Class12(Pol.sci) Class-monday(date:4/5/20)

Chapter: Salient features of Indian Constitution

In the Indian Constitution there are two special methods of amendment & nearly more than 100 amendments have been done. Article 12-35 contains these rights. The National Human Rights Commission protects the human rights of the people. The Constitution also comprises of the Fundamental Duties & Directive Principles. We have a bicameral legislature comprising of two houses one lower & one upper. As per the Constitution we have parliamentary form og government and single citizenship. Universal adult franchise is provided to all who have attained 18years of age.

Questions:

a) Explain the two special methods of amendments as mentioned.
b) Define-Right to constitutional remedies
c) State the Fundamental Duties of the citizens.

Class 12

Business studies

Answer the question:

Q1: What do you mean by performance appraisal?

Q2: What are the importance of performance appraisal?

Q3: What are the objectives of performance appraisal?

Q4: What are the major step sister involved in performance appraisal?

Q5: State the problems of performance appraisal?

CHEMISTRY - XII

Haloalkanes-Haloarenes

Preparation of Haloalkanes :-

1. From alkane :-

$$CH_4 + \underset{(1\,eq)}{Cl_2} \xrightarrow[\text{or Sunlight}]{h\nu} CH_3Cl + HCl$$

$$CH_4 \xrightarrow[h\nu]{Cl_2} CH_3Cl \xrightarrow[h\nu]{Cl_2} CH_2Cl_2 \xrightarrow[h\nu]{Cl_2} CHCl_3 \xrightarrow[h\nu]{Cl_2} CCl_4$$

Reaction goes via SET mechanism.

$$CH_3-CH_3 \xrightarrow[h\nu]{Br_2\,(1\,eq)} CH_3-CH_2-Br$$

$$CH_3-CH_2-CH_3 \xrightarrow[h\nu]{Br_2\,(1\,eq)} \underset{\text{(major)}}{CH_3-\underset{Br}{CH}-CH_3} + \underset{\text{(minor)}}{CH_3-CH_2-CH_2-Br}$$

2. From alkenes :-

$$CH_2=CH_2 + HBr \rightarrow CH_3-CH_2-Br$$

$$R-CH=CH_2 + HBr \longrightarrow \underset{\text{(major)}}{R-\underset{Br}{CH}-CH_3} + \underset{\text{(minor)}}{R-CH_2-CH_2-Br}$$

$-R \equiv -$alkyl

$$R-CH=CH_2 + HBr \xrightarrow[\text{or UV-Light}]{H_2O_2} \underset{\text{(major)}}{R-CH_2-CH_2Br} + \underset{\text{(minor)}}{R-\underset{Br}{CH}-CH_3}$$

$-R \equiv -$alkyl.

Allylic halogenation :-

$$CH_3-CH=CH_2 \xrightarrow[CCl_4/\Delta]{NBS} \underset{\underset{Br}{|}}{CH_2}-CH=CH_2 .$$

3. From alcohols :-

(a) Groove's process :-

$$R-OH \xrightarrow[ZnCl_2]{HCl} R-Cl + H_2O.$$

$-R \equiv 1^\circ$ or 2° alkyl gr.

if $-R$ is 3° alkyl then $ZnCl_2$ (Lewis acid) is not required.

(b) Darzen process :-

$$R-OH \xrightarrow[\text{or } COCl_2]{SOCl_2} R-Cl + SO_2 + HCl. \quad [S_N^i]$$

If R is chiral, then retension of configuration is observed.

$$R-OH \xrightarrow[Py]{SOCl_2 \text{ or } COCl_2} R-Cl + SO_2 + HCl. \quad [S_N^2]$$

If R is chiral, then inversion of configuration is found.

(c) Reaction with PX_3 or PX_5 :-

$$3R-OH + PX_3 \longrightarrow 3R-X + H_3PO_3.$$

$-X \equiv -Cl, -Br, -I.$ | If $-R$ is chiral, then inversion of configuration is obtained.

$$R-OH + PCl_5 \longrightarrow R-Cl + HCl + POCl_3.$$

4. Halogen exchange reaction :-

(a) Finkelstein reaction :-

$$R-X + NaI \xrightarrow[\text{solvent}]{\text{acetone}} R-I + NaX$$

$X \equiv -Cl, -Br$.

Reactivity order $\longrightarrow$ $R \equiv 1^\circ > 2^\circ > 3^\circ$

(b) Swart reaction :-

$$C_2H_5Br \xrightarrow{HgF_2} C_2H_5F$$

$$CH_3Cl \xrightarrow{Hg_2F_2} CH_3F.$$

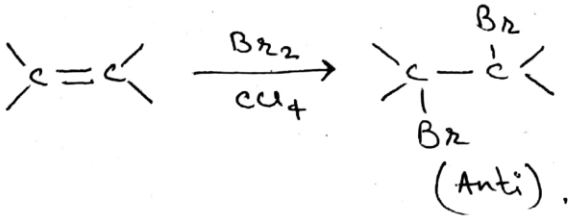
5. Hunsdiecker reaction :-

$$R-COOAg \xrightarrow[CCl_4]{Br_2} R-Br + CO_2\uparrow + AgBr.$$

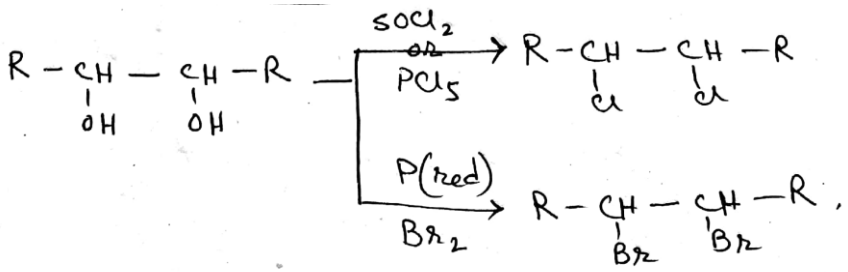
Preparation of dihalides :-

1. Vicinal dihalides ($-\overset{|}{\underset{X}{C}}-\overset{|}{\underset{X}{C}}-$).

(a) From alkene :-

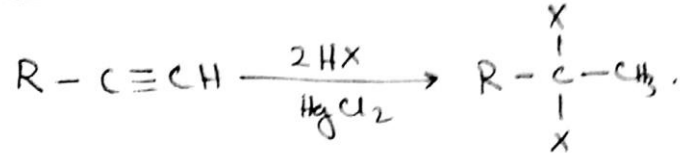


(b) From vicinal diols :-

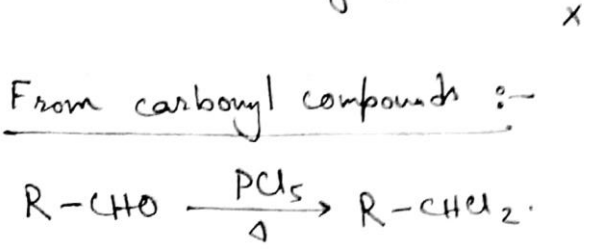


2. Geminal dihalide ($-\overset{|}{\underset{|}{C}}-\overset{X}{\underset{X}{C}}-$) :-

(a) From alkyne :-



(b) From carbonyl compounds :-



Commerce Class XII

Chapter : Management (Part -4)

SECTION C : ⇒ SCHOOLS OF MANAGEMENT THOUGHT

3.18. Introduction

The different schools (or approaches) of management thought, which were advocated by eminent management experts, are now been discussed by dividing them into three main stages :

(1) **Classical approach**
- (i) Scientific management ;
- (ii) Administrative management (process or functional approach) ;
- (iii) Bureaucratic management.

(2) **Neo-classical approach**
- (i) Human relations approach ;
- (ii) Behavioural science approach ;
- (iii) Operation research approach (quantitative approach).

(3) **Modern approach**
- (i) System theory ;
- (ii) Contingency theory.

3.19. Classical approach

Early management theorists are popularly known a 'classical school of management thought'. The classical theory developed in three streams, namely, (i) scientific management ; (ii) administrative management ; (iii) bureaucratic management.

3.19.1. Scientific management

Scientific management may be regarded as a set of scientific techniques which are supposed to increase the efficiency of an enterprise. It refers to the application of scientific methods in decision-making for solving management problems. In other words, it is a logical approach

towards the solution of management problems. In simple words, it is the art of knowing exactly what is to be done and the best way of doing it. Here, all the organisational activities are performed by rationality and proper discipline.

F.W. Taylor is the father of scientific management. Other spokesmen of scientific management are — H. L. Gnatt, Frank Gilbreth, M. L. Cooke, Harrington Emerson. These pioneers investigated the effective use of human beings in industrial organisations.

Scientific management is based on the following principles :

(a) Scientific study and planning of work ;

(b) Development and use of scientific methods ;

(c) Scientific selection, training and development of employees ;

(d) Reasonable remuneration to employees ;

(e) Standardisation of raw materials, equipment and working conditions ;

(f) Division of work and responsibility ;

(g) Integration and co-ordination of various functions ;

(h) Mental revolution with respect to mutual relations and work efforts of employees and management.

3.19.2. Administrative management (process or functional approach)

Henry Fayol is regarded as the pioneer of 'administrative theory' and father of 'principles of management'. The administrative theory is concerned with the entire range of managerial performances (i.e., the total organisation). According to this theory, administration of all organisations requires the same rational process. In other words, major functions and basic principles of management are universal in character.

Henry Fayol presented fourteen principles of management as general guides to the management process, namely, (i) Division of work ; (ii) Authority and responsibility ; (iii) Discipline ; (iv) Unity of command ; (v) Unity of direction ; (vi) Subordination of individual interest to general interest; (vii) Fair remuneration to workers ; (viii) Effective centralisation ; (ix) Scalar chain ; (x) Order ; (xi) Equity ; (xii) Stability of tenure of workers ; (xiii) Initiative ; (xiv) *Esprit de corps*.

3.19.3. Bureaucratic management

Max Weber is considered to be the founder of this school. He viewed bureaucracy as the most efficient form for complex organisation. Bureaucratic organisations are the most rational means of carrying out imperative controls over human beings. Max Weber visualised such an ideal organisation with its defined hierarchy, lines of authority and regulating mechanisms. Elements of bureaucracy are found almost universally in modern organisations, particularly if they are large and complex. Bureaucracy provides an ordered hierarchy with special emphasis on specialisation. It makes an organisation more democratic by reducing patronage and other privileged treatment.

The main characteristics of bureaucracy are — (a) Hierarchy of authority ; (b) Rules, regulations and procedures of work ; (e) Division of labour ; (iv) Professionalisation and training ; (v) Legal authority and power ; (vi) Good inter-personal relationships, etc.

3.20. Neo-classical approach

Neo-classical theory was built on the foundation of classical theory. However, neo-classical theory modified, enlarged and extended the classical theory. It is a humanistic approach focussing especially on human relations, motivation, leadership, group dynamics, etc. It emphasized social and psychological factors existent at the place of work (i.e., the informal organisation).

The neo-classical theory has three streams, namely, (i) Human relations approach ; (ii) Behavioural science approach ; (iii) Operational research approach.

3.20.1. Human relations approach

Human relations school believes in the importance of human resources in management. It means that the management should treat workers as human beings and appreciate the informal organisation that grows out of their interrelationships. In order to create effective human relations, managers are required to know social and psychological factors that motivate workers to contribute actions.

Elton Mayo is regarded as the father of human relations approach. Besides Elton Mayo, some of the associates like W.J. Dickson, T.N. Whitehead have also contributed to the thought of this school. The human relations movement was a concerted effort to make managers more sensitive to employee needs and attributes. This approach added a new dimension of significance of employees and their interaction to management thought. Here, effective supervision plays an important role in maintaining employees morale and productivity.

