

Class 12

Business Studies

Ch-11 Staff Separation

Q1: What is staff separation?

Q2: What is downsizing?

Q3: What is lay off?

Q4: What is a pink slip?

Q5: What is vrs?

Economics Class 12

Ch-4 Elasticity of Demand

Q1: What is an elasticit of demand?

Q2: What is price elasticity of demand?

Q3: How many types of Price elasticity demand are there?

Q4: What is perfectly inelastic demand?

Q5: What is perfectly elastic demand

Q6: What is unitary elastic demand?

Commerce

Class 12

Ch-3 Sources of Finance for the Joint Stock Company:

Q1: What are the long term sources of finance?

Q2: What are the short term sources of finance?

Q3: What are equity share?

Q4: What are the advantages of equity shares?

Q5: What are the disadvantages of equity shares?

Class 12 (Psychology) Class: Wednesday Date:6/5/20

Chapter-Intelligence

There are some classical theories of intelligence trying to discover the components of intelligence. Spearman said that intelligence consists of 2 kinds of abilities-General & Specific. He developed his theory on simple observation & referred general mental ability as 'g' whereas specific mental ability were symbolised as 's'. 'g' is common to all intellectual activities. Spearman postulated his two factor theory of intelligence by finding the correlation between the 2 factors. On the basis of this correlation process Spearman said that 'g' factor is inborn, constant, unique. Whereas 's' factor is acquired through interaction & environment, it varies & it differs in individuals.

Questions:

Discuss Spearman two factors theory.

Class12:political science(date:6/5/20)Wednesday.Chapter:Features of the Indian Constitution

Indian Constitution provides a single integrated judiciary system common for the union & the states. The Supreme Court runs the judicial administration of the country & is independent in its decisions. Moreover the courts have the power of judicial review. With the passage of time it is being observed that the judiciary is becoming more & more active nowadays.PIL system is making the judiciary exercise its power at a wide range. The Constitution has adopted Hindi as the Union Language & has allowed the State Legislature to adopt the language of its provinces as its official language. Indian Constitution is highly influenced by other constitution of the world like :US has influenced for judicial review while USSR influenced for socialism.

Questions:

