x+y)^2 \end{vmatrix} = 2xyz(x+y+z)^3$

LINEAR PRORAMMING PROBLEM

1. Rohan owns a field of 1000sq m. He wants to plant fruits trees in it. He has a sum of RS.1400 to purchase young trees. He has a choice of two types of trees. Type A requires 10sq m of ground per tree and costs Rs.20 per tree. Type B requires 20 sq m of ground per tree and costs Rs.25 per tree .When fully grown, type A produces an average of 20 kg of which can be sold at a profit of Rs.2 per kg and type B produces an average of 40kg of fruit which can be sold at profit of Rs.1.5 per kg. How many trees of each type should be planted to achieve maximum profit when they are fully grown? What is the maximum profit? Formulate the above L.P.P. mathematically and then solve it graphically. Other than providing fruits, in what way is the field owner serving the society by planting trees?

2. A farmer decides to grow tomatoes and potatoes in upto 10 acres .He decided to grow tomatoes in at least 2 but not more than 8 acres and potatoes in at least one but not more than 6 acres. If he can make a profit of Rs.1500 per acre on tomatoes and Rs.2000 per acre on potatoes, how should he plan his farming so as to get maximum profit, assumed the total yield that he get is sold? Formulate the above L.P.P. mathematically and then solve it graphically.

3. A company produces two types of belts, say B1 and B2. Belt B1 is of a superior quality and belt B2 is of a lower quality. Profits on type B1 and B2 are Rs.2 and Rs.1.50 per belt, respectively. Each belt of type B1 requires twice as much time as required by a belt of type B2. If all belts were of type B2, the company could produce 1000 belts per day. But the supply of leather is sufficient only for 800 belts per day(both B1 and B2 combined). Belt B1 requires a fancy buckle and only 400 fancy buckles are available per day. For belt of type B2, only 700 buckles are available per day. How should the company manufacture the two type of belt in order to have a maximum overall profit? Express it as a L.P.P. anad then solve it.

4. Abhinav wants to invest at most Rs.12000 in kisan vikas patras and National saving bonds. According to rules, he has to invest at least Rs.2000 in kisan vikas patras and at least Rs.4000 in National saving bond. If the rate of interest on kisan vikas patras is 8% per annum and the rate of interest on National saving bond is 10% per annum, how much money should he invest to earn maximum yearly income? Also, find his maximum yearly income. Formulate the above L.P.P. mathematically and solve it graphically.

5. If a 19 year old girl drives her car at 25km/hr, she has to spend Rs.2 /km on petrol. If she drives it at a faster speed of 40km/h , the petrol costs increases to Rs.5/km. She has Rs.100 to spend on petrol and wishes to find the maximum distance she can travel within one hour. Express it as a L.P.P. and the solve it.

6. A cottage industry manufactures pedestal lamps and wooden shades, each requiring the use of a grinding/cutting machine and a sprayer. It takes 2hrs. on the grinding/cutting machine and 3hrs. on the sprayer to manufacture a pedestal lamp while it takes one hour on grinding/cutting machine and 2hrs. on the sprayer to manufacture a wooden shade. On any day, the sprayer is available for at most 20 hrs. and the grinding/cutting machine for at most 12 hours. The profit from the sale of pedestal lamp Rs.5 and a wooden shade is Rs.3. Assuming that the manufacture

can sell all the pedestal lamps and the wooden shades that he produces, how should he schedule his daily production in order to maximize his profit? Express it as a L.P.P. and then solve it.

7. An airplane can carry a maximum of 200 passengers. A profit of Rs.1000 is made of each first class ticket and a profit of Rs.600 is made on each economy class ticket. The airline reserves at least 20 seat of first class. However, at least 4 times as many passenger prefer to travel by economy class as by the first class. Determine how many tickets of each type must be sold in order to maximise the profit of the airline? What is maximum profit? Formulate the above L.P.P. mathematically and then solve it graphically.

8. A brick manufacturer has two depots, P and Q, with stocks of 30000 and 20000 bricks respectively. He receives orders from three builders A,B and C, for 15000,20000 and 15000 bricks respectively. The cost in Rs for transporting 1000 bricks to the builder from the depots is given in the following table.

