

**Class 12**

**Business studies**

**Ch-7 Staff Motivation:**

Q1: What is motivation?

Q2: What is motive?

Q3: What are motivators?

Q4: What are the characteristics of motivation?

Q5: What are the advantages of motivation?

## **Economics**

### **Class 12**

#### **Ch-2 Demand and Law of Demand:**

Q1: What are the exceptions to the law of demand?

Q2: What are giffen goods?

Q3: What is change in quantity demanded?

Q4: What is extension of demand?

Q6: What are contraction of demand?

Q7: What is increase in demand

Q8: What is decrease in demand?

## **Class 12**

### **Ch-2 Fixed capital and working capital:**

Q1: What is a business finance?

Q2: What is the nature of business finance?

Q3: What are the importance of business finance?

Q4: What are the sources of finance for different types of business?

Q5: What is the meaning of business finance?

## **Class 12 (Psychology)**

### **1st Chapter (Intelligence)**

The word intelligence has been derived from the word 'intelligere' & different psychologists have defined it in a different way. Some say that intelligence is a quality other say it is a process. Some say it is inherited some say it is affected by environment. In brief we can say intelligence works as a process from birth to death. Modern psychologists emphasised on social context-adjustment between the influence of inherited traits & environment. Modern view also laid stress on the aspect of cognitive development. There are many theories which attempted to explain the elements of intelligence. Is intelligence a single character or an array of various abilities. This question had been an important topic of debate among many.

#### **Questions:**

- a) Define intelligence.
- b) Discuss 'intelligence- quality or process'?

## **Class12 (pol.sci)-29/4/20Wednesday Class**

### **Chapter: Parliamentary & Presidential Government**

The American Constitution had adopted a Presidential form of governance where the President is the Head of the State as well as Head of the Government. He is not a part of the Congress nor responsible before it. There is separation of powers between the Congress & the President & both enjoy a fixed & stable tenure. The Cabinet is known as Presidential Cabinet & the President acts as the real master of it & the decisions taken by him are to be followed by all the ministers. The Cabinet is responsible to the President & he can remove any ministers at his own will without citing any cause. Political homogeneity is not the rule & the President can appoint anybody of any party as minister if that person is capable or qualified to run that **department or post**.

#### **Question(Long)**

- a) Explain thoroughly the Presidential system of USA.

DREAMLAND SCHOOL

Class: XII

Subject: ART Paper 1

Objects required:

A medium size aluminum kettle, a strainer, few earthen pots.

Arrangement:

Place the aluminum kettle at the back against a suitable back ground. All the other items should be arranged in such a way that they make an interesting composition.

DREAMLAND SCHOOL

Class : XII

Subject : ART Paper : 4

Make a picture composition of five children playing with colours during the festival of HOLI. The backdrop for the painting should be an open verandah where a tub or bucket of coloured water can be seen.

A small child is hiding behind a pillar so as to avoid getting colour on herself, while others can be seen enjoying themselves and applying colour on each other.

DREAMLAND SCHOOL

Class : XII

Subject : ART Paper : 5

Design a cover for a book on mathematics for students. Incorporate the title "MATHEMAGIC" into your design.

Special attention must be given to the calligraphy and presentation

GEOGRAPHY  
CLASS XII  
CHAPTER 6 (part 1)

Natural vegetation includes that part of plant life which grows in wild without human aid and adapts to the constraints of natural environment in size structure and requirements.

**Virgin vegetation:** -The part of the natural vegetation which has remained undistributed distributed by human is called virgin vegetation.

Natural vegetation of a place is influenced by the climate, soil and drainage pattern of the particular area. So we can say that the environment controls the types of natural vegetation of a particular place.

<b>DISTINCTION BETWEEN VEGETATION AND FOREST</b>	
<i>Vegetation</i>	<i>Forest</i>
1. It includes trees, plants and grasses which grow in a particular environment.	1. This term is generally used to denote a large area covered by trees and shrubs.
2. Trees, shrubs, and grasses grow in a given ecological frame.	2. Forests are thick with dense growth of trees.
3. Vegetation provides distinct landscape such as woodland, grassland, etc.	3. Forests provide just one landscape.

<b>DISTINCTION BETWEEN FLORA AND VEGETATION</b>	
<i>Flora</i>	<i>Vegetation</i>
1. It refers to plants of a particular region or period listed by species and considered as a group.	1. It refers to the assemblage of plant species living in association with each other in a given environmental frame.
2. Different flora can be found in different types of environment.	2. Similar plants and trees are found in a given ecological frame.
3. Flora can be put in a category. For example, Indian species brought from Indo-Tibet are known as <i>boreal</i> .	3. It includes trees, plants and grasses in a particular environment. Forests, shrubs and grasslands are examples of vegetation.

### **Classification of vegetation of India:-**

Depending upon the climate, soil, relief and structure Indian forest can be classified into following categories:-

- 1) Tropical Evergreen Forest
- 2) Tropical Deciduous Or Monsoon Forests
- 3) Tropical Dry Forests
- 4) Arid Forests
- 5) Delta Forests
- 6) Mountainous Forest

### **1) Tropical Evergreen Forest:-**

#### **Climatic Conditions:-**

- Annual rainfall is 200-250 cm
- Mean annual temperature varies from 24°C to 27°C
- The relative humidity is about 75 per cent

#### **Characteristics**

- Evergreen: Due to high heat and high humidity, the trees of these forests do not shed their leaves together.
- Lofty: The trees often reach 45 – 60 metres in height.
- Thick Canopy: From the air, the tropical rain forest appears like a thick canopy of foliage, broken only where it is crossed by large rivers or cleared for cultivation.
- All plants struggle upwards for sunlight resulting in a peculiar layer arrangement. The entire morphology looks like a green carpet when viewed from above.
- Less undergrowth: The sun light cannot reach the ground due to thick canopy. The undergrowth is formed mainly of bamboos, ferns, climbers, orchids, etc.

#### **Distribution**

- Western side of the Western Ghats (500 to 1370 metres above sea level).
- Some regions in the Purvanchal hills.
- In the Andaman and Nicobar Islands.
- Assam
- Lower slopes of the Eastern Himalayas
- Odisha and
- Andamans.

The important species of these forests are **mahogany, rubber, bamboos etc.**

#### **Uses:**

Hardwood: many of the trees of these forests is fine-grained, hard and durable. It has high commercial value.

## 2) Tropical Deciduous Or Monsoon Forests

### Climatic Conditions

---

- Annual rainfall 100 to 200 cm.
- Mean annual temperature of about 27°C
- The average annual relative humidity of 60 to 75 per cent.

### Characteristics:-

---

- The trees drop their leaves during the spring and early summer when sufficient moisture is not available.
- They are 30-45 meters tall.

### Distribution

---

- Belt running along the Western Ghats surrounding the belt of evergreen forests.
- A strip along the Shiwalik range including terai and bhabar from 77° E to 88° E.
- Manipur and Mizoram.
- Hills of eastern Madhya Pradesh and Chhattisgarh.
- Chota Nagpur Plateau.
- Most of Odisha.
- Parts of West Bengal and

The important species of these forests are **Sal, teak, shisham, sandalwood etc.**

### Uses:

These trees provide useful wood and are economically very important.

## 3) Tropical Dry Forests

### Climatic Conditions

---

- Annual rainfall 50-100 cm.
- Mean annual temperature of about more than 27°C

### Characteristics:-

---

- Their roots are thick and long so that they can use underground water.
- They have thick bark to avoid undue evaporation.
- They are 6 to 9 meters tall.

### Distribution

---

- These cover large parts of Maharashtra, Andhra Pradesh, Karnataka, Punjab
- Western part of Madhya Pradesh.

- Eastern part of Rajasthan
- Southern part of Uttar Pradesh.

The important species of these forests are **Neem, babul, papal, mango etc.**

---

#### **4) Arid Forests**

##### **Climatic Conditions**

- Annual rainfall less than 50 cm.
- Humidity is less than 50 per cent.
- Mean temperature is 25°-30°C.

##### **Characteristics**

- They have thorns, small leaves with thick bark.
- It has long thick roots which enable them to face dry climate.

##### **Distribution**

- Rajasthan, south-western Punjab, western Haryana and some part of Gujarat.
- Such forests also grow on the leeward side of the Western Ghats covering large areas of Maharashtra, Karnataka, Telangana, Andhra Pradesh and Tamil Nadu.

The important species are neem, babul etc.

Home Assignment 6 (part 1):-

1. Mention any two factors which influence natural vegetation of a place.
  2. Distinguish between Ever-green and Deciduous forest.
  3. What is meant by virgin vegetation?
  4. Where are the main evergreen rain forest found in India.
-



# Commerce Class XII

## Chapter : Management (Part -2)



### 3.6. Management as an art

'Art' refers to the application of skill and knowledge to attain the desired result. Art is concerned with the practical application of theoretical knowledge. The function of art is to accomplish concrete ends. It represents the methods of doing specific things and indicates how an objective is to be achieved. Every art is practical and is concerned with the creation of something.

An art has the following five essential features :

- (i) Practical knowledge ;
- (ii) Personal skill ;
- (iii) Result-oriented approach ;
- (iv) Constructive skill (i.e., creativity) ;
- (v) Regular practice aimed at further improvement.

Now let us see how far management fulfils these requirements to qualify as an art :

- (i) **Practical knowledge** : Art presupposes the existence of theoretical knowledge. Art is concerned with the application of theoretical knowledge. Therefore, every form of art has both theoretical and practical aspects. Management is an art of getting things done through people to accomplish desired results. Management is concerned with putting the available knowledge into practice so as to accomplish predetermined goals.
- (ii) **Personal skill** : Every manager has his own style of working. The taste of management lies in the skillful use of one's technical knowledge to ensure maximum productivity and profitability. The manager has to use his personal skill and knowledge in solving many complicated problems to accomplish desired results. Therefore, management is a practice and performance.

- (iii) **Result-oriented approach** : All managerial activities have to be goal-oriented and result-oriented. Management is concerned with the establishment and accomplishment of some definite goals. Management aims at attaining maximum productivity and profitability at the lowest cost.
- (iv) **Constructive skill (i.e., creativity)** : Art involves practice of basic principles and then infusing creativity to develop own style of doing. Every artist has an element of creativity in him. This requires intelligence and imagination. This is true in management as well. Management is creative in the sense that it is the function of creating situations needed for further improvement.
- (v) **Regular practice aimed at further improvement** : Practice makes a man perfect. Art involves practice of basic principles. Getting work done through people is an art of management. This objective is attained through regular practice. An efficient manager can convert a challenge into an opportunity as he regularly practices the art of decision-making and leadership.



### **3.7. Management as a science**

Science is a systematised body of knowledge, which can be acquired through observations and experimentation. The basis of science is to search for information by means of determining the cause-effect relationship through observations and experimentation.

The essential features of science are as follows :

- (i) Systematised body of knowledge ;
- (ii) Continued observations ;
- (iii) Universal validity of principles ;
- (iv) Principles based on experiments.

Now let us see how far management fulfils these requirements to qualify as a science.

- (i) **Systematised body of knowledge** : Science is a systematised body of knowledge which is based on a cause-effect relationship. Management is viewed as a science as it is also a systematised body of knowledge built up by management practitioners and experts over a period of time. The principles of management make use of scientific methods for observations.
- (ii) **Continued observations** : Science uses the scientific methods of observations which are unbiased and objective. The knowledge of management has been acquired through continuous efforts of many experts and practitioners over a period of years. The methods of observations followed by management are not completely objective, since management deals with human beings whose behaviour cannot be predicted.
- (iii) **Universal validity of principles** : Scientific principles represent basic truths. These principles have universal validity and application. The principles of management can also be verified for their validity. Principles of management are evolved on the basis of repeated experimentation in various types of organisations. The fundamental principles of management are universally applicable. But other principles have no universal applicability under all situations.

(iv) **Principles based on experiments** : Scientific principles are first developed through observations and then tested by repeated experimentation. These principles establish a cause and effect relationship between various factors. When applied to management, the principles of management also establish a cause and effect relationship (e.g., faulty planning causes low productivity, etc.).

Thus, management being a social science deals with people and their behaviours. Human behaviour cannot be subjected to laboratory experiments as is possible in natural sciences. Management is not an exact (or accurate) science. The principles of management cannot be considered as fundamental truths. Therefore, management may be regarded as an inexact science, as its principles do not always have universal application.



### **3.8. Management — a science as well as an art**

Management can be regarded as both science and art because it combines the features of both of them. In fact, science and art are not mutually exclusive but complimentary to each other. Science without art is a waste, and art without science, is misleading. Only the right mixture of the two can make each other complete. Therefore, science and art of management must go hand in hand.



### **3.9. Meaning of profession**

Profession is a specialized occupation. Profession involves rendering of personalized services by the use of specialized knowledge. Services rendered by doctors, lawyers, chartered accountants, tax consultants, engineers, etc., come under this category. A professional renders specialized service to the general public. This service is based on professional education, knowledge, training and experience. The activities of professionals are in the nature of intellectual exercise. The service offered by a professional cannot be substituted by another person in the same profession because it involves intellectual exercise. The quality of service offered by different professionals varies from one individual to another.

Professions are studied in specialized institutions and practiced in the real life situations. Any activity recognized as a profession is regulated by a professional association (body). A professional must possess *membership* and *certificate of practice* from the professional association that enforces the code of conduct for its members.

Prominent professional associations (bodies) in India are :

<b>Profession</b>	<b>Professional Association</b>
● Accounting profession	The Institute of Chartered Accountants of India
● Legal profession	Bar Council of India
● Medical profession	Medical Council of India
● Engineering profession	The Institute of Engineers (India)
● Company secretary	The Institute of Company Secretaries of India

A profession is called an economic activity only when the service is rendered for some remuneration. Professionals charge fees from their clients for the services rendered to them. When a profession is practiced for pleasure alone, it would be a hobby.



### 3.9.1. Features (characteristics) of profession

The basic features of a profession are as follows :

- (i) **Specialized body of knowledge** : A profession is a specialized body of knowledge related to a particular field. Professionals should have specialized knowledge, technical skill and experience. They possess special abilities and aptitudes for the work due to their specialized education.
- (ii) **Formal education and training** : One must possess relevant professional degree (e.g., M.B.B.S.; C.A.; LL.B.; etc.) to pursue a profession. Training in the profession is available in specialized institutions. Formal education and training are imparted by professional institutions. Such institutions assist in the technical advancement of professional knowledge and ensure discipline among members.
- (iii) **Code of conduct** : Professionals are to keep any material information regarding their work a secret. Members of a profession are bound to follow the code of conduct prescribed by their respective association. Every member of a professional association is obliged to follow its code of conduct.
- (iv) **Honesty and morality** : A professional must possess the qualities of honesty, integrity, morality and hard work. An efficient professional renders valuable service to the society.
- (v) **Service motive** : Professionals are respected in the society because of their service motive and dedication to jobs. They give top priority to provide services to their clients at reasonable fees. They try to maintain high status of their professions by rendering quality services.
- (vi) **Professional association** : The existence of a recognized professional association is a must for the development of any profession (like Bar Council of India for lawyers; Medical Council of India for doctors, etc.). The membership to a professional body is compulsory in order to practice a profession.



### 3.9.2. Management as a profession

Although management does not possess all the essential attributes of a profession, it is no doubt emerging as a profession. Management of today is becoming creative rather than adaptive. It is conscious of its ethical and social responsibilities. Now management is moving in the direction of a profession.



### 3.10. Levels of management

On the basis of authority and responsibility, we can identify three levels of management in the organisational hierarchy, namely,

- (i) Top level management ;
  - (ii) Middle level management ; and
  - (iii) Lower level management.
- (i) **Top level management** : This level consists of the Board of Directors, the chief executive (i.e., Managing Director) and the General Manager. The main functions of top level management include the following :
- (a) To establish overall long-term goals ;
  - (b) To set the ways of attaining these goals ;

- (c) To frame policies and make plans to achieve these objectives ;
  - (d) To set up an organisational framework ;
  - (e) To lay down guidelines for the departmental heads ;
  - (f) To assemble the resources (men, materials, machines, money, methods, etc.) ;
  - (g) To provide overall leadership ;
  - (h) To review the work of executives and evaluate their performance ;
  - (i) To exercise effective control on various activities ;
  - (j) To relate the organisation to the external environment.
- (ii) **Middle level management** : It consists of various functional managers (such as, production manager, purchase manager, marketing manager, public relation officer, research and development officer, etc.). The main functions of middle level management include the following :
- (a) To establish a link between top management and lower management ;
  - (b) To transmit orders, suggestions, policy decisions and detailed instructions downward ;
  - (c) To carry the problems and suggestions upward ;
  - (d) To achieve co-ordination between the different parts of the organisation ;
  - (e) To build up an efficient staff where reward is given according to capacity and merit ;
  - (f) To inspire operating managers towards better performance ;
  - (g) To motivate employees to achieve higher productivity ;
  - (h) To collect reports on performance to be intimated to the top management.
- (iii) **Lower level management** : This consists of superintendent, supervisors and foremen who are in direct touch with the rank and file of workers. It is also called 'operating management'. The main functions of lower level management include the following :
- (a) To assign jobs and tasks to subordinates ;
  - (b) To arrange materials, machinery and tools ;
  - (c) To assist the subordinates by explaining the procedures of work ;
  - (d) To ensure the work of requisite quantity and quality ;
  - (e) To supervise the work of operatives ;
  - (f) To report the problems faced by workers to the middle level management.



### **3.11. Scope (or branches) of management**

Management includes the following aspects :

- (1) **Subject matter of management** : It consists of various management functions, such as, (i) Planning, ; (ii) Organising ; (iii) Directing ; (iv) Staffing ; (v) Co-ordinating ; (vi) Motivating ; (vii) Controlling ; etc.
- (2) **Functional areas of management** : It includes functional areas, such as, (i) Production management ; (ii) Marketing management ; (iii) Financial management ; (iv) Personnel management ; (v) Office management ; (vi) Purchasing management, etc.

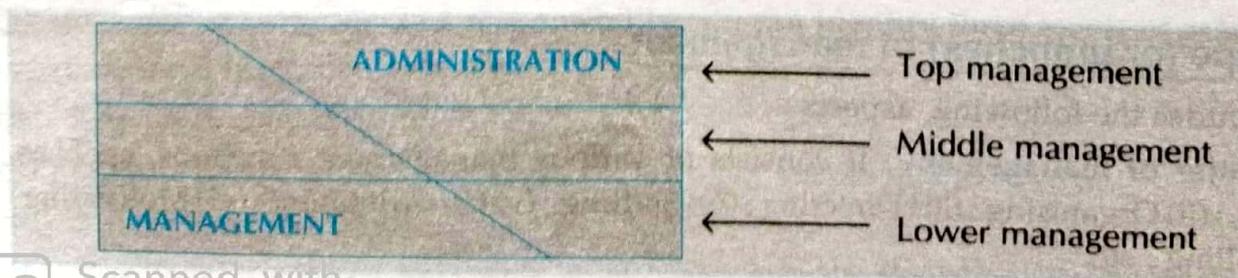
- (i) **Production management** : It relates to production planning, quality control, inspection, production control techniques, research and development, value analysis, etc.
- (ii) **Marketing management** : It relates to the marketing of goods and services, price determination, channels of distribution, sales-promotion, sales-mix determination, after-sale service, market research, etc.
- (iii) **Financial management** : It relates to the procurement and utilisation of funds for business purposes.
- (iv) **Personnel management** : It deals with the effective control and use of manpower and relates to the procurement, utilisation and development of human resources involved in an enterprise.
- (v) **Office management** : It relates to office lay-out, staffing, equipment of office, etc. It is the technique of planning, co-ordinating and controlling office activities with a view to achieving common business objectives.
- (vi) **Purchasing management** : It relates to purchasing of raw materials, maintenance of records, materials control, issuing materials to the departments, etc.

### 3.12. Administration and management

'Management' and 'Administration' are absolutely controversial words and their intensive study is, therefore, necessary. According to American concept, the scope of administration is wider than management. According to British concept, the scope of management is wider than administration. According to modern concept, management and administration are synonymous. On the basis of modern concept, there cannot be any clear cut demarcation between the managerial and administrative functions. Managers have to perform both the functions simultaneously at different levels in the organisational hierarchy.

Administration is a thinking function of the top level management. It sets objectives which management strives to realise. It lays down policies under which management operates. It helps in deciding the field of operation of business activities.

The element of administration increases as one progresses to higher ranks (or positions) and the element of management increases as one proceeds to the lower ranks. This may be observed from the following diagram.



## Distinctions between administration and management

<i>Serial number</i>	<i>Basis of distinction</i>	<i>Administration</i>	<i>Management</i>
1.	<b>Meaning</b>	It means determination of objectives, targets and policies of an enterprise.	It means creating the internal environment towards the attainment of goals of enterprise.
2.	<b>Nature of work</b>	It is a decision-making function.	It is an executive function.
3.	<b>Level of authority</b>	It is concerned with top level of management.	It is concerned with middle and lower levels of management.
4.	<b>Scope</b>	It is a wider term than management.	It takes decisions within the framework set up by the administration.
5.	<b>Relative importance</b>	The element of administration increases as one progresses to higher levels of management.	The element of management increases as one descends to lower levels of management.
6.	<b>Use of the term</b>	It is generally used in non-business institutions.	It is generally used in business enterprises.
7.	<b>Factors influencing decision-making</b>	Its decisions are influenced by external factors.	Its decisions are influenced by internal factors.
8.	<b>Determination of limits</b>	It determines those limits within which management has to function.	It functions within the limits determined by the administration.

Home assignment :

1. Management is both a science and an art. Explain.
2. Discuss the different levels of management in a business enterprise.
3. What is a profession ? Is management a profession ? Why ?

**CLASS 12**  
**COMPUTER SCIENCE**  
**COMPUTER HARDWARE**  
**LOGIC GATES**

The basic digital electronic circuit that has one or more inputs and single output is known as Logic gate. Hence, the Logic gates are the building blocks of any digital system. We send information through computers using wires that represent 1s and 0s. Computers need a way to manipulate those 1s and 0s, so that they can eventually do more complicated operations. Computer use logic gates to transform the 1s and 0s from input wires. A logic gate accepts inputs and then outputs a result based on their state.

We can classify these Logic gates into the following three categories.

- Basic gates
- Universal gates
- Special gates

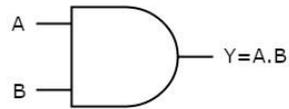
**Basic Gates**

we have already learnt that the Boolean functions can be represented either in sum of products form or in product of sums form based on the requirement. So, we can implement these Boolean functions by using basic gates. The basic gates are AND, OR & NOT gates.

**AND gate**

An AND gate is a digital circuit that has two or more inputs and produces an output, which is the logical AND of all those inputs. It is represented by the symbol ‘.’

Logic diagram



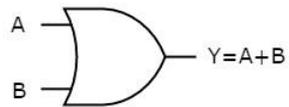
### Truth Table

Inputs		Output
A	B	AB
0	0	0
0	1	0
1	0	0
1	1	1

### OR gate

An OR gate is a digital circuit that has two or more inputs and produces an output, which is the logical OR of all those inputs. This logical OR is represented with the symbol '+’.

### Logic diagram



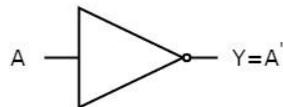
### Truth Table

Inputs		Output
A	B	A + B
0	0	0
0	1	1
1	0	1
1	1	1

## NOT gate

A NOT gate is a digital circuit that has single input and single output. The output of NOT gate is the logical inversion of input. Hence, the NOT gate is also called as inverter.

Logic diagram



Truth Table

Inputs	Output
A	B
0	1
1	0

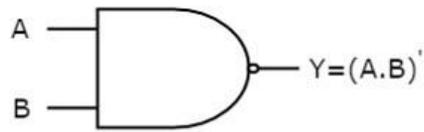
## Universal gates

NAND & NOR gates are called as universal gates. Because we can implement any Boolean function, which is in sum of products form by using NAND gates alone. Similarly, we can implement any Boolean function, which is in product of sums form by using NOR gates alone.

## NAND gate

NAND gate is a digital circuit that has two or more inputs and produces an output, which is the inversion of logical AND of all those inputs.

Logic diagram



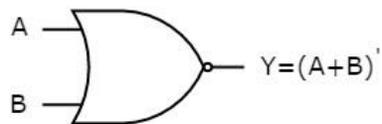
Truth Table

Inputs		Output
A	B	$\overline{AB}$
0	0	1
0	1	1
1	0	1
1	1	0

**NOR gate**

NOR gate is a digital circuit that has two or more inputs and produces an output, which is the inversion of logical OR of all those inputs.

Logic diagram



Truth Table

Inputs		Output
A	B	$\overline{A+B}$
0	0	1
0	1	0
1	0	0
1	1	0

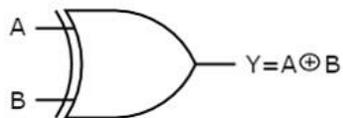
## Special Gates

Ex-OR & Ex-NOR gates are called as special gates. Because, these two gates are special cases of OR & NOR gates.

### Ex-OR gate

The full form of Ex-OR gate is Exclusive-OR gate. Its function is same as that of OR gate except for some cases, when the inputs having even number of ones.

Logic diagram



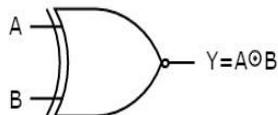
Truth Table

Inputs		Output
A	B	A ⊕ B
0	0	0
0	1	1
1	0	1
1	1	0

### Ex-NOR gate

The full form of Ex-NOR gate is Exclusive-NOR gate. Its function is same as that of NOR gate except for some cases, when the inputs having even number of ones.

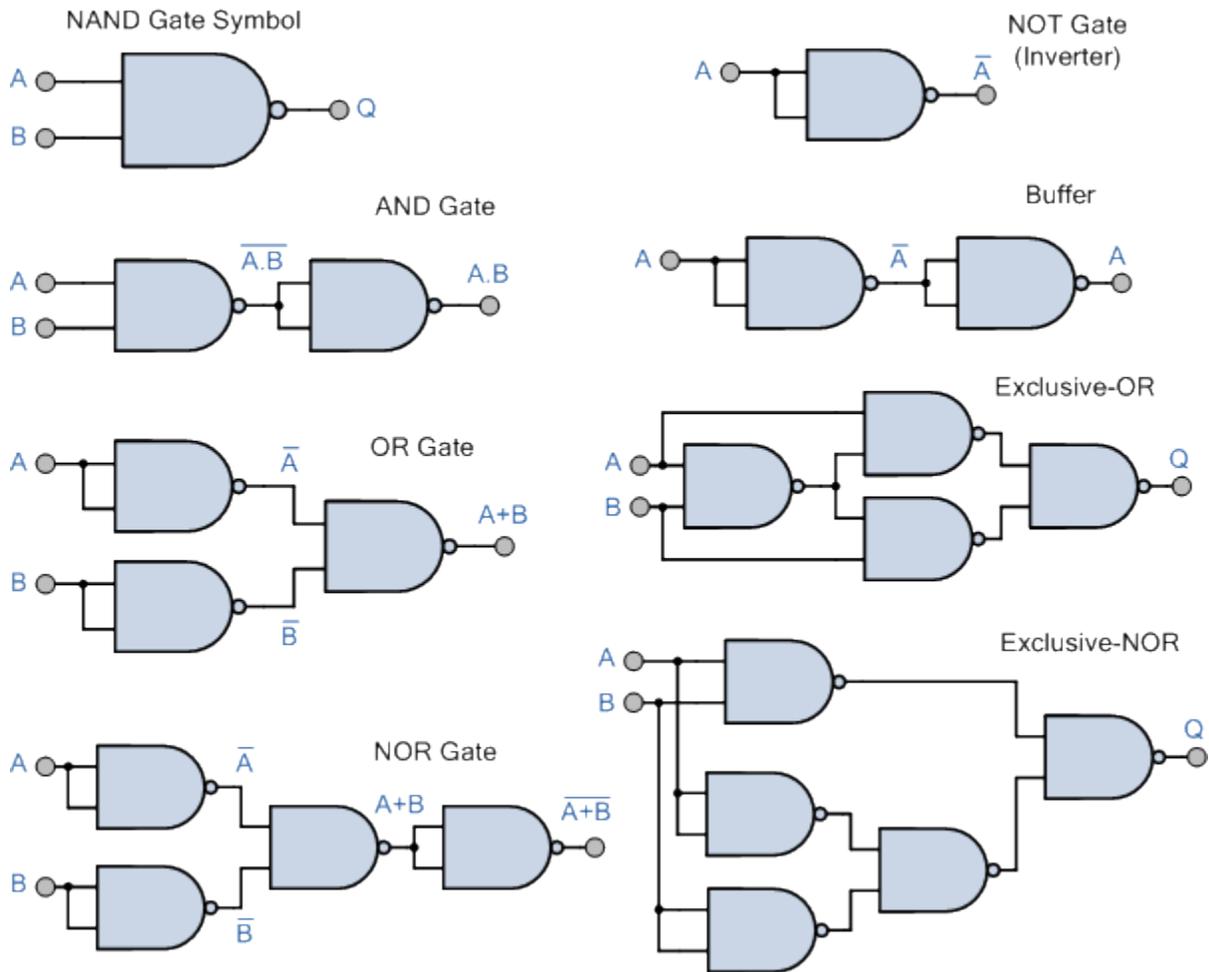
Logic diagram



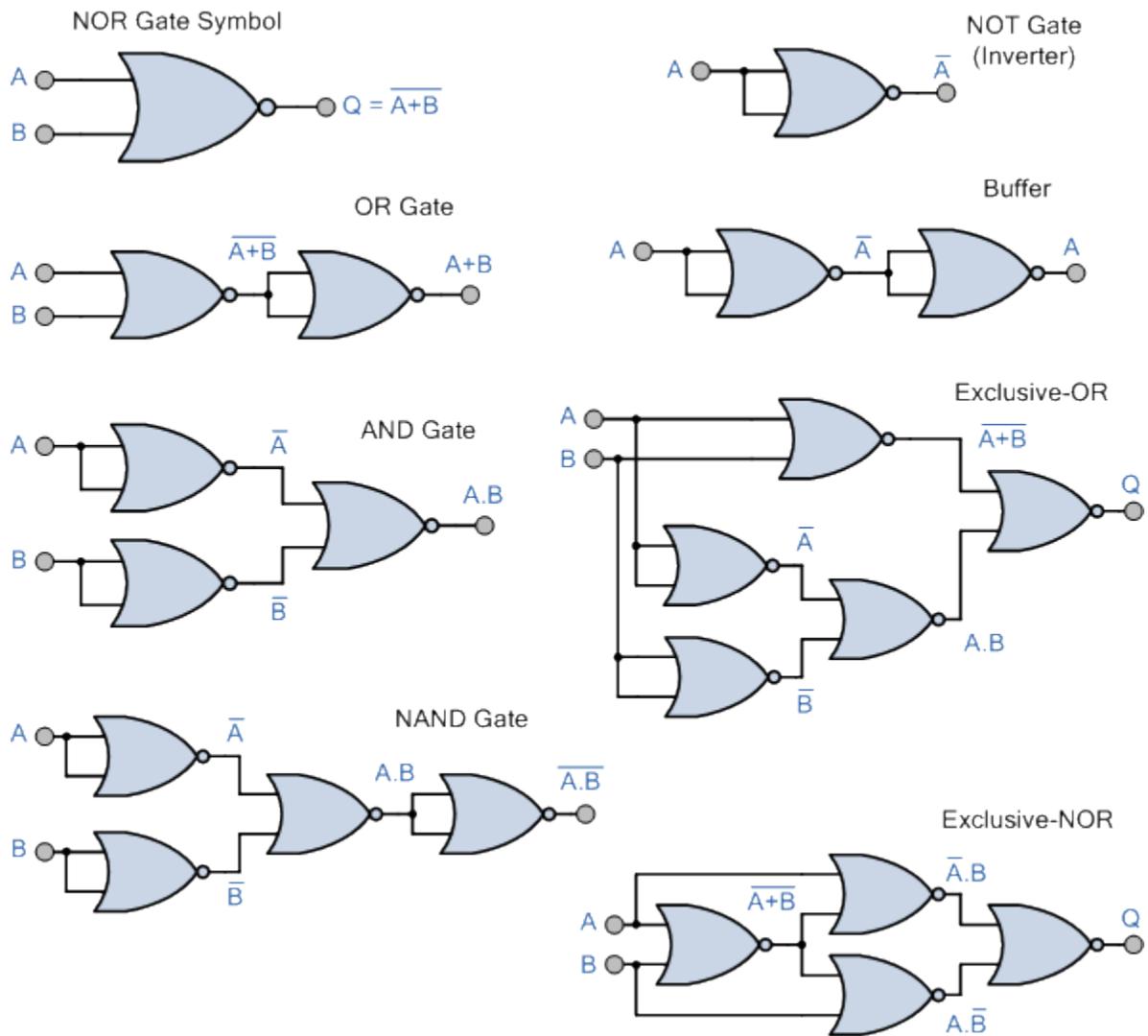
A	B	$Y = A \odot B$
0	0	1
0	1	0
1	0	0
1	1	1

Truth Table

### Logic Gates using only NAND Gates

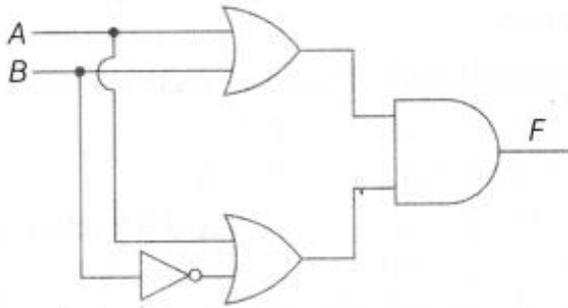


## Logic Gates using only NOR Gates



## ASSIGNMENT IV (PART – 1)

1. Which gates are called Universal gates and why?
2. Draw a logic circuit diagram for the boolean expression  $A.(B + \bar{C})$ .
3. Draw a logic circuit diagram for the following boolean expression  $\bar{X}.(\bar{Y} + Z)$
4. Write the equivalent boolean expression for the following logic circuit:



5. Draw AND gate using NAND gate.

# Assignment - 8

Class - XI Maths

## Continuity

If a function whose right hand limit, left hand limit and functional value are equal then the function is continuous on that point.

$$\text{If } \lim_{x \rightarrow a^+} f(x) = \lim_{x \rightarrow a^-} f(x) = f(a)$$

Then  $f(x)$  is continuous on 'a' point.

Ex 1. Prove that  $f(x)$  is continuous or not at  $x=1$ , where

$$f(x) = \begin{cases} \frac{|x-1|}{x-1}, & x \neq 1 \\ 0, & x = 1 \end{cases}$$

Ans

$$f(x) = \begin{cases} \frac{(x-1)}{(x-1)}, & x > 1 \\ \frac{-(x-1)}{(x-1)}, & x < 1 \\ 0, & x = 1 \end{cases}$$

L.H.L  $\lim_{x \rightarrow 1^-} f(x) = \lim_{x \rightarrow 1^-} \frac{-(x-1)}{(x-1)} = -1$

R.H.L  $\lim_{x \rightarrow 1^+} f(x) = \lim_{x \rightarrow 1^+} \frac{(x-1)}{(x-1)} = 1$

$f(1) = 0$   
Hence  $f(x)$  is not continuous at  $x=1$ .  
proved

Ex 2 If  $f(x) = \begin{cases} 2x^2 - 8 & , x \neq 2 \\ k & , x = 2 \end{cases}$

$f(x)$  is continuous at  $x = 2$ . Then find the value of  $k$ .

Ans  $\lim_{x \rightarrow 2} \frac{(2x^2 - 8)}{(x-2)} = \lim_{x \rightarrow 2} \frac{2(x^2 - 2^2)}{(x-2)}$

$= \lim_{x \rightarrow 2} \frac{2(x-2)(x+2)}{(x-2)} = 2(2+2) = 8.$

If  $f(x)$  is continuous then  $\lim_{x \rightarrow 2} f(x) = f(2)$ .

Hence  $8 = k$ .

Ex 3 prove that  $f(x) = \begin{cases} x \cos \frac{1}{x} & , x \neq 0 \\ 0 & , x = 0 \end{cases}$

is continuous at  $x = 0$ .

Ans  $|\cos \frac{1}{x}| \leq 1$ . (we know)

now  $|x \cos \frac{1}{x}| \leq x$

$\lim_{x \rightarrow 0} f(x) = \lim_{x \rightarrow 0} |x \cos \frac{1}{x}| \leq \lim_{x \rightarrow 0} |x| = 0$

$\lim_{x \rightarrow 0} f(x) = 0$ ,  $f(0) = 0$  (given)

$\lim_{x \rightarrow 0} f(x) = f(0)$ ,

Hence  $f(x)$  is continuous at  $x = 0$ .

Proved

H.W  
① Prove that  $f(x)$  is continuous or not at  $x=0$ .

$$\text{If } f(x) = \begin{cases} \frac{|x|}{x}, & x \neq 0 \\ 0, & x = 0 \end{cases}$$

② If  $f(x) = \begin{cases} 2x+1, & x < 2 \\ k, & x = 2 \\ 3x-1, & x > 2 \end{cases}$

Then  $f(x)$  is continuous at  $x=2$ .  
Now find the value of  $k$ .

③ Prove that  $f(x)$  is continuous or not if  $f(x) = \begin{cases} x^2 \sin \frac{1}{x}, & x \neq 0 \\ 0, & x = 0 \end{cases}$  at  $x=0$ .

④ If  $f(x) = \begin{cases} ax+1, & x \leq 3 \\ bx+3, & x > 3 \end{cases}$

and  $f(x)$  is continuous at  $x=3$ .  
Then find the value of  $a$  and  $b$ .

⑤  $f(x) = \begin{cases} \frac{1 - \cos x}{2x^2}, & x \neq 0 \\ k, & x = 0 \end{cases}$

is continuous at  $x=0$ , then find the value of  $k$ .

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

DATE – 29/04/2020

**CHAPTER – HUMAN REPRODUCTION**

**EXPLANATION**

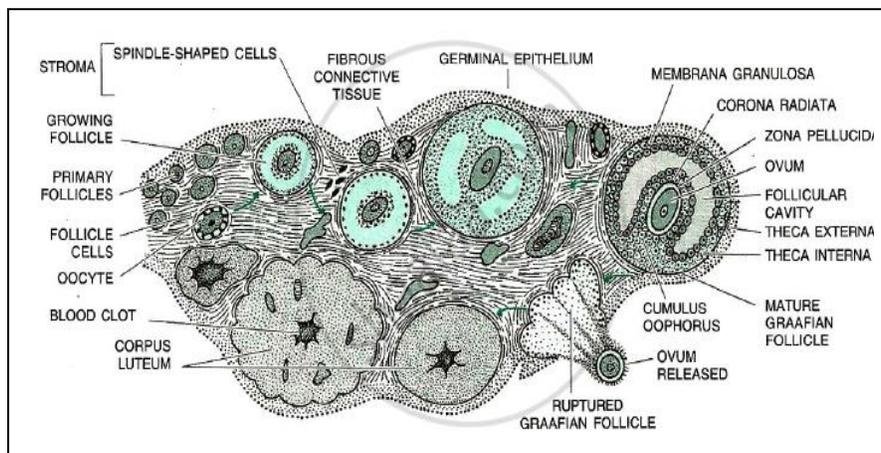
**FEMALE REPRODUCTIVE SYSTEM**

The human female reproductive system consist of two ovaries, fallopian tube, uterus, cervix, vagina ,accessory genital gland & mammary gland.

Each ovary is attached to the uterus by a double fold of peritoneum called ovarian ligament.

**OVARY**

- The ovaries are the female gonads. Each ovary is located alongside the lateral wall of the uterus in a region called the ovarian fossa.
- These are connected to the uterus by the fallopian tubes. It is covered by a layer of germinal epithelium, followed by visceral peritoneum.
- During embryonic life, the cells of the germinal epithelium proliferate thousands of primordial follicles.
- The stroma consist of outer cortical stroma & inner medullary stroma.
- The cortex contains thousands of tiny undeveloped ovarian follicles.
- Medulla contains only blood vessels and nerve fibres.
- A fully mature ovarian follicle is called a Graafian follicle. It has an outer multilayered membrana granulosa formed of 2 - 3 layers of follicle cells. The oocyte is surrounded by a vitelline membrane, zona radiata and corona radiata. The oocyte is attached to the membrana granulosa by a group of cells called discus proligerus. The graafian follicle has a follicular cavity or antrum filled with a colourless follicular fluid.
- In human female, at around 28 days, one graafian follicle matures and ruptures and thereby releasing an ovum.
- After the ovum is released, it becomes the corpus luteum. It serves as a temporary endocrine gland by releasing female sex hormones namely progesterone and estrogen.
- It then becomes corpus albicans and disappear.

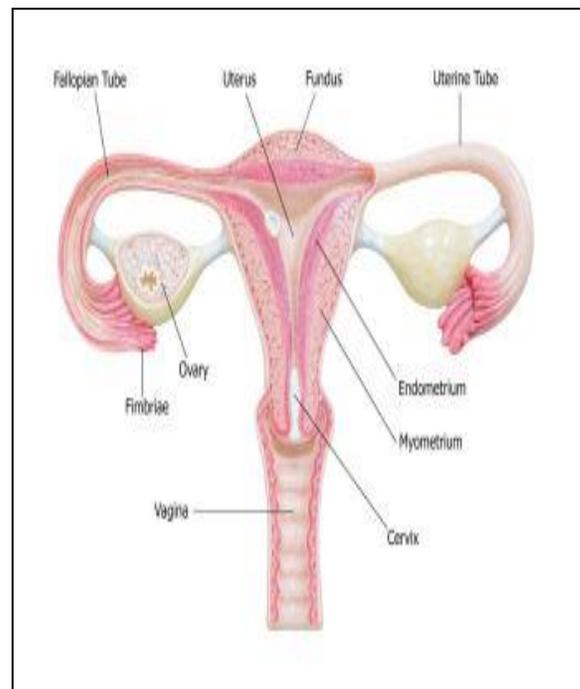
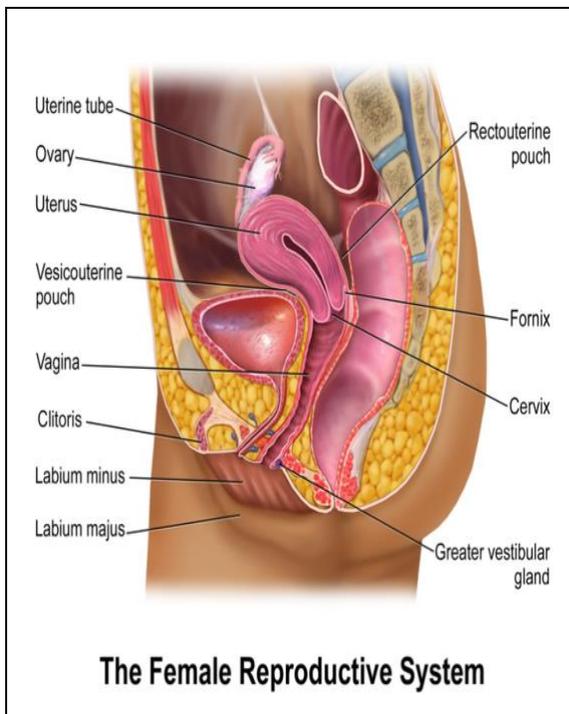


T.S OF HUMAN OVARY

## DUCT SYSTEM

### FALLOPIAN TUBE

- At the upper corners of the uterus are the fallopian tubes.
- There are two fallopian tubes, also called the uterine tubes or the oviducts.
- Each fallopian tube attaches to a side of the uterus and connects to an ovary. They are positioned between the ligaments that support the uterus.
- At the other end of each fallopian tube is a fringed area that looks like a funnel. This fringed area, called the infundibulum, lies close to the ovary, but is not attached.
- The ovaries alternately release an egg. When an ovary does ovulate, or release an egg, it is swept into the lumen of the fallopian tube by the fimbriae.
- Once the egg is in the fallopian tube, tiny hairs in the tube's lining help push it down the narrow passageway toward the uterus. The oocyte, or developing egg cell, takes four to five days to travel down the length of the fallopian tube.



### UTERUS

- The uterus is shaped like an upside-down pear, with a thick lining and muscular walls. Located near the floor of the pelvic cavity, it is hollow to allow a blastocyte, or fertilized egg, to implant and grow.
- The uterus is only about three inches long and two inches wide, but during pregnancy it changes rapidly and dramatically. The top rim of the uterus is called the fundus
- Its upper broad part is called body & the narrower lower part is called cervix.
- The thick uterine wall has three layers- inner endometrium, middle myometrium & outer parietal peritoneum

### CERVIX

The cervix (from Latin "neck") is the lower, narrow portion of the uterus where it joins with the top end of the vagina.

During menstruation, the cervix stretches open slightly to allow the endometrium to be shed. This stretching is believed to be part of the cramping pain that many women experience.

## VAGINA

- The vagina is a muscular, hollow tube that extends from the vaginal opening to the cervix of the uterus. It is situated between the urinary bladder and the rectum. It is about three to five inches long in a grown woman.
- The muscular walls are lined with mucous membranes, which keep it protected and moist.
- A thin sheet of tissue with one or more holes in it, called the **hymen**, partially covers the opening of the vagina.
- The vagina is made up of three layers, an inner mucosal layer, a middle muscularis layer, and an outer fibrous layer.
- The vaginal rugae has glands that secrete an acidic mucus (pH of around 4.0.) that keeps bacterial growth down. The outer muscular layer is especially important with delivery of a fetus and placenta.

From ovary to vagina composes the internal genitals.

## **EXTERNAL GENITALS**

### VULVA

The external female genitalia is referred to as vulva. It consists of the labia majora and labia minora (while these names translate as "large" and "small" lips, often the "minora" can protrude outside the "majora"), mons pubis, clitoris, opening of the urethra (meatus), vaginal vestibule, vestibular bulbs, vestibular glands

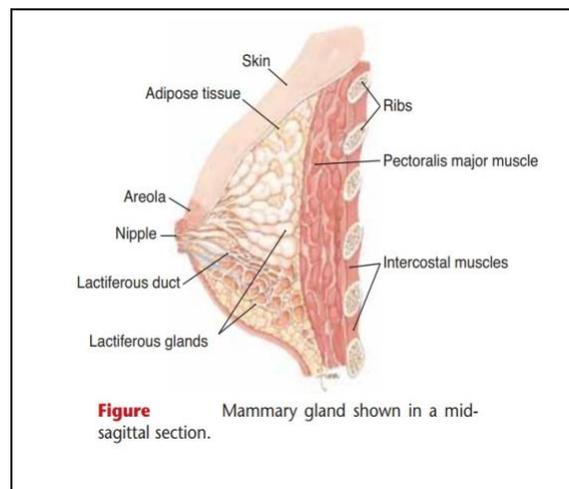
- The **mons veneris**, Latin for "mound of Venus" (Roman Goddess of love) is the soft mound at the front of the vulva (fatty tissue covering the pubic bone). It is also referred to as **the mons pubis**. The mons veneris protects the pubic bone.
- The **labia majora** are the outer "lips" of the vulva. They are pads of loose connective and adipose tissue, as well as some smooth muscle. The labia majora wrap around the vulva from the mons pubis to the perineum.
- a. The **labia minora** are the inner lips of the vulva. They are thin stretches of tissue within the labia majora that fold and protect the vagina, urethra, and clitoris.
- The **clitoris**, visible as the small white oval between the top of the labia minora and the clitoral hood, is a small body of spongy tissue
- The opening to the **urethra** is just below the clitoris. Although it is not related to sex or reproduction, it is included in the vulva. The urethra is actually used for the passage of urine. The urethra is connected to the bladder.
- The **hymen** is a thin fold of mucous membrane that separates the lumen of the vagina from the urethral sinus. Sometimes it may partially cover the vaginal orifice. The hymen is usually perforated during later fetal development.
- The **perineum** is the short stretch of skin starting at the bottom of the vulva and extending to the anus. It is a diamond shaped area between the symphysis pubis and the coccyx. This area forms the floor of the pelvis and contains the external sex organs and the anal opening.
- Urethra & vagina open by separate apertures the urethral orifice & vaginal orifice.

## BARTHOLIN'S GLAND OR VESTIBULAR GLAND

The **Bartholin's glands** (also called **Bartholin glands** or **greater vestibular glands**) are two pea sized compound alveolar glands<sup>[2]</sup> located slightly posterior and to the left and right of the opening of the vagina. They secrete mucus to lubricate the vagina and are homologous to bulbourethral glands in males. However, while Bartholin's glands are located in the superficial perineal pouch in females, Their duct length is 1.5 to 2.0 cm and they open into navicular fossa.<sup>[2]</sup> The ducts are paired and they open on the surface of the vulva.

## MAMMARY GLAND

- Mammary glands are the organs that produce milk for the sustenance of a baby. These exocrine glands are enlarged and modified sweat glands.
- The basic components of the mammary gland are the **alveoli**.
- These alveoli join up to form groups known as **lobules**, and each lobule has a lactiferous duct that drains into openings in the nipple. The myoepithelial cells can contract, similar to muscle cells, and thereby push the milk from the alveoli through the lactiferous ducts towards the **nipple**, where it collects in widenings (**sinuses**) of the ducts.
- The development of mammary glands is controlled by hormones. The mammary glands exist in both sexes, but they are rudimentary until puberty when - in response to ovarian hormones - they begin to develop in the female.
- Estrogen promotes formation, while testosterone inhibits it.
- At the time of birth, the baby has lactiferous ducts but no alveoli. Little branching occurs before puberty when ovarian estrogens stimulate branching differentiation of the ducts into spherical masses of cells that will become alveoli.
- True secretory alveoli only develop in pregnancy, where rising levels of estrogen and progesterone cause further branching and differentiation of the duct cells, together with an increase in adipose tissue and a richer blood flow.
- Colostrum is secreted in late pregnancy and for the first few days after giving birth. True milk secretion (lactation) begins a few days later due to a reduction in circulating progesterone and the presence of the hormone prolactin.
- The suckling of the baby causes the release of the hormone oxytocin which stimulates contraction of the myoepithelial cells.
- The cells of mammary glands can easily be induced to grow and multiply by hormones. If this growth runs out of control, cancer results. Almost all instances of breast cancer originate in the lobules or ducts of the mammary glands lined with milk-secreting epithelial cells and surrounded by myoepithelial cells.



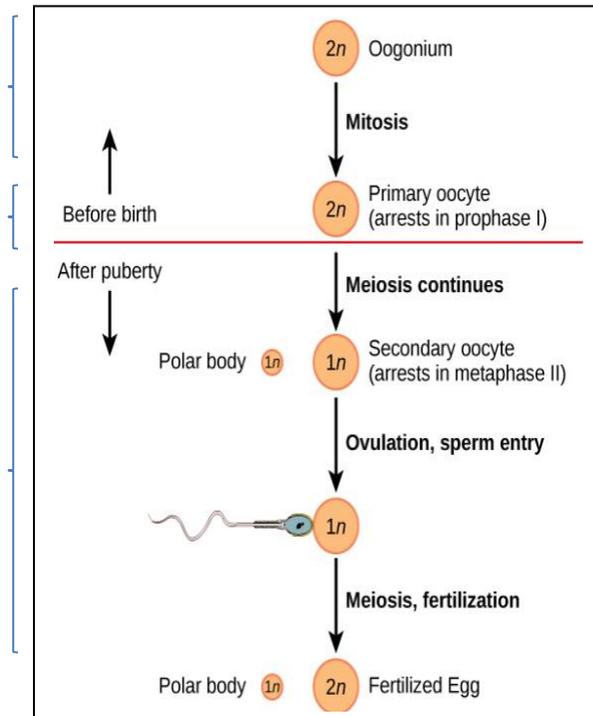
## OOGENESIS

Oogenesis occurs in the outermost layers of the ovaries.

Multiplication phase

Growth phase

Maturation phase



### **MULTIPLICATION PHASE**

- As with sperm production, oogenesis starts with a germ cell, called an **oogonium** (plural: oogonia), but this cell undergoes mitosis to increase in number, eventually resulting in up to one to two million cells in the embryo.
- The cell starting meiosis is called a primary oocyte.

### **GROWTH PHASE**

- The primary oocyte increases in size
- Increase in number of mitochondria
- Synthesis of yolk
- Formation of thin vitelline membrane around the oocyte
- Increased activity of golgi complex.
- Gene amplification

### **MATURATION PHASE**

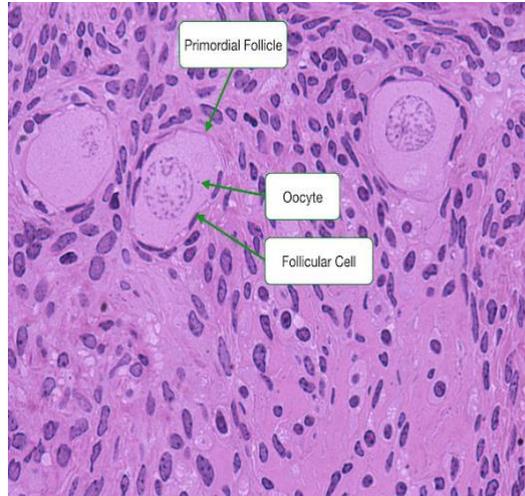
- This cell will begin the first meiotic division, but be arrested in its progress in the first prophase stage. At the time of birth, all future eggs are in the prophase stage.
- At adolescence, anterior pituitary hormones cause the development of a number of follicles in an ovary. This results in the primary oocyte finishing the first meiotic division.
- The cell divides unequally, with most of the cellular material and organelles going to one cell, called a secondary oocyte, and only one set of chromosomes (haploid) and a small amount of cytoplasm going to the other cell.
- This second cell is called a polar body and usually dies.
- A secondary meiotic arrest occurs, this time at the metaphase II stage. At ovulation, this secondary oocyte will be released and travel toward the uterus through the oviduct.

- If the secondary oocyte is fertilized, the cell continues through the meiosis II, completing meiosis, producing a second polar body and a fertilized egg containing all 46 chromosomes of a human being, half of them coming from the sperm.

## MATURATION OF GRAFFIAN FOLLICLE FROM PRIMARY OOCYTE

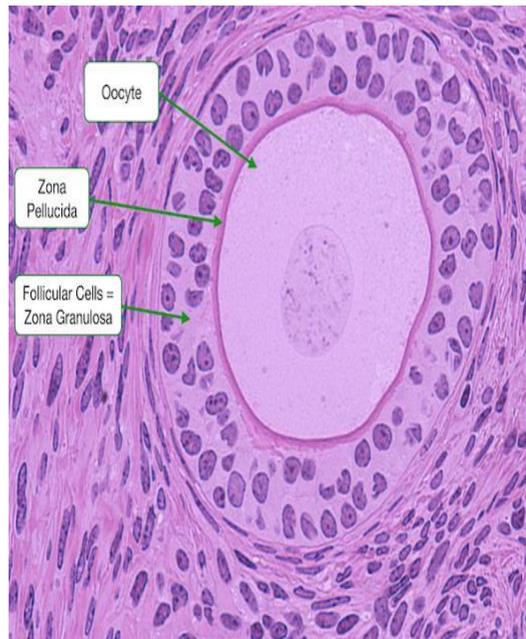
### Primordial Follicle

An ovarian follicle progresses through several distinct phases before it releases its ovum. During the first five months of development, a finite number of primordial follicles form in the fetal ovary. These follicles consist of oocytes surrounded by a single layer of squamous follicular cells. These primordial follicles remain in the process of the first meiotic division. At puberty, they begin to develop further and become primary follicles.



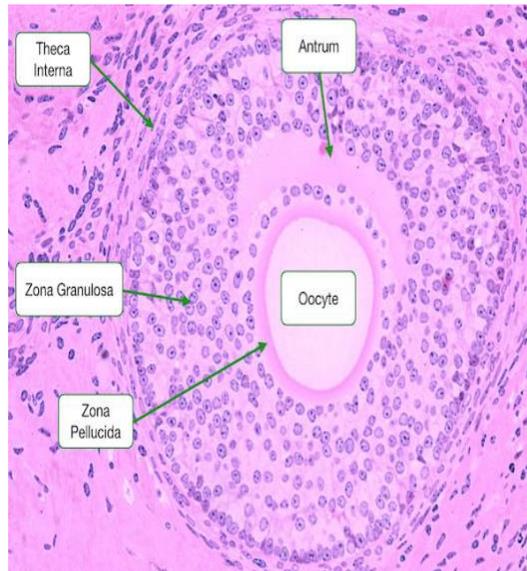
### Primary follicle

The first apparent histological stage is the primary follicle that consists of a central oocyte surrounded by a single layer of follicular cells which have become cuboidal. The zona pellucida is a thin band of glycoproteins that separates the oocyte and follicular cells. Proteins on the surface of sperm will bind to specific glycoproteins in the zona pellucida. After that the follicular cells proliferate into a stratified epithelium known as the zona granulosa. The zona pellucida enlarges



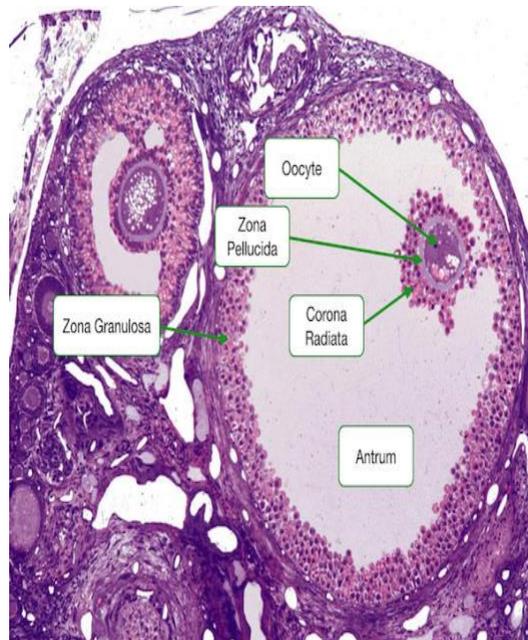
## Secondary Follicle

The characteristic feature that distinguishes secondary from primary follicles is the appearance of a follicular antrum within the granulosa layer. The antrum contains fluid which is rich in hyaluronan and proteoglycans. Note the increase in cell layers of the zone granulosa, the thicker zone pellucida, and larger oocyte. At this stage, a layer of cells outside the follicle become evident. These cells compose the theca interna and contribute to the production of estrogens.



## Graafian Follicle

The Graafian follicle is the stage after the first meiotic division has completed but before ovulation. The oocyte is now a 2N haploid. The follicle is characterized by a large follicular antrum that makes up most of the follicle. The secondary oocyte, having undergone the first meiotic division, is located eccentrically. It is surrounded by the zona pellucida and a layer of several cells known as the corona radiata. When released from the Graafian follicle and into the oviduct, the ovum will consist of three structures: oocyte, zona pellucida and corona radiata.



## ASSIGNMENT 3 ( BIOLOGY COPY 1 )

- 1) Explain the maturation phase of oogenesis with the changes occurring in the secondary follicle and graffian follicle.
- 2) What are Bartholin's gland? State its location & function.
- 3) Explain the structure of fallopian tube.

DATE-29.04.2020

CLASS-XII

SUBJECT-PHYSICS

CHAPTER-7.MOVING CHARGES AND MAGNETISM (2<sup>nd</sup> CLASS)

- ◆ Force on a charged particle moving with a velocity ( $\vec{v}$ ) in a uniform magnetic field ( $\vec{B}$ ) is

$$\vec{F} = q\vec{v} \times \vec{B}$$

- ◆ The radius of the circular path described by a moving charged particle entering a uniform magnetic field perpendicularly,

$$r = \frac{mv}{qB}$$

[ $m$  = mass of the charged particle,  $v$  = velocity of the particle,  $q$  = charge of the particle and  $B$  = magnetic field]

- Time period of revolution,  $T = 2\pi \frac{m}{qB}$ .
- Number of complete revolutions along the circular path, i.e., frequency of circular motion,

$$n = \frac{1}{T} = \frac{1}{2\pi} \left( \frac{q}{m} \right) B$$

This is known as **cyclotron frequency**.

- ◆ A charged particle, when enters a magnetic field obliquely it follows a helical or spiral path.

Pitch of this spiral or helical path

$$= \text{time period} \times \text{linear velocity}$$

$$= \text{circumference of the circular path} \times \cot\theta$$

- ◆ Force experienced by a charged particle having charge  $+q$  experiences in a uniform electric field,

$$\vec{F} = q\vec{E}$$

- ◆ For a charge  $q$  moving in an electromagnetic field with velocity  $\vec{v}$ , the forces acting are,

(i) electric force,  $\vec{F}_e = q\vec{E}$  [ $\vec{E}$  = electric field]

(ii) magnetic force,  $\vec{F}_m = q\vec{v} \times \vec{B}$  [ $\vec{B}$  = magnetic field]

• Resultant Lorentz force,  $\vec{F} = q(\vec{E} + \vec{v} \times \vec{B})$

- ◆ In case of a current carrying conductor in a magnetic field, the resultant magnetic force acting on the whole circuit or a finite part of the circuit,

$$F = \int dF = \int BIdl \sin\theta$$

The torque acting on a rectangular conductor having  $N$  turns placed in a uniform magnetic field,

- ◆ Torque =  $BINA$

- ◆ Force per unit length  $F = \frac{\mu_0 2I_1 I_2}{4\pi r}$

Tanmoy Rana

DATE-29.04.2020  
CLASS-XII  
SUBJECT-PHYSICS  
ASSIGNMENT-6  
CHAPTER-7.MOVING CHARGES AND MAGNETISM (2<sup>nd</sup> 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. The velocities of two alpha particles are in the ratio 4:1. On entering the field they move in different circular paths. What is the ratio of the radii of their paths?
2. Derive the expression of magnetic force  $F=BIL\sin\theta$ .
3. (i) Mention two applications of cyclotron.  
(ii) What is the important limitation encountered in accelerating a light elementary particle such as electron to high energies?
4. (i) Two long, parallel, straight wires A and B carrying currents of 8 A and 5 A respectively in the same direction are placed 4 cm apart. Estimate the force on a 10 cm section of wire A.  
(ii) Define 1 ampere in terms of force between two long, parallel, straight conducting wires carrying currents in same direction.

---

Tanmoy Rana