3.20.2. Behavioural science approach

It may be defined as systematic and scientific analysis of human behaviour with a view to determining the causes of working behaviour of an individual. This approach is also known as organisational behaviour approach. This is an interdisciplinary approach of studying human behaviour consisting of psychology, sociology and anthropology. The behaviour of the members of an organisation clearly affects both its structure and its functioning. A wide range of factors influence work and interpersonal behaviour of people in the organisation. Agreement between organisational goals and individual goals of organisation members is of prime importance. Informal leadership is more important for increasing performance of employees. Co-ordinated co-operation is vital for the achievement of organisational goals.

A large number of behavioural scientists have made notable contributions to the management theory and practice, such as, Mary Parkar Follet, Abraham Maslow, Chris Argyris, Douglas Mc Gregor, Frederick Herzberg, Robert Blake, Jane Mouton and others. The major areas of research and analysis by the behavioural scientists are — (a) interaction between employees' behaviour and organisational structure ; (b) influence of technological changes on group behaviour; (c) human needs and aspirations ; (d) theories of motivation and leadership ; (e) group dynamics; (f) managerial styles and their impact on employee behaviour ; (g) organisational development, change and conflict, etc.

3.20.3. Operational research approach (quantitative approach)

This approach is also known as 'Management Science Approach'. It is based on the approach of scientific management. It offers a systematic and scientific analysis and solution to the problems faced by managers. It aims at achieving a high degree of precision, perfection and objectivity by the use of mathematical tools for solving complex problems.

The approach to solve complex problems using management science consists of the following stages :

(a) Formulating the problem and dividing the same into small simple components ;

(b) Gathering required information on each component ;

(c) Constructing a mathematical model to represent the system under study ;

(d) Finding the solution to the problem at hand ;

(e) Establishing controls over the solution ;

(f) Putting the solution to work implementation.

Major contributors in this field are H. Simon, C. Barnard, K. Arrow, Newmann, Leontieff and others. Management science techniques increase the effectiveness of managers' decision-making. Linear programming, game theory, queueing theory, simulation, etc. are often used for making rational decisions.

3.21. Modern approach

The modern approach of management represents the latest development in the field of management which took place after 1950. The modern approach has two streams, namely, (i) Systems theory ; and, (ii) Contingency theory.

3.21.1. Systems theory

A system is a set of interacting components that go to constitute a united whole. It is composed of elements that are dependent on one another. These elements (or components) are viewed as sub-systems of a larger system. These sub-systems interact with each other by getting influenced and influencing others. The main parts of the management system are organisational inputs, organisational transformation process and organisational outputs. The cycle of inputs, transformation and outputs is continuous. It is an open system that interacts with its environment. It is subject to changes from within and outside to meet the needs of an organisation. Major contributors in this field are L.V. Bertelanffy, C.I. Bernard, H. A. Simon, R. A. Johnson, F.E. Kast, K. Boulding, and others.

3.21.2. Contingency theory (or situational approach)

Management techniques which are effective in one situation may not be effective in another situation. In other words, effective management principles and practices vary with the situation in which the organisation operates. It is a systematic attempt to determine package of management techniques, approaches and practices which are appropriate in a specific situation. Managers should have flexibility and freedom for devising a course of action which is effective and efficient for a particular situation. It may also be considered as commonsense approach. The application of this approach requires the managers to have thorough knowledge of the situation in terms of situational variables and external factors. It places more emphasis on appropriateness of management tools and techniques for a specific situation. This approach is pragmatic in nature and encourages multi-variable analysis. Main contributors of this approach are J. Woodward, H.M. Carlisle, Lorsch and Lawrence.

Home assignment :

1. State and explain any four principles of F.W.Taylor.
2. Briefly explain the different schools (or approaches) of management thought.

Accountancy Class XII

Retirement of a Partner (Part – 2)

Illustration 5.

A, *B* and *C* are in partnership sharing profits and losses in the ratio of 3 : 2 : 1. Their Balance Sheet as at 31st March, 2017 stood as follows:

Liabilities		₹	Assets		₹
Capital A/cs:			Machinery at cost	50,000	
A	40,000		*Less:* Provision for Depreciation	8,000	42,000
B	60,000		Furniture		1,000
C	20,000	1,20,000	Sundry Debtors	80,000	
Reserve		30,000	*Less:* Provision for Doubtful Debts	3,000	77,000
Sundry Creditors		60,000	Stock		50,000
			Cash at Bank		40,000
		2,10,000			2,10,000

On 30th June, 2017, *B* retired and *A* and *C* continued in partnership, sharing profits and losses in the ratio of 3 : 2. They agreed to the following adjustments in the books of account to decide *B*'s Share:

(*i*) Machinery to be revalued at ₹ 45,000.

(*ii*) Stock to be reduced by ₹ 1,000.

(*iii*) Furniture to be reduced to 60%.

(*iv*) Provision for Doubtful Debts to be maintained at 5%.

(*v*) Provision of ₹ 300 to be made for Outstanding Expenses.

(*vi*) Goodwill of the firm to be valued at ₹ 24,000 and *B*'s share of the same was to be adjusted into the accounts of *A* and *C*.

(*vii*) The profits up to the date of retirement from the date of last Balance Sheet was estimated at ₹ 18,000. All the partners are to be credited with their respective share of profit earned till the date of retirement of *B*.

(*viii*) *B* was to be paid off in full. *A* and *C* were to bring sufficient amount so as to make their capitals in proportion to the new profit-sharing ratio, subject to the condition that a cash balance of ₹ 20,000 was to be maintained as working capital. Before making this adjustment the cash balance was ₹ 58,000 on 30th June, 2017.

Pass necessary Journal entries to give effect to the above arrangements and prepare Partners' Capital Accounts as on 30th June, 2017.

Solution:

JOURNAL

Date	Particulars		L.F.	Dr. (₹)	Cr. (₹)
2017 June 30	*A*'s Capital A/c	...Dr.		2,400	
	C's Capital A/c	...Dr.		5,600	
	To *B*'s Capital A/c				8,000
	(Being *B*'s share of goodwill adjusted in the Capital Accounts of *A* and *C* in the gaining ratio of 3 : 7) (WN 1 and 2)				

Revaluation A/c ...Dr.		2,700	
To Stock A/c			1,000
To Provision for Doubtful Debts A/c			1,000
To Furniture A/c			400
To Provision for Outstanding Expenses A/c			300
(Being the decrease in assets and increase in liabilities)			
Machinery A/c ...Dr.		3,000	
To Revaluation A/c			3,000
(Being the increase in the value of machinery)			
Revaluation A/c ...Dr.		300	
To *A*'s Capital A/c			150
To *B*'s Capital A/c			100
To *C*'s Capital A/c			50
(Being the gain (profit) on revaluation divided in the old ratio)			
Reserve A/c ...Dr.		30,000	
To *A*'s Capital A/c			15,000
To *B*'s Capital A/c			10,000
To *C*'s Capital A/c			5,000
(Being the transfer of Reserve to the Partners' Capital Accounts in the old ratio)			
Profit and Loss Suspense A/c ...Dr.		18,000	
To *A*'s Capital A/c			9,000
To *B*'s Capital A/c			6,000
To *C*'s Capital A/c			3,000
(Being the estimated profit till the date of retirement transferred to the Capital Accounts in the old ratio)			
Bank A/c ...Dr.		46,100	
To *A*'s Capital A/c			16,430
To *C*'s Capital A/c			29,670
(Being the cash brought in by *A* and *C* as per agreement) (WN 3)			
B's Capital A/c ...Dr.		84,100	
To Bank A/c			84,100
(Being the payment made to *B* on his retirement)			

Dr. PARTNERS' CAPITAL ACCOUNTS *Cr.*

Particulars	*A* (₹)	*B* (₹)	*C* (₹)	Particulars	*A* (₹)	*B* (₹)	*C* (₹)
To *B*'s Capital A/c (WN1) (Goodwill)	2,400	...	5,600	By Balance *b/d*	40,000	60,000	20,000
				By *A*'s Capital A/c (WN 1)	...	2,400	...
To Bank A/c (Balancing Figure)	...	84,100	...	By *C*'s Capital A/c (WN 1)	...	5,600	...
				By Revaluation A/c	150	100	50
To Balance *c/d*	78,180	...	52,120	By Reserve A/c	15,000	10,000	5,000
				By Profit and Loss Suspense A/c	9,000	6,000	3,000
				By Bank A/c (WN 3)	16,430	...	29,670
	80,580	84,100	57,720		80,580	84,100	57,720

Working Notes:

1. *Adjustment of Goodwill:*

   B's Share of Goodwill = ₹ 24,000 × 2/6 = ₹ 8,000, which is contributed by *A* and *C* in their Gaining Ratio of 3 : 7.

   A's contribution = ₹ 8,000 × 3/10 = ₹ **2,400**.

   C's contribution = ₹ 8,000 × 7/10 = ₹ **5,600**.

2. *Computation of Gaining Ratio:*

   Gain = New Share – Old Share

   A's Gain = 3/5 – 3/6 = 3/30; *C*'s Gain = 2/5 – 1/6 = 7/30

   Gaining Ratio = 3/30 : 7/30 or **3 : 7**

3. *Cash to be brought in by A and C:*

	₹
Amount payable to *B*	84,100
Add: Amount to be retained as Working Capital	20,000
	1,04,100
Less: Cash already available	58,000
Cash to be brought in by *A* and *C*	46,100

   Adjusted Old Capital of *A* ₹ (40,000 + 150 + 15,000 + 9,000 – 2,400) = ₹ 61,750.

   Adjusted Old Capital of *C* ₹ (20,000 + 50 + 5,000 + 3,000 – 5,600) = ₹ 22,450.

   Total Capital of the New Firm (₹ 46,100 + ₹ 61,750 + ₹ 22,450) = ₹ 1,30,300.

   A will bring (₹ 1,30,300 × 3/5 – ₹ 61,750) = ₹ 78,180 – ₹ 61,750 = ₹ **16,430**.

   C will bring (₹ 1,30,300 × 2/5 – ₹ 22,450) = ₹ 52,120 – ₹ 22,450 = ₹ **29,670**.

Illustration 6.

A, *B* and *C* were equal partners. Their Balance Sheet as at 31st March, 2018 is given below:

BALANCE SHEET *as at 31st March, 2018*

Liabilities		₹	Assets		₹
Bills Payable		20,000	Bank		20,000
Creditors		40,000	Stock		20,000
General Reserve		30,000	Furniture		28,000
Profit and Loss A/c		6,000	Debtors	45,000	
Capital A/cs:			*Less:* Provision for Doubtful Debts	5,000	40,000
A	60,000		Land and Building		1,20,000
B	40,000				
C	32,000	1,32,000			
		2,28,000			2,28,000

B retired on 1st April, 2018. *A* and *C* decided to continue the business as equal partners on the following terms:

(*i*) Goodwill of the firm was valued at ₹ 57,600.

(*ii*) Provision for Doubtful Debts to be maintained @ 10% on Debtors.

(*iii*) Land and Building to be increased to ₹ 1,32,000.

(*iv*) Furniture to be reduced by ₹ 8,000.

(*v*) Rent Outstanding (not provided for as yet) was ₹ 1,500.

The remaining partners decided to bring sufficient cash in the business to pay off *B* and to maintain a bank balance of ₹ 24,800. They also decided to readjust their capitals as per their new profit-sharing ratio.

Prepare necessary Ledger Accounts and Balance Sheet. *(ISC 2001, Modified)*

Solution:

In the Books of the Firm

REVALUATION ACCOUNT

Dr. Particulars		₹	Cr. Particulars	₹
To Furniture A/c		8,000	By Provision for Doubtful Debts A/c	500
To Outstanding Rent A/c		1,500	By Land and Building A/c	12,000
To Gain (Profit) on Revaluation transferred to:				
A's Capital A/c	1,000			
B's Capital A/c	1,000			
C's Capital A/c	1,000	3,000		
		12,500		12,500

PARTNERS' CAPITAL ACCOUNTS

Dr. Particulars	*A* ₹	*B* ₹	*C* ₹	Cr. Particulars	*A* ₹	*B* ₹	*C* ₹
To *B*'s Capital A/c	9,600	...	9,600	By Balance *b/d*	60,000	40,000	32,000
To Bank A/c	...	72,200	...	By General Reserve A/c	10,000	10,000	10,000
To Balance *c/d* (WN)	87,900	...	87,900	By Profit and Loss A/c	2,000	2,000	2,000
				By *A*'s Capital A/c	...	9,600	...
				By *C*'s Capital A/c	...	9,600	...
				By Revaluation A/c —Gain	1,000	1,000	1,000
				By Bank A/c (Bal. Fig.)	24,500	...	52,500
	97,500	72,200	97,500		97,500	72,200	97,500

BANK ACCOUNT

Dr. Date	Particulars	₹	Cr. Date	Particulars	₹
2017			2017		
April 1	To Balance *b/d*	20,000	April 1	By *B*'s Capital A/c	72,200
April 1	To *A*'s Capital A/c	24,500	April 1	By Balance *c/d*	24,800
April 1	To *C*'s Capital A/c	52,500			
		97,000			97,000

BALANCE SHEET OF *A* AND *C*

as at 1st April, 2018

Liabilities		₹	Assets		₹
Capital A/cs:			Land and Building		1,32,000
A	87,900		Furniture		20,000
C	87,900	1,75,800	Stock		20,000
Creditors		40,000	Debtors	45,000	
Bills Payable		20,000	*Less:* Provision for Doubtful Debts	4,500	40,500
Outstanding Rent		1,500	Bank		24,800
		2,37,300			2,37,300

Working Note:

Calculation of Capitals of A and C in the new firm:

(*i*) Amount payable to *B* = ₹ 72,200. Required Cash in Hand = ₹ 24,800. Cash already in Hand = ₹ 20,000. Thus, the amount to be brought in by *A* and *C* (shortage of cash) = ₹ 77,000 (*i.e.*, ₹ 72,200 + ₹ 24,800 – ₹ 20,000).

(*ii*) *Capitals of A and C before capital brought in:*

A—₹ (60,000 + 10,000 + 2,000 + 1,000 – 9,600) = ₹ 63,400

C—₹ (32,000 + 10,000 + 2,000 + 1,000 – 9,600) = ₹ 35,400

Total Capital of *A* and *C* is ₹ [63,400 + 35,400 + 77,000 (Shortage of cash)] = ₹ 1,75,800

Therefore, Capital of each partner is ½ of ₹ 1,75,800 = ₹ 87,900.

Illustration 7.

A, *B* and *C* are partners in a trading firm sharing profits in the ratio of 3 : 2 : 1. Their Balance Sheet as at 31st March, 2018 stood as follows:

Liabilities		₹	Assets		₹
Sundry Creditors		12,500	Cash at Bank		1,500
General Reserve		18,000	Sundry Debtors	15,000	
Capital A/cs:			*Less:* Provision for Doubtful Debts	1,500	13,500
A	40,000		Stock		12,500
B	21,000		Investment		8,000
C	20,000	81,000	Office Equipments		14,000
			Furniture		12,000
			Building		50,000
		1,11,500			1,11,500

B retired on 1st April, 2018 subject to the following conditions:

(*i*) A typewriter purchased on 1st October, 2017 for ₹ 2,000 debited to Office Expenses Account is to be brought into account charging depreciation @ 10% p.a.

(*ii*) Building revalued at ₹ 75,000. Furniture is to written-down by ₹ 2,000 and stock is reduced to ₹ 10,000.

(*iii*) Provision for Doubtful Debts is to be calculated @ 5% on Sundry Debtors.

(*iv*) Goodwill of the firm is to be valued at ₹ 18,000.

(*v*) Market value of Investment is ₹ 7,500.

(*vi*) Amount due to *B* to be transferred to his Loan Account.

(*vii*) *A* and *C* will share profits and losses in the ratio of 2 : 1 and their capitals are to be adjusted in the profit-sharing ratio.

Prepare Revaluation Account, Partners' Capital Accounts and Balance Sheet immediately after *B*'s retirement.

Solution:

Dr. REVALUATION ACCOUNT *Cr.*

Particulars		₹	Particulars	₹
To Stock A/c		2,500	By Office Equipments A/c (WN 1)	1,900
To Furniture A/c		2,000	By Building A/c	25,000
To Investment A/c		500	By Provision for Doubtful Debts A/c (₹ 1,500 – 5% of ₹ 15,000)	750
To Gain (Profit) transferred to:				
A's Capital A/c	11,325			
B's Capital A/c	7,550			
C's Capital A/c	3,775	22,650		
		27,650		27,650

Dr. PARTNERS' CAPITAL ACCOUNTS Cr.

Particulars	A ₹	B ₹	C ₹	Particulars	A ₹	B ₹	C ₹
To *B*'s Capital A/c (WN 3)	3,000	...	3,000	By Balance *b/d*	40,000	21,000	20,000
To *B*'s Loan A/c	...	40,550	...	By General Reserve A/c	9,000	6,000	3,000
To Bank A/c (WN 2)	3,258	...	...	By *A*'s Capital A/c (WN 3)	...	3,000	...
To Balance *c/d* (WN 2)	54,067	...	27,033	By *C*'s Capital A/c (WN 3)	...	3,000	...
				By Revaluation A/c (Profit)	11,325	7,550	3,775
				By Bank A/c (WN 2)	...	...	3,258
	60,325	40,550	30,033		60,325	40,550	30,033

BALANCE SHEET *as at 1st April, 2018 (After B's Retirement)*

Liabilities		₹	Assets		₹
Sundry Creditors		12,500	Cash at Bank		1,500
Loan—*B*		40,550	Sundry Debtors	15,000	
Capital A/cs:			*Less:* Provision for Doubtful Debts	750	14,250
A	54,067		Stock		10,000
C	27,033	81,100	Investments		7,500
			Office Equipments (₹ 14,000 + ₹ 1,900)		15,900
			Furniture		10,000
			Building		75,000
		1,34,150			1,34,150

Working Notes:

1. The typewriter purchased was wrongly debited to Office Expense Account, but should have been debited to Office Equipments Account. In effect, depreciation for 6 months (from 1st October, 2017 and 31st March, 2018) has not been provided. Therefore, ₹ 2,000 – ₹ 100 (depreciation for 6 months) = ₹ 1,900 should be debited (added) to Office Equipments Account and also credited to Revaluation Account.
2. *Ascertainment of required Closing Capital:*

Adjusted capitals of *A* and *C* after *B*'s retirement are:	₹
A (₹ 40,000 + ₹ 9,000 + ₹ 11,325 – ₹ 3,000)	57,325
C (₹ 20,000 + ₹ 3,000 + ₹ 3,775 – ₹ 3,000)	23,775
Total capital of the new firm	81,100

Thus, ₹ 81,100 will be shared by *A* and *C* in their new ratio, *i.e.*, 2 : 1

A's New Capital = ₹ 54,067; and *C*'s New Capital = ₹ 27,033.

In effect, A will withdraw ₹ 3,258 (*i.e.*, ₹ 57,325 – ₹ 54,067) and *C* will bring ₹ 3,258 (*i.e.*, ₹ 27,033 – ₹ 23,775).

3. *Adjustment of Goodwill:*

(*i*) *Calculation of Gaining Ratio:*

Gain of a Partner = New Share – Old Share

$$A\text{'s Gain} = \frac{2}{3}-\frac{3}{6}=\frac{4-3}{6}=\frac{1}{6};\ C\text{'s Gain} = \frac{1}{3}-\frac{1}{6}=\frac{2-1}{6}=\frac{1}{6};$$

$$\text{Gaining Ratio of } A \text{ and } C = \frac{1}{6}:\frac{1}{6}=1:1.$$

(*ii*) Firm's Goodwill = ₹ 18,000

B's Share of Goodwill = ₹ 18,000 × 2/6 = ₹ 6,000, which is to be contributed by *A* and *C* in their gaining ratio, *i.e.*, 1 : 1.

Thus, *A*'s Contribution= ₹ 6,000 × 1/2 = ₹ 3,000; and *C*'s Contribution = ₹ 6,000 × 1/2 = ₹ 3,000.

DREAMLAND SCHOOL
PSYCHOLOGY - CLASS 12 (2020 – 2021)
ASSIGNMENT

DATE – 04/05/2020

CHAPTER – PERSONALITY

EXPLANATION

NON- FREUDIAN (POST FREUDIAN) APPROACH OF PERSONALITY THEORY

The post Freudians such as Karen Horney &Erik Erikson explained their view from psychoanalytic approach which was different from Freud's view. According to the theory , personality is not only the product of one's own id, ego, superego or the urge of unconscious drive, but also dependant on the influence of culture & social experiences.

KAREN HORNEY

Karen Horney (1885 -1952) was one of the first women trained as a Freudian psychoanalyst. Horney believed that each individual has the potential for self-realization and that the goal of psychoanalysis should be moving toward a healthy self rather than exploring early childhood patterns of dysfunction. Horney also disagreed with the Freudian idea that girls have **penis envy** and are jealous of male biological features. According to Horney, any jealousy is most likely culturally based, due to the greater privileges that males often have, meaning that the differences between men's and women's personalities are culturally based, not biologically based. She further suggested that men have womb envy, because they cannot give birth.

Horney's theories focused on the role of unconscious anxiety. She suggested that normal growth can be blocked by **basic anxiety** stemming from needs not being met, such as childhood experiences of loneliness and/or isolation, child understands that he/she is weak, powerless & needs parental care.

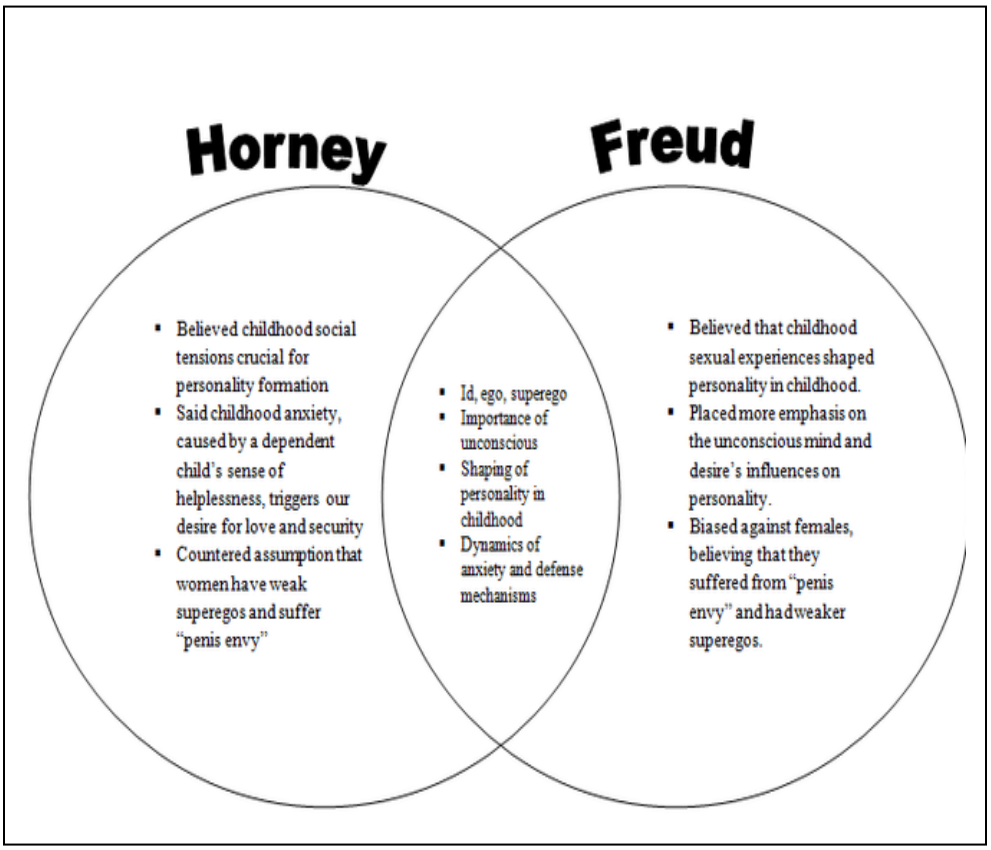
The parental behavior that makes the child feel insecure and anxious gives rise to **basic hostility**. However, this hostility is repressed as it cannot be directly manifested to the parents. This repression increases the child's anxiety. This makes he/she feel more anxious towards their parents behavior but cannot express their hostility.

As a consequence they find **three coping** styles which might be carried on to his adulthood.

1) **MOVING TOWARD PEOPLE*, RELIES ON AFFILIATION AND DEPENDENCE*.** These children become dependent on their parents and other caregivers in an effort to receive attention and affection, which provides relief from anxiety (Burger, 2008). When these children grow up, they tend to use this same coping strategy to deal with relationships, expressing an intense need for love and acceptance.
2) **MOVING AGAINST PEOPLE*, RELIES ON AGGRESSION AND ASSERTIVENESS***. Children with this coping style find that fighting is the best way to deal with an unhappy home situation, and they deal with their feelings of insecurity by bullying other children (Burger, 2008). As adults, people with this coping style tend to lash out with hurtful comments and exploit others.
3) **MOVING AWAY FROM PEOPLE*, CENTERS ON DETACHMENT AND ISOLATION***. These children handle their anxiety by withdrawing from the world. They need privacy and tend to be self-sufficient. When these children are adults, they continue to avoid such things as love and friendship, and they also tend to gravitate toward careers that require little interaction with others .

Horney's Coping Styles		
Coping Style	**Description**	**Example**
Moving toward people	Affiliation and dependence	Child seeking positive attention and affection from parent; adult needing love
Moving against people	Aggression and manipulation	Child fighting or bullying other children; adult who is abrasive and verbally hurtful, or who exploits others
Moving away from people	Detachment and isolation	Child withdrawn from the world and isolated; adult loner

According to Horney normal people use all the three modes of interaction at some time or the other in a flexible & balanced manner. However when any one approach dominates a person's social interaction it might give rise to neurotic behavior.



Horney VS Freud view.

ERIK ERICKSON

Erickson emphasized the importance of thinking process of conscious mind unlike Freud whose primary focus was on unconscious mind. Though he adopted basic assumptions from Freud , he felt social & environmental aspects influence personality development. He tried to bridge the gap between **Freudian concept of psycho-sexual development & collective understanding of children's physical & social development.**

Erickson developed a new approach of **'developmental milestones'**. He said that children passes through different stages of development. During this passage, they automatically changed by learning different norms of society.

E. Erickson's Stages of Development

Stage	Basic Conflict	Important Events	Outcome
Infancy (birth to 18 months)	Trust vs. Mistrust	Feeding	Children develop a sense of trust when caregivers provide reliability, care and affection. A lack of this will lead to mistrust.
Early Childhood (2-3 years)	Autonomy vs. Shame and Doubt	Toilet Training	Children need to develop a sense of personal control over physical skills and a sense of independence. Success leads to feelings of autonomy. Failure results in feelings of shame and doubt.
Preschool (3-5 years)	Initiative vs. Guilt	Exploration	Children need to begin asserting control and power over the environment. Success in this stage leads to a sense of purpose. Children who try to exert too much power experience disapproval, resulting in a sense of guilt.
School Age (6-11 years)	Industry vs. Inferiority	School	Children need to cope with new social and academic demands. Success leads to a sense of competence, while failure results in feelings of inferiority.
Adolescence (12-18 years)	Identity vs. Role Confusion	Social Relationships	Teens need to develop a sense of self and personal identity. Success leads to an ability to an ability to stay true to yourself, while failure leads to role confusion and a weak sense of self.
Young Adulthood (19-40 years)	Intimacy vs. Isolation	Relationships	Young adults need to form intimate, loving relationships with other people. Success leads to strong relationships, while failure results in loneliness and isolation.
MIddle Adulthood (40-65 years)	Generativity vs. Stagnation	Work and Parenthood	Adults need to create or nurture things that will outlast them, often by having children or creating a positive change that benefits other people. Success leads to feelings of usefulness and accomplishment, while failure results in shallow involvement in the world.
Maturity (65-Death)	Ego Integrity vs. Despair	Reflection on Life	Older adults need to look back on life and feel a sense of fulfillment. Success at this stage leads to feelings of wisdom, while failure results in regret, bitterness and despair.

EVALUATION OF PSYCHOANALYTIC & NON-FREUDIAN THEORIES.

ADVANTAGES

- Stimulated extensive research.
- Given the idea that early childhood experiences can have a life long effect on personality.
- Given the concept of levels of consciousness & the importance of unconscious mind.
- Horney's theory has given importance to social factors unlike Freud.
- Horney's theory has even influenced theorizing by Erikson & Maslow.
- Many people can relate to the various psychological stages theorized by Erik Erickson through their own experiences.

DISADVANTAGES

- There is no way of proving the theories right or wrong through experimentation. It has many vague concepts like 'Oedipus complex' or 'Electra complex' which can't be verified by scientific studies.
- The case studies put forward by Freud as a proof of his theories are criticized as being deliberately interpreted in a specific way to suit the theories.
- Horney's theory was not so well constructed as the Freudian theory. It even ignores the role of biological instincts in shaping one's personality.

- The major criticism of Erickson's theory is that it is vague about causes of development. What real experiences people must have as to successfully resolve various psychological conflicts and move from one stage to another is not clearly explained.

ASSIGNMENT 4

1) Explain the' developmental milestones ' given by Erickson.
2) Explain the three coping styles given by Horney.
3) How was Freud's concept different from Horney's?
4) What gives rise to anxiousness in children's according to Horney?
5) List three advantages & three disadvantages of psychoanalytic & non-freudian theory.

MOUMITA GANGULY

GEOGRAPHY
CLASS XII
CHAPTER 7(PART 1)

India's population compared with other major countries:-India is one of the most populous countries of the word. India became the second country in the word after China. If we look at the area of the major countries of the world, Russian Federation is more than five times, Canada is over three times, the U.S.A. is 2.8 times, Brazil is 2.6 times and Australia is 2.3 times as large as India. But their combined population is only 60 % of the total population of India.

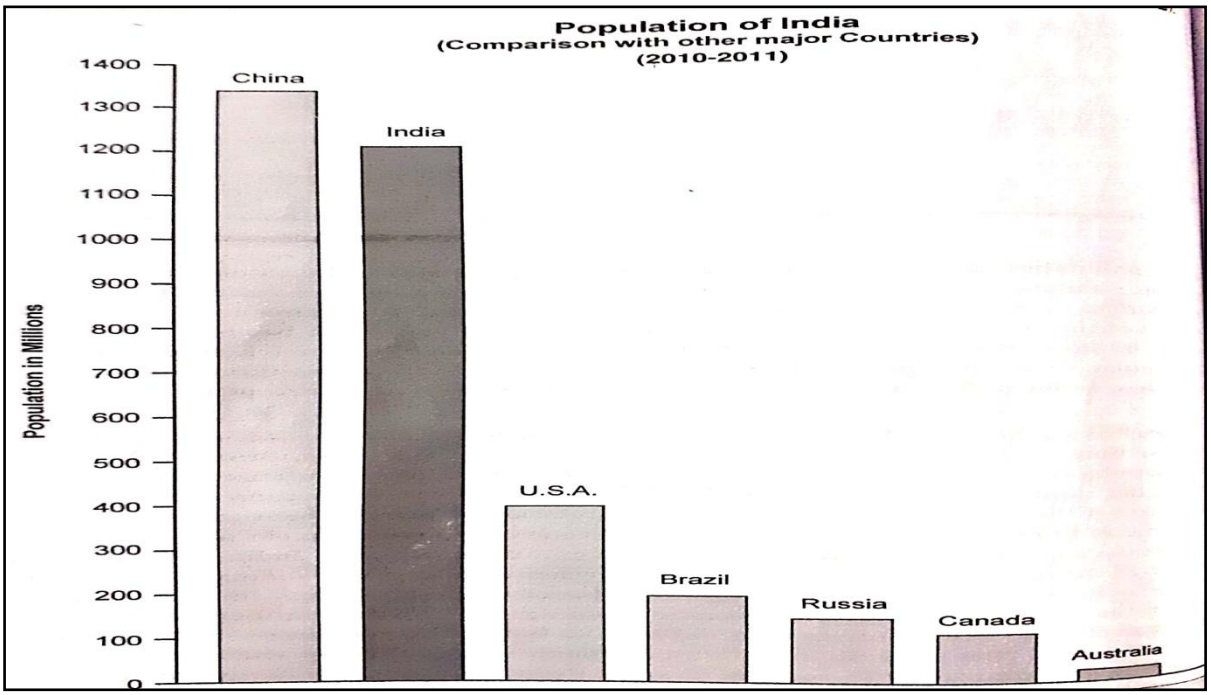


TABLE 7.1. Population of Major Countries (Comparison with India)

Country	Year	Population in millions	Percentage of the world population	Percentage as compared to India with India as 100%
1. China	2010	1341.0	19.4	134.1
2. India	2011	1210.2	17.5	100.0
3. U.S.A.	2010	308.7	4.5	25.5
4. Brazil	2010	190.7	2.8	15.7
5. Russian Federation	2010	140.4	2.0	11.6
6. Canada	2010	33	0.5	2.7
7. Australia	2010	21.1	0.3	0.3

Source : Data Computed from Census of India 2011 and World Development Report 2011-12.

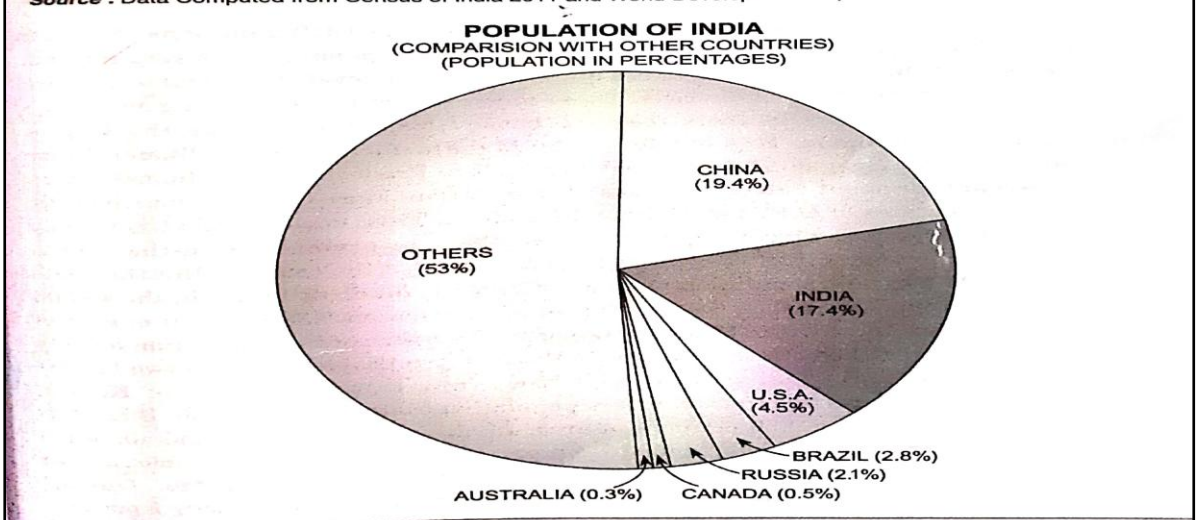


FIG. 7.2. Population of India (Comparison with other major countries) (Population in Percentages)

Distribution Of Population: - The total population of India according to the 2011 census is 1210.2 millions. Uttar Pradesh has the largest population of 199.5 millions. This is followed by Maharashtra, Bihar and West Bengal.

TABLE 7.3. Ranking of States and Union Territories by Population: 2001 and 2011

Rank in 2011	India/State/Union Territory	Population 2011	Percent to total population of India		Rank in 2001
			2011	2001	
	India	1,21,01,93,422	100.00	100.00	
1	Uttar Pradesh	19,95,81,477	16.49	16.16	1
2	Maharashtra	11,23,72,972	9.29	9.42	2
3	Bihar	10,38,04,637	8.58	8.07	3
4	West Bengal	9,13,47,736	7.55	7.79	4
5	Andhra Pradesh	8,46,65,533	7.00	7.41	5
6	Madhya Pradesh	7,25,97,565	6.00	5.87	7
7	Tamil Nadu	7,21,38,958	5.96	6.07	6
8	Rajasthan	6,86,21,012	5.67	5.49	8
9	Karnataka	6,11,30,704	5.05	5.14	9
10	Gujarat	6,03,83,628	4.99	4.93	10
11	Odisha	4,19,47,358	3.47	3.58	11
12	Kerala	3,33,87,677	2.76	3.10	12
13	Jharkhand	3,29,66,238	2.72	2.62	13
14	Assam	3,11,69,272	2.58	2.59	14
15	Punjab	2,77,04,236	2.29	2.37	15
16	Chhattisgarh	2,55,40,196	2.11	2.03	17
17	Haryana	2,53,53,081	2.09	2.06	16
18	NCT of Delhi#	1,67,53,235	1.38	1.35	18
19	Jammu & Kashmir	1,25,48,926	1.04	0.99	19
20	Uttarakhand	1,01,16,752	0.84	0.83	20
21	Himachal Pradesh	68,56,509	0.57	0.59	21
22	Tripura	36,71,032	0.30	0.31	22
23	Meghalaya	29,64,007	0.24	0.23	23
24	Manipur	27,21,756	0.22	0.22	24
25	Nagaland	19,80,602	0.16	0.19	25
26	Goa	14,57,723	0.12	0.13	26
27	Arunachal Pradesh	13,82,611	0.11	0.11	27
28	Puducherry#	12,44,464	0.10	0.09	28
29	Mizoram	10,91,014	0.09	0.09	30
30	Chandigarh#	10,54,686	0.09	0.09	29
31	Sikkim	6,07,688	0.05	0.05	31
32	Andaman & Nicobar Islands#	3,79,944	0.03	0.03	32
33	Dadra & Nagar Haveli#	3,42,853	0.03	0.02	33
34	Daman & Diu#	2,42,911	0.02	0.02	34
35	Lakshadweep#	64,429	0.01	0.01	35

Union Territory. ***Source*** **:** Census of India, 2011; Provisional Population Totals paper 1, p. 47.

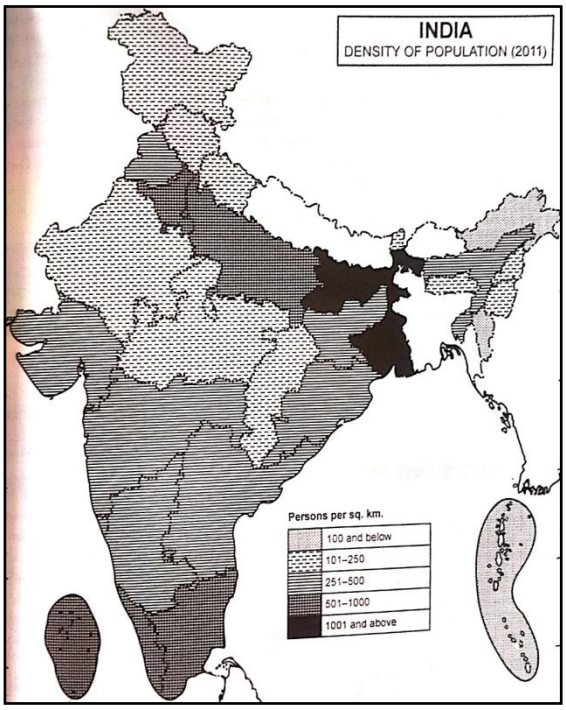
Density Of Population: - Density of population is a better means of understanding the variation of the distribution of population. It can also be expressed as the ratio of total population to the total area of a country or a part thereof.
India's population density of 382 people per square kilometre is much higher than China's 141 parsons per square kilometre.

1. Arithmetical density $= \dfrac{\text{Total Population}}{\text{Total Area}}$

2. Physiological density $= \dfrac{\text{Total population}}{\text{Net cultivated area}}$

Rank in 2011	State /Union Territory	Density (per sq. km)	
		2011	2001
1	2	3	4
	India	382	325
1	NCT of Delhi	11,297	9,340
2	Chandigarh	9,252	7,900
3	Puducherry	2,598	2,034
4	Daman & Diu	2,169	1,413
5	Lakshadweep	2,013	1,895
6	Bihar	1,102	881
7	West Bengal	1,029	903
8	Kerala	859	819
9	Uttar Pradesh	828	690
10	Dadra & Nagar Haveli	698	449
11	Haryana	573	478
12	Tamil Nadu	555	480
13	Punjab	550	484
14	Jharkhand	414	338
15	Assam	397	340
16	Goa	394	364
17	Maharashtra	365	315
18	Tripura	350	305
19	Karnataka	319	276
20	Andhra Pradesh	308	277
21	Gujarat	308	258
22	Odisha	269	236
23	Madhya Pradesh	236	196
24	Rajasthan	201	165
25	Uttarakhand	189	159
26	Chhattisgarh	189	154
27	Meghalaya	132	103
28	Jammu & Kashmir	124	100
29	Himachal Pradesh	123	109
30	Manipur	122	103
31	Nagaland	119	120
32	Sikkim	86	76
33	Mizoram	52	42
34	Andaman & Nicobar Islands	46	43
35	Arunachal Pradesh	17	13

Density of Population of India Of 2001 & 2011



Variations in the density of population appear to have been caused by various factors such as relief, climate, water supply, soil fertility and agricultural productivity. However it will be wrong to suppose that all variations in the density of population are caused by natural and environmental factors along. The influence of these factors is Greater in some regions than in others. For example, relief, altitude and temperature exercise a great influence on the distribution of population in the hilly regions of Jammu and Kashmir, Himachal Pradesh and the North East. In reality there are the social, economic, demographic, political and historical factors which have an important role to play in the spatial distribution of population density. For example of urbanisation industrialisation and several other nonfarm activities have always caused large scale migration the population from rural to urban areas and alter density patterns. We can name West Bengal, Kerala and Delhi which present typical examples of the impact of these factors.

Index Of Concentration: - Index of concentration is the proportion of population living in each state or union territory to the total population of India.
For example the population of Uttar Pradesh according to 2011 Census was 199.5 millions where as total population of India in the same year was 1021 Millions .So the index of concentration for U.P. in 2011was:-

$$\frac{199.5}{1021} \times 100 = 19.5\%$$

Growth of population: Basic concepts
1. Birth Rate:- Birth rate is the number of living births in a year per thousand of mid year population.
2. Death Rate:- Death rate is the number of deaths in a particular year per thousand of population.
3. Growth Rate:- Growth rate population is the change in the number of people living in a particular area between two given points of time. The net change between two points of time is expressed in percentage and is described as the growth rate of population.
4. Natural Growth:- The difference between the natural birth and death rate is called the natural growth of population.
5. Migratory Group:- This growth of population is caused by Migration of people.

6. Positive Growth:- When the population increases between two given points of time is called positive growth. It takes place when the birth rate is higher than the death rate or people migrate from one to another country.

7. Negative Growth:- Population is called negative if the population decrease between two given points of time. It takes place if the birth rate is lower than the death rate or people migrate from one to another country.

Home Assignment 7(part 1):-

1. What is meant by “Density of Population”? What is the average Density of population of India according to the last census.

2. Name the states which has the highest and the lowest density of population and why?

3. What is the Index of concentration of population? Which state in India has the Maximum Index of Concentration according to the 2011 census.

4. Define the following term:
i) Birth Rate, ii) Growth Rate, iii) Positive Growth.

Sayanti Chatterjee

Assignment – 11
Maths Class – 12
Differentiation

Ex1 If $x = a(\cos t + t\sin t)$ and $y = a(\sin t - t\cos t)$

Find. $\frac{dy}{dx}$ at $t = \frac{3\pi}{4}$.

$$\frac{dx}{dt} = a(-\cancel{\sin t} + \cancel{\sin t} + t\cos t)$$

$$\frac{dy}{dt} = a(\cancel{\cos t} - \cancel{\cos t} + t\sin t)$$

$$\frac{dy}{dx} = \frac{dy}{dt} \cdot \frac{dt}{dx} = \frac{at\sin t}{at\cos t}$$

$$= \tan t = \tan\frac{3\pi}{4}$$

$$= \tan\left(\pi - \frac{\pi}{4}\right) = -\tan\frac{\pi}{4}$$

$$= -1$$

Ex2 If $x^m \cdot y^n = (x+y)^{m+n}$, then prove that

$$\frac{dy}{dx} = \frac{y}{x}.$$

Now. $x^m \cdot y^n = (x+y)^{m+n}$

Taking log in both sides.

$$\log(x^m \cdot y^n) = \log(x+y)^{m+n}$$

or, $\log x^m + \log y^n = (m+n)\log(x+y)$

or, $m\log x + n\log y = (m+n)\log(x+y)$

Now differentiating both sides.

$$\frac{m}{x} + \frac{n}{y}\frac{dy}{dx} = \frac{m+n}{x+y}\left(1 + \frac{dy}{dx}\right),$$

or, $\frac{m}{x} - \frac{m+n}{x+y} = \left(\frac{m+n}{x+y} - \frac{n}{y}\right)\frac{dy}{dx}$

or, $\frac{m(x+y)-(m+n)x}{x\cancel{(x+y)}} = \frac{(m+n)y-n(x+y)}{y\cancel{(x+y)}}\frac{dy}{dx}$

or, $\frac{\cancel{mx}+my-\cancel{mx}-nx}{x} = \frac{my+\cancel{ny}-nx-\cancel{ny}}{y}\frac{dy}{dx}$

or, $\frac{(my-nx)}{x} = \frac{(my-nx)}{y}\frac{dy}{dx}$.

or, $\frac{dy}{dx} = \frac{y}{x}$ proved

H.W ① If $x = a(\theta + \sin\theta)$, $y = a(1+\cos\theta)$

find $\frac{dy}{dx}$.

② $(\cos x)^y = (\sin y)^x$ find $\frac{dy}{dx}$.

③ $x = a(\cos t + \log\tan\frac{t}{2})$, $y = a\sin t$.

find $\frac{dy}{dx}$.

④ $\tan y = \frac{2t}{1-t^2}$, $\sin x = \frac{2t}{1+t^2}$

find $\frac{dy}{dx}$.

⑤ If $y = e^{\frac{y}{x}}$ then prove that

$\frac{dy}{dx} = \frac{y^2}{x(y-x)}$.

DREAMLAND SCHOOL
BIOLOGY - CLASS 12 (2020 -2021)
ASSIGNMENT

DATE – 04/05/2020

CHAPTER – HUMAN REPRODUCTION

EXPLANATION-

MENSTRUAL CYCLE

- In a human female , reproductive phase begins at the age of 13 years & ends at about the age of 45-49 years.
- During reproductive phase cyclic changes occur almost after every 28 days in the ovary & the wall of uterus in case fertilization fails to occur.
- The series of changes in the sex organs of a female is called menstrual cycle.
- The starting of menstrual cycle is called **menarche**.
- Menstruation during pregnancy may be suppressed during lactation & permanently stops at **menopause.**
- Menstrual cycle can be discussed under the following heads:

1) MENSTRUAL PHASE – (1st to 5th day)

- When egg is not fertilized , the spongy layer, endometrium of uterine wall is sloughed off.
- The glands & blood vessels of the endometrium are broken down & lost.
- This causes discharge of blood carrying broken uterine tissue.
- The monthly flow of blood is called emenstruation.

2) FOLLICULAR OR POST – MENSTRUAL PHASE – (6th to 13th/14th day)

- Growth & maturation of graffian follicle in the ovary.
- Regeneration of broken mucous membrane (endometrium) of uterine wall & repair of its ruptured blood vessels by proliferation of tissues. Hence it can also be called proliferative phase.
- Growth of endometrium & its uterine glands.
- **These changes are controlled by estrogens secreted by the ovary & follicle cells of maturing Graffian follicle.**
- **Level of estrogen is maximum during this phase & is regulated by FSH of anterior pituitary gland.**
- By the end of this phase endometrium becomes 2-3 mm thick.
- Contraction of uterine muscles increases considerably.
- The arterioles supplying uterine wall also grow longer and more coiled.
- The epithelium of fallopian tube gets thickened & the movement of its cilia increases.

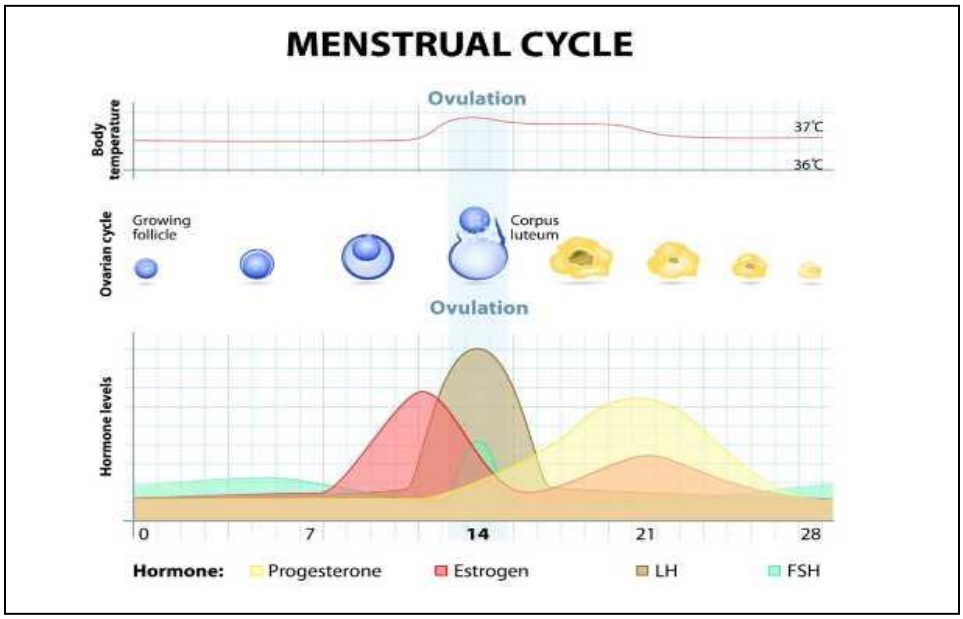
3) OVULATION PHASE – (on 14th day)

- Graffian follicle gets ruptured & release ovum in the body cavity. This is called ovulation.
- **Final maturation of follicles & ovulation are under the control of Luteinizing hormone (LH).**

4) LUTEAL PHASE – (15th to 28Th day)

- It is the period between ovulation & onset of menses.
- The cells of ruptured follicles enlarge & form golden coloured corpus luteum.
- **It grows for about 7 days & secretes progesterone**.
- **The secretion of progesterone & its level in the body is controlled by LH.**

- In case the ovum is not fertilized, the corpus luteum degenerates into a white mass , corpus albicans. This lowers down the level of progesterone in blood.
- In case fertilization occurs then corpus luteum is retained & progesterone further prepare the uterus for the anticipated pregnancy.
    - The uterine thickens further upto 4-5 mm .
    - The uterine glands increase in length & diameter become more.
    - The uterine movements are reduced thus completing preparation for implantation of the embryo.
    - **Progesterone also inhibit the further follicular maturation**.
- If fertilization fails to occur then again the ovum will be shed & another menstrual cycle will start after 28 days. If fertilized the menstrual cycle will stop for time being.



HORMONAL CONTROL OF CYCLIC CHANGES IN OVARIES & UTERUS DURING MENSTRUAL CYCLE

1. During **menstrual phase** the level of estrogen & progesterone falls considerably. This induces adenohypophysis to secrete FSH & LH.
2. During **follicular phase** the increased amount of FSH stimulates one or two primary ovarian follicle to start growing. It also stimulates follicle cells to secrete estrogen.
    - the estrogen level increases gradually for few days and is at the peak at the 12th day.
    - The estrogen surge reduces FSH secretion & induces LH surge within 12 hours.
3. LH causes **ovulation** & forms corpus luteum.
4. During **luteal phase** corpus luteum secretes progesterone . if fertilization occurs then progesterone level remains high which prevent formation of follicle.
5. Estrogen level remain low during luteal phase.
6. If fertilization fails then progesterone level will fall.
7. The low level of estrogen & progesterone stimulates secretion of FSH & LH from anterior pituitary initiating the next ovarian cycle.

FERTILIZATION

The fusion of haploid male gamete (sperm) & female gamete (egg) to form zygote is called fertilization.

Fertilization involves following processes :-

1) **Approach of sperm to ovum**
   - During copulation male discharges 3-5 ml of seminal fluid in the female vagina. It contains 200 -400 million of sperms. Only few (approx. 100) reach the fallopian tube , rest are killed by the acidity of the female genital tract & many others engulfed by the leucocytes of vaginal epithelium.
   - Sperm swim towards the fallopian tube through the uterus by the lashing movement of their tail .
   - The aspiratory action of the uterus & peristaltic movement of fallopian tube propel the sperm upward.
   - These contractions are initiated by the release of hormone , oxytocin, during copulation, & local action of prostaglandin present in the semen.

2) **Agglutination**
   - Ovum secretes a chemical substance called fertilizing.
   - It has a number of **spermophillic** sites on its surface for **antifertilizin** present on the head of the sperms.
   - Adhesion of spermatozoa to the surface of egg is brought about by linking of **fertilizin –antifertilizin** molecules.
   - In addition **fertilizin –antifertilizin** reaction causes agglutination of sperm & thins out the number of sperm reaching the egg to reduce the chances of polyspermy.
   - Though a sperm can survive in the female reproductive tract for 1-3 days , it can fertilize the oocyte within 12-24 hours.

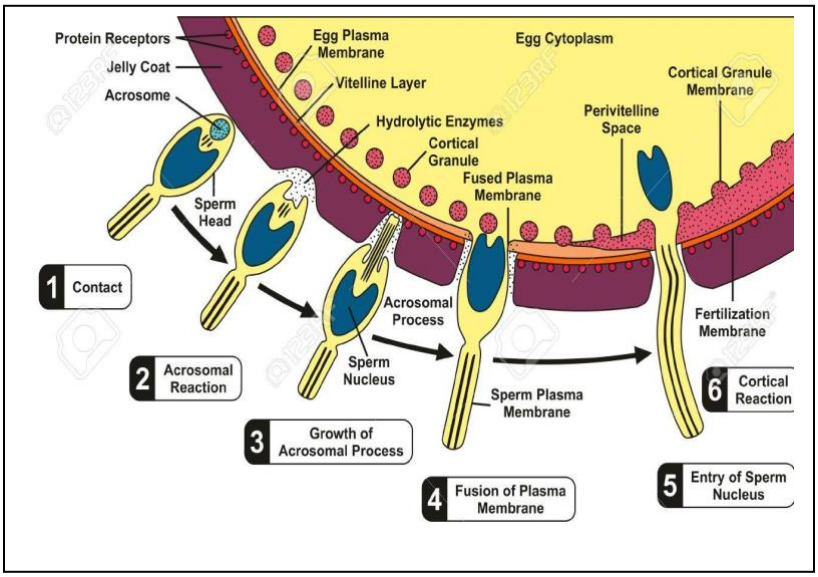
3) **Capacitation of sperm**
   - The secretions of the male accessory glands forms the major part of seminal fluid which enables the sperm to fertilise the ovum & neutralize the acidity of vagina.
   - The changes in the mammalian sperm which make it to fertilize the ovum is called capacitation.

4) **Penetration of sperm into ovum**
   - The ovum at the secondary oocyte stages extrudes from the ovary & trickles down the fallopian tube.
   - The follicle cells are glued together by a mucopolysaccharide called **hyaluronic acid**.
   - The sperm acrosome produces enzymes **sperm lysins** .
   - These dissolve the egg membranes in the local area & clear the path for spermatozoa to reach the surface of egg.
   - The sperm now penetrate the zona pellucida layer of follicle with the help of the enzyme **hyaluronidase** which dissolves the mucopolysaccharide, **hyaluronic acid**.
   - This follows dissolution of the plasma membrane of the ovum & sperm head at the point of contact & the nucleus & cytoplasm of the sperm are drawn inside the ovum.

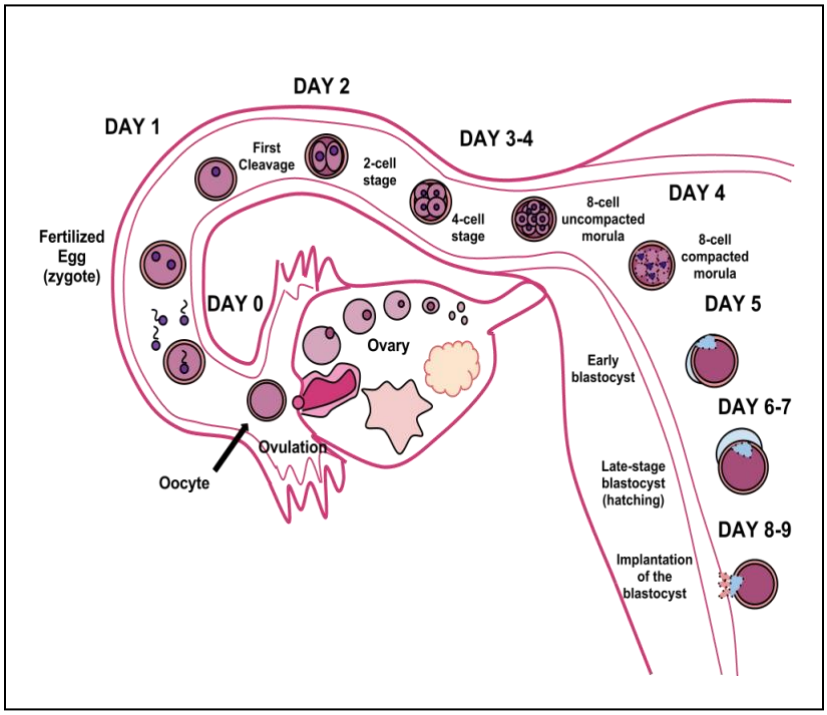
5) **Activation of ovum**
   - The entry of sperm invokes a chemical signal in the egg cell.
   - The signal is transmitted to the egg surface incapacitating hundreds of sperms in the vicinity to enter the egg cell.
   - The rest of the follicle cells around the fertilized ovum disperse before the implantation of the fertilized ovum on the inner wall of uterus.
   - Thus, with the penetration of sperm into the egg cell, a fertilization membrane is formed around the egg.
   - This prevents the entry of other sperms into the egg cell.

6) Fusion of sperm & egg nucleus

- The penetration of the sperm activates the egg & the secondary oocyte undergoes meiotic –II division to produce ovum & 2nd polar body.
- The 2nd polar body immediately degenerates.
- Inside the ovum the sperm nucleus moves towards egg nucleus along a definite path called **copulation path.**
- The fusion of male & female proneclei restores the diploid condition in zygote nucleus.
- The process of intermingling of paternal & maternal chromosome is called **amphimixis .**
- The fertilized egg is called **zygote** & zygote nucleus as **synkaryon.**



Steps in fusion of sperm & ovum



ASSIGNMENT 3 (CONTINUATIO N) (BIOLOGY COPY 1)

4. Explain the luteal phase of menstrual cycle with the hormonal control involved in it.

5. Mention the series of events that occurs in the follicular phase.

6. Explain the series of events involved In penetration of sperm into ovum.

7. Define capacitation & amphimixis.

MOUMITA GANGULY

DATE-04.05.2020 (MONDAY)

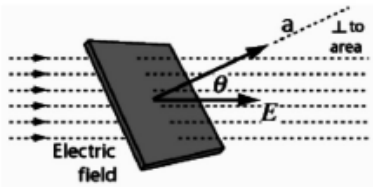
CLASS-XII

SUBJECT-PHYSICS

CHAPTER-2: GAUSS' THEOREM (2nd CLASS)

To understand the Gauss law first we have to define the quantity Electric Flux.

Electric Flux



The concept of electric ?ux involves a surface and the (vector) values of the electric ?eld at all points of the surface. To introduce the way that ?ux is calculated, we start with a simple case. We will consider a ?at surface of area a and an electric ?eld which is constant (that is, has the same vector value) over the surface.

The surface is characterized by the "area vector" a. This is a vector which points perpendicularly (normal) to the surface and has magnitude a. The surface and its area vector along with the uniform electric ?eld are shown in the side figure.

Actually, there's a little problem here: There are really two choices for the vector a. (It could have been chosen to point in the opposite direction; it would still be normal to the surface and have the same magnitude.) However in every problem where we use electric ?ux, it will be made clear which choice is made for the "normal" direction.

n words, **electric flux is equal to the number of electric field lines that pass through a particular surface multiplied by the area of the surface.** Electric flux is denoted by the symbol $?_E$.

The electric flux $?_E$ through a Gaussian surface is proportional to the net number of electric field lines passing through that surface.

So,

$$\phi_E = \int_S \vec{E}.d\vec{a}$$

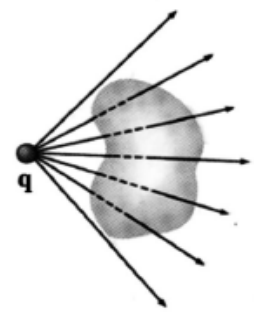
Now, for this simple case, the electric ?ux Φ is given by where theta is the angle between E and a.

$?_E = Ea\cos\theta$

Here θ is the angle between Electric field vector ($\vec{E}$) and area vector ($d\vec{a}$).

If $\vec{E}$ is perpendicular to a fl at surface having a total area *A*, then the electric flux through this surface would be, $?_E = Ea$. In this case, the flux is just the magnitude of the electric field multiplied by the area of the surface. Flux is a scalar, just an ordinary number; **it is not a vector.**

Gauss Law



The electric flux $?_E$ through any closed surface is equal to the net charge inside the surface, *Q* inside, divided by ε_0:

$?_E = Q_{enc}/\varepsilon_0$

Or,

$$\Phi_E = \int_s \vec{E}.d\vec{a} = Q_{enc}/\varepsilon_0$$

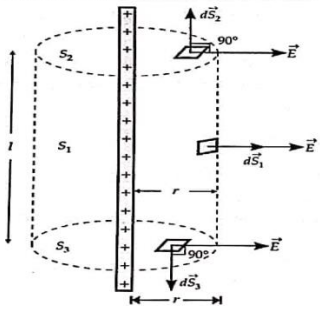
So,

$$\phi_E = \int_S \vec{E}.d\vec{a} = \frac{Q_{enclosed}}{\varepsilon_0}$$

Though it's not obvious, Gauss's law describes how charges create electric fields. In principle, it can always be used to calculate the electric field of a system of charges or a continuous distribution of charge. In practice, the technique is useful only in a limited number of cases in which there is a high degree of symmetry, such as spheres, cylinders, or planes. With the symmetry of these special shapes, the charges can be surrounded by an imaginary surface, called a Gaussian surface. This imaginary surface is used strictly for mathematical calculation, and need not be an actual, physical surface.

APPLICATIONS

Electric field due to an infinitely long straight charged wire. Consider a thin infinitely long straight wire having a uniform linear charge density $\lambda\ Cm^{-1}$. By symmetry, the field $\vec{E}$ of the line charge is directed radially outwards and its magnitude is same at all points equidistant from the line charge. To determine the field at a distance r from the line charge, we choose a cylindrical Gaussian surface of radius r, length l and with its axis along the line charge. As shown in Fig. 1.97, it has curved surface S_1 and flat circular ends S_2 and S_3. Obviously, $d\vec{S}_1 \parallel \vec{E}$, $d\vec{S}_2 \perp \vec{E}$ and $d\vec{S}_3 \perp \vec{E}$. So only the curved surface contributes towards the total flux.



Cylindrical Gaussian surface for line charge.

$$\phi_E = \oint_S \vec{E}\cdot d\vec{S} = \int_{S_1} \vec{E}\cdot d\vec{S}_1 + \int_{S_2} \vec{E}\cdot d\vec{S}_2 + \int_{S_3} \vec{E}\cdot d\vec{S}_3$$

$$= \int_{S_1} E dS_1 \cos 0° + \int_{S_2} E dS_2 \cos 90° + \int_{S_3} E dS_3 \cos 90°$$

$$= E\int dS_1 + 0 + 0$$

$$= E \times \text{area of the curved surface}$$

or $\phi_E = E \times 2\pi r l$

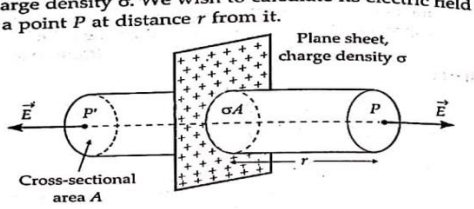
Charge enclosed by the Gaussian surface, $q = \lambda l$

Using Gauss's theorem, $\phi_E = q/\varepsilon_0$, we get

or $E.2\pi rl = \dfrac{\lambda l}{\varepsilon_0}$ or $E = \dfrac{\lambda}{2\pi\varepsilon_0 r}$

Thus the electric field of a line charge is inversely proportional to the distance from the line charge.

Electric field due to a uniformly charged infinite plane sheet. As shown in Fig. 1.98, consider a thin, infinite plane sheet of charge with uniform surface charge density σ. We wish to calculate its electric field at a point P at distance r from it.



Gaussian surface for a uniformly charged infinite plane sheet.

By symmetry, electric field E points outwards normal to the sheet. Also, it must have same magnitude and opposite direction at two points P and P' equidistant from the sheet and on opposite sides. We choose cylindrical Gaussian surface of cross- sectional area A and length $2r$ with its axis perpendicular to the sheet.

As the lines of force are parallel to the curved surface of the cylinder, the flux through the curved surface is zero. The flux through the plane-end faces of the cylinder is

$$\phi_E = EA + EA = 2\ EA$$

Charge enclosed by the Gaussian surface,

$$q = \sigma A$$

According to Gauss's theorem,

$$\phi_E = \frac{q}{\varepsilon_0}$$

$$\therefore \quad 2\ EA = \frac{\sigma A}{\varepsilon_0} \quad \text{or} \quad E = \frac{\sigma}{2\varepsilon_0}$$

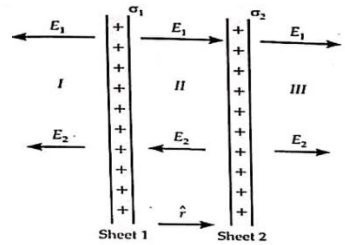
Clearly, E is independent of r, the distance from the plane sheet.

(*i*) If the sheet is *positively* charged ($\sigma > 0$), the field is directed *away* from it.

(*ii*) If the sheet is *negatively* charged ($\sigma < 0$), the field is directed *towards* it.

For a finite large planar sheet, the above formula will be approximately valid in the middle regions of the sheet, away from its edges.

Electric field of two positively charged parallel plates. Fig. 1.99 shows two thin plane parallel sheets of charge having uniform charge densities σ_1 and σ_2 with $\sigma_1 > \sigma_2 > 0$. Suppose $\hat{r}$ is a unit vector pointing from left to right.



In the region I : Fields due to the two sheets are

$$\vec{E}_1 = -\frac{\sigma_1}{2\varepsilon_0}\hat{r}, \quad \vec{E}_2 = -\frac{\sigma_2}{2\varepsilon_0}\hat{r}$$

From the principle of superposition, the total electric field at any point of region I is

$$\vec{E}_I = \vec{E}_1 + \vec{E}_2 = -\frac{\hat{r}}{2\varepsilon_0}(\sigma_1 + \sigma_2)$$

In the region II : Fields due to the two sheets are

$$\vec{E}_1 = \frac{\sigma_1}{2\varepsilon_0}\hat{r}, \quad \vec{E}_2 = -\frac{\sigma_2}{2\varepsilon_0}\hat{r}$$

$\therefore$ Total field, $\vec{E}_{II} = \dfrac{\hat{r}}{2\varepsilon_0}(\sigma_1 - \sigma_2)$

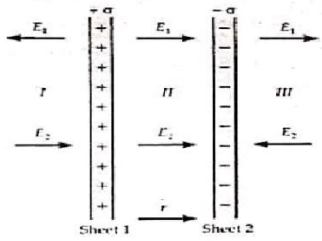
In the region III : Fields due to the two sheets are

$$\vec{E}_1 = \frac{\sigma_1}{2\varepsilon_0}\hat{r}, \quad \vec{E}_2 = \frac{\sigma_2}{2\varepsilon_0}\hat{r}$$

$\therefore$ Total field, $\vec{E}_{III} = \dfrac{\hat{r}}{2\varepsilon_0}(\sigma_1 + \sigma_2)$

55. *Two infinite parallel planes have uniform charge densities $\pm\sigma$. Determine the electric field in (i) the region between the planes, and (ii) outside it.*

Electric field of two oppositely charged plane parallel plates. As shown in Fig. 1.100, consider two plane parallel sheets having uniform surface charge densities of $\pm\sigma$. Suppose $\hat{r}$ be a unit vector pointing from left to right.



In the region I : Fields due to the two sheets are

$$\vec{E}_1 = -\frac{\hat{r}}{2\varepsilon_0}\sigma, \quad \vec{E}_2 = \frac{\hat{r}}{2\varepsilon_0}\sigma$$

Total field, $\vec{E}_I = \vec{E}_1 + \vec{E}_2 = -\dfrac{\hat{r}}{2\varepsilon_0}\sigma + \dfrac{\hat{r}}{2\varepsilon_0}\sigma = 0$

In the region II : Fields due to the two sheets are

$$\vec{E}_1 = \frac{\hat{r}}{2\varepsilon_0}\sigma, \quad \vec{E}_2 = \frac{\hat{r}}{2\varepsilon_0}\sigma$$

Total field, $\vec{E}_{II} = \dfrac{\hat{r}}{2\varepsilon_0}\sigma + \dfrac{\hat{r}}{2\varepsilon_0}\sigma = \dfrac{\sigma}{\varepsilon_0}\hat{r}$

In the region III : Fields due to the two sheets are

$$E_1 = \frac{\hat{r}}{2\varepsilon_0}\sigma, \quad E_2 = -\frac{\hat{r}}{2\varepsilon_0}\sigma$$

Total field, $\vec{E}_{III} = 0$.

Thus the electric field between two oppositely charged plates of equal charge density is uniform which is equal to $\dfrac{\sigma}{\varepsilon_0}$ and is directed from the positive to the negative plate, while the field is zero on the outside of the two sheets. This arrangement is used for producing *uniform electric field*.

Electric field due to a uniformly charged thin spherical shell. Consider a thin spherical shell of charge of radius R with uniform surface charge density σ. From symmetry, we see that the electric field $\vec{E}$ at any point is radial and has same magnitude at points equidistant from the centre of the shell *i.e.*, the field is *spherically symmetric*. To determine electric field at any point P at a distance r from O, we choose a concentric sphere of radius r as the Gaussian surface.

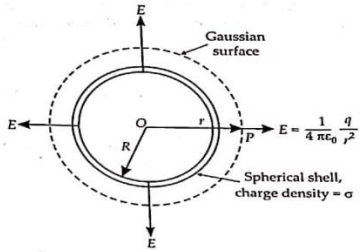


Fig. 1.101 Gaussian surface for outside points of a thin spherical shell of charge.

(*a*) *When point P lies outside the spherical shell.* The total charge q inside the Gaussian surface is the charge on the shell of radius R and area $4\pi R^2$.

$$\therefore \quad q = 4\pi R^2 \sigma$$

Flux through the Gaussian surface,

$$\phi_E = E \times 4\pi r^2$$

By Gauss's theorem,

$$\phi_E = \frac{q}{\varepsilon_0}$$

$$\therefore \quad E \times 4\pi r^2 = \frac{q}{\varepsilon_0}$$

or $$E = \frac{1}{4\pi\varepsilon_0} \cdot \frac{q}{r^2} \qquad \text{[For } r > R\text{]}$$

This field is the same as that produced by a charge q placed at the centre O. Hence *for points outside the shell, the field due to a uniformly charged shell is as if the entire charge of the shell is concentrated at its centre.*

(*b*) *When point P lies on the spherical shell.* The Gaussian surface just encloses the charged spherical shell.

Applying Gauss's theorem,

$$E \times 4\pi R^2 = \frac{q}{\varepsilon_0}$$

or $$E = \frac{q}{4\pi\varepsilon_0 R^2} \qquad \text{[For } r = R\text{]}$$

or $$E = \frac{\sigma}{\varepsilon_0} \qquad [\because q = 4\pi R^2 \sigma]$$

(*c*) *When point P lies inside the spherical shell.* As is clear from Fig. 1.102, the charge enclosed by the Gaussian surface is zero, *i.e.*,

$$q = 0$$

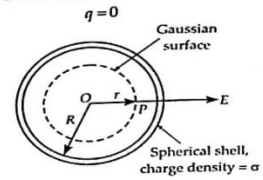


Fig. 1.102 Gaussian surface for inside points of a thin spherical shell of charge.

Flux through the Gaussian surface,

$$\phi_E = E \times 4\pi r^2$$

Applying Gauss's theorem,

$$\phi_E = \frac{q}{\varepsilon_0}$$

$$E \times 4\pi r^2 = 0$$

or $$E = 0 \qquad \text{[For } r < R\text{]}$$

Hence electric field due to a uniformly charged spherical shell is zero at all points inside the shell.

Figure 1.103 shows how E varies with distance r from the centre of the shell of radius r. E is zero from $r = 0$ to $r = R$; and beyond $r = R$, we have

$$E \propto \frac{1}{r^2}.$$

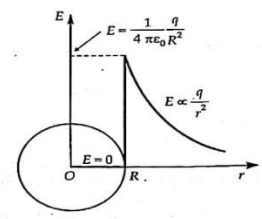


Fig. 1.103 Variation of E with r for a spherical shell of charge.

IMPORTANT FORMULA

- **Electric flux through a surface $d\vec{S}$** in an electric field of intensity $\vec{E}$ is,

$$\phi = \int_S \vec{E} \cdot d\vec{S}$$

- According to Gauss' theorem, total electric flux linked with a closed surface is given by,

$$\oint_S \vec{E} \cdot d\vec{S} = \frac{4\pi}{k} q \quad \text{(in CGS system)}$$

where q is the charge enclosed by the closed surface and k is the permittivity of the medium.

$$\oint_S \vec{E} \cdot d\vec{S} = \frac{q}{\varepsilon} \quad \text{(in SI)}$$

where ϵ is the permittivity of the medium.

- The electric field intensity at a point due to a point charge,

$$E = \frac{q}{4\pi\varepsilon r^2} \text{ (in SI)}; \quad E = \frac{q}{kr^2} \text{ (in CGS system)}$$

1. Electric field of a long straight wire of uniform linear charge density λ,

$$E = \frac{\lambda}{2\pi\varepsilon_0 r}$$

where r is the perpendicular distance of the observation point from the wire.

2. Electric field of an infinite plane sheet of uniform surface charge density σ,

$$E = \frac{\sigma}{2\varepsilon_0}$$

3. Electric field of two positively charged parallel plates with charge densities σ_1 and σ_2 such that $\sigma_1 > \sigma_2 > 0$,

$$E = \pm\frac{1}{2\varepsilon_0}(\sigma_1 + \sigma_2) \qquad \text{(Outside the plates)}$$

$$E = \frac{1}{2\varepsilon_0}(\sigma_1 - \sigma_2) \qquad \text{(Inside the plates)}$$

4. Electric field of two equally and oppositely charged parallel plates,

$$E = 0 \qquad \text{(For outside points)}$$

$$E = \frac{\sigma}{\varepsilon_0} \qquad \text{(For inside points)}$$

5. Electric field of a thin spherical shell of charge density σ and radius R,

$$E = \frac{1}{4\pi\varepsilon_0} \cdot \frac{q}{r^2} \qquad \text{For } r > R \text{ (Outside points)}$$

$$E = 0 \qquad \text{For } r < R \text{ (Inside points)}$$

$$E = \frac{1}{4\pi\varepsilon_0} \cdot \frac{q}{R^2} \qquad \text{For } r = R \text{ (At the surface)}$$

Here $q = 4\pi R^2 \sigma$.

6. Electric field of a solid sphere of uniform charge density ρ and radius R:

$$E = \frac{1}{4\pi\varepsilon_0} \cdot \frac{q}{r^2} \qquad \text{For } r > R \text{ (Outside points)}$$

$$E = \frac{1}{4\pi\varepsilon_0} \cdot \frac{qr}{R^3} \qquad \text{For } r < R \text{ (Inside points)}$$

$$E = \frac{1}{4\pi\varepsilon_0} \cdot \frac{q}{R^2} \qquad \text{For } r = R \text{ (At the surface)}$$

Here $q = \frac{4}{3}\pi R^3 \rho$

Units Used

Here charges are in coulomb, r and R in metre, λ in Cm^{-1}, σ in Cm^{-2}, ρ in Cm^{-3} and electric field E in NC^{-1} or Vm^{-1}.

DATE-04.05.2020 (MONDAY)
CLASS-XII
SUBJECT-PHYSICS
ASSIGNMENT-8
CHAPTER-2: GAUSS' THEOREM (2nd CLASS)
(F.M.-10)

Answer the following questions
(Question No-1 carries 1 mark, 2 carries 2 marks, 3 carries 3 marks, 4 carries 4 marks)

1. How the electric field intensity due to a conducting uniformly charged sphere depends on the distance on an internal point, on the surface and external any point of that sphere?

2. What is an area vector? How do we associate a factor to the area of a curved surface?

3. A spherical Rubber Balloon carries a charge that is uniformly distributed over its surface. As the balloon is blown up how does E very for Points inside the balloon, on the surface of the balloon, and outside the balloon.

4. (i) An arbitrary surface encloses a dipole. What is the electric flux through the surface?
   (ii) Calculate the electric field in three different regions of two positively charged parallel plates.

Sudeb Chatterjee

DREAMLAND SCHOOL
CLASS XII
ASSIGNMENT -8
ACADEMIC YEAR-2020-21
ENGLISH I

DATE- 4th MAY 2020

- I. DO AS DIRECTED:

1. The heavy rains did not deter the footballers from playing the match.
   [Begin-Notwithstanding ……..]
2. Malini said," Had it not been for my grandmother, I would have been dead by now."
   [Begin -Malini affirmed that……]
3. I kept wondering how gold could be the most precious metal.
   [Begin- That…….]
4. Shena returned to India just a fortnight ago.
   [Begin-It……..]
5. As soon as Ram came home, he was asked to report back to his workplace.
   [Begin- Hardly…….]
6. Both Alok and his brother Amol dislike eating porridge.
   [Begin- Neither Alok……]
7. The policeman on duty asked the two girls if they were accompanied by any guardian.
   [Begin –The policeman on duty said,"……..."]
8. As soon as my mother had started cooking, the electricity went off.
   [Begin- No sooner…….]
9. The painting of the façade is being completed by the painter in a hurry.
   [Begin-The painter……]
10. Never had I heard such a beautiful rendition by such a young girl.
    [Begin-That was……]

- ***BOOK AND FILM REVIEWS***

A book or a film review is a critical analysis of a book or film. It does not merely narrate the plot but talks about the various stylistic aspects of the work and analyses the strength and the weakness of the given material. A successful review also gives the reader or the viewer an idea about the aim of the author or the film maker and how far he has succeeded in his purpose. This enables the reader or the viewer to get some idea about the merits and demerits of the work without having to actually read the book or see the film.

HOW TO WRITE A GOOD BOOK REVIEW-

Choose a book which might be a contemporary best-seller or a classic. Read it thoroughly . Form a clear idea about the writer's intention and the scope of the work.
Make note of the setting and the period in which the book is set and the readership to which it caters. Get a clear idea about the language used and the style of writing.
Do not write a review on a book which is one of the prescribed texts as this leaves a poor impression on the examiner about your knowledge of literature.

HOW TO WRITE A GOOD FILM REVIEW-

In case of a film review, choose a film with a message or one that is based on a social issue. It might be a contemporary film or an all-time classic. Keep in mind the plot of the film, its backdrop , the characters and how well they have been portrayed by the actors playing them.

A review is highly personal and needs an expression of the reviewer's opinion.
However, keep in mind that your views should not be extreme or hurtful to the sentiments of any group of people. Also, do not give away the complete plot as this will prevent the reader or viewer from enjoying the film or book later.

II. Write a review of a film you have recently seen (in approximately 300 words). Make use of the given points:

Name of the film-plot and characterisation – director – producer – actors- viewership- music- cinematography- insight into some interesting incidents- entertainment quotient- message if any- comparison with other films- similarity or dissimilarity- appeal of the film to you- conclusion.