To from	A	B	C
Q	40	20	30
P	20	60	40

How should the manufacturer fulfill the order so as to keep the cost of transportation minimum? Formulate the above L.P.P. mathematically and then solve it graphically.

9. Maximize $Z=-3x-5y$ subject to the constraints:
$-2x + y \leq 4$, $x+ y \geq 3$, $x -2y \leq 2$, $x \geq 0$, $y \geq 0$

10. Solve the following L.P.P. graphically
Minimise $Z= 2x + 3y$ subject to constraints:
$2x + 3y \geq 6$, $x – y \geq 0$, $2x + y \leq 8$, $x \geq 0$, $y \geq 0$

11. Solve the following L.P.P. graphically
Maximise $Z= 2x – 5y$ subject to the constraints:
$X + y \geq 2$, $x – y \geq 0$, $x \leq 1$, $x \geq 0, y \geq 0$

12. Solve the following L.P.P. graphically:
Minimize $Z = x + 5y$ subject to constraints:
$X + y \geq 5$, $2x – 5y \geq 10$, $x \leq 2$, $x \geq 0$, $y \geq 0$

13. An oil company has two depots, P and Q, with capacities of 7000 litres and 4000 litres respectively. The company is used to supply oil to three petrol pumps D,E and F whose requirements are 4500 litres, 3000 litres and 3500 respectively. The distance between the depots and the petrol pump is given in the following table:

	Distance (in km)	
To from	P	Q
D	7	3
E	6	4
F	3	2

Assuming that the transportation cost per km is Rs.2 per litre, how should the delivery be scheduled in order that the transportation cost is minimum? Formulate the above L.P.P. mathematically and then solve it graphically.

14. A cooperative society of farmers has 50 hectares of land to grow two crops X and Y. The profits from crops X and Y as per hectare are estimated as Rs.10500 and Rs.9000 respectively. To control weeds , a liquid herbicide has to be used for crop X and Y at rates of 20 litres and 10 litres per hectare respectively .further , no more than 800litres of herbicide should be used in order to protects fish and wild life using a pond , which collects drainage from this land. How much land should be allocated to each crop so as to maximise the total profit of the society? Formulate the above L.P.P. mathematically and then solve it graphically.in what ways does a cooperative society help the farmer?

15. Maximize $z = x + y$ subject to constraints:
$3x + y \leq 6, \quad x + 2y \leq 4, \quad x \geq 0, \quad y \geq 0$

16. A box manufacturer makes large and small boxes from a large piece of cardboard. The large boxes require 4 sq m per box while the small boxes require 3 sq m per box. The manufacturer is required to make at least three large boxes and at most twice as many small boxes as large boxes. If 60 sq m of cardboard is in stock, and if the profits on the large and small boxes are Rs.3 and Rs.2 respectively, how many of each should be made in order to maximise the total profit? Formulate the above L.P.P. mathematically and then solve it graphically.

17. The postmaster of local post office wishes to hire extra helpers during the deepawali season, because of a large increase in the volume of mail handling and delivery. Because of the limited office space and the budgetary condition, the number of temporary helpers must not exceed 10. According to past experience, a man can handle 300 letters and 80 packages per day, on the average, and a woman can handle 400 letters and 50 packages per day . The postmaster believes that the daily volume of extra mail and packages will be no less than 3400 and 680 respectively. A man receives Rs.225 a day and a woman receives Rs.200 a day. How many men and women helpers should be hired to keep the pay-roll at a minimum? Formulate an L.P.P. and solve it graphically.

18. A fruit grower can use two types of fertilisers in his garden,brand P and brand Q. The amounts (in kg) of nitrogen,phosphoric acid, potash and chlorine in a bag of each brand are given in the table. Test indicate that the garden needs at least 240kg of phosphoric acid ,at least 270 kg of potash and at most 310kg of chlorine. If the grower wants to minimize the amount of nitrogen added to the garden, how many bags of each brand should be used? What is the minimum amount of nitrogen added in the garden? Formulate the above L.P.P. mathematically and solve it graphically.

	Brand P	Brand Q
Nitrogen	3	3.5
Phosphoric acid	1	2
Potash	3	1.5
Chlorine	1.5	

19. Every gram of rice provides 0.1 g of protein and 0.25 g of carbohydrates, and the corresponding values of wheat are 0.05 g respectively. It is given that rice costs Rs.40 per kg and wheat Rs.60 per kg. The minimum daily requirements of proteins and carbohydrates for an average child are 50 g and 200g respectively. In what quantities should rice and wheat be mixed in daily diet to provide minimum daily requirements of proteins and carbohydrates at minimum cost? Formulate the above L.P.P. mathematically and then solve it graphically. What other nutrients should be included in the diet for a healthy living? Mention any three.
20. A retired person wants to invest an amount of Rs 50000. His broker recommends investing in two types of bonds A & B yielding 10% & 9% return respectively on the invested amount. He decides to invest at least Rs 20000 in bond A and at least Rs10000 in bond B. He also wants to invest at least as much in bond A as in bond B. Solve this LPP graphically to maximise his returns.
21. There are two types of fertilisers A& B. A consists of 12% nitrogen and 5% phosphoric acid whereas B consists of 4% nitrogen and 5% phosphoric acid. After testing the soil conditions, a farmer finds that he needs at least 12 kg of nitrogen and 12 kg of phosphoric acid for his crops. If A costs Rs10 per kg and B costs Rs 8 per kg, then graphically determine how much of each type of fertilisers should be used so that nutrient requirements are met at a minimum cost.
22. Two tailors A and B earn Rs 150 and Rs 200 per day respectively. A can stitch 6 shirts and 4 pants per day while B can stich 10 shirts and 4 pants per day. Form a LPP to minimise the labour cost to produce atleast 60 shirts and 32 pants.

Hindi

ग्रीष्मावकाश कार्य -कक्षा -बारहवीं

1. ”हिंदी की कहानी -उसकी जुबानी “ आत्मकथात्मक शैली में लिखिए |(ए 4 साइज शीट में)
2. दिए गए विषय से संबन्धित परियोजना लगभग 1000 शब्दों में तैयार कीजिए -

क) भारत का सांस्कृतिक गौरव - बनारस

ख) प्रेमचंद और भारतीय कृषक (उपन्यास "गोदान" को आधार बनाकर)

ग) छायावादी कविता में प्रकृति चित्रण

घ) जनसंचार के माध्यम और लोकतन्त्र के सजग प्रहरी

ड) हिन्दी साहित्य का स्वर्ण युग -भक्तिकाल

च) महाकवि तुलसीदास - महाकाव्य रामचरितमानस और नैतिक मूल्य

च) नमामि गंगे

छ) नाटककर जयशंकर प्रसाद तथा नाटक "चन्द्रगुप्त"

ज) नारी सशक्तिकरण -सुभद्रा कुमारी चौहान की कविता -"खूब लड़ी मर्दानी .....

झ) राष्ट्र कवि मैथिलीशरण गुप्त तथा देशप्रेम

ट) महादेवी वर्मा -मेरा परिवार -मानव की पशु -पक्षियों के प्रति संवेदना

ठ) पर्वों का देश भारत

3.साहित्यिक परिचय लिखिए -(ए-4 साइज शीट पर)

क) रामचन्द्र शुक्ल

ख) जयशंकर प्रसाद

ग) तुलसीदास

घ) असगर वजाहत

च) चंद्रधर शर्मा गुलेरी

छ) ब्रजमोहन व्यास

4.कक्षा में करवाए गए कार्य की पुनरावृत्ति कीजिए |

Art & Craft

Note:-Submit your Holidays Homework in a presentable manner as per the nature of the work e.g. a work which is two dimensional should be properly laminated) with name slip.

Topic- Madhubani Painting / Warli Art- Painting

Size A-3 Ivory Sheet

Browse internet and collect innovative ideas. This will stimulate your imagination.

Work Experience

Make any utility item or any decorative item using eco-friendly waste material e.g.

File Folder with Pocket, Paper Bag, Tie &Dye (White XL-Hanky), Door Mat (Waste Cloth) etc.

BUSINESS STUDIES

INSTRUCTIONS

THE HOLIDAY HOMEWORK IS DIVIDED INTO TWO PARTS

A. PROJECTWORK TO BE DONE IN PROJECT FILES
PROJECT TO BE SUBMITTED ON 5JULY 2018

B. COMPLETE THE ASSIGNMENT GIVEN IN CLASS AS DISCUSSED

ACCOUNTANCY

- **Complete the assignment given and as discussed in class.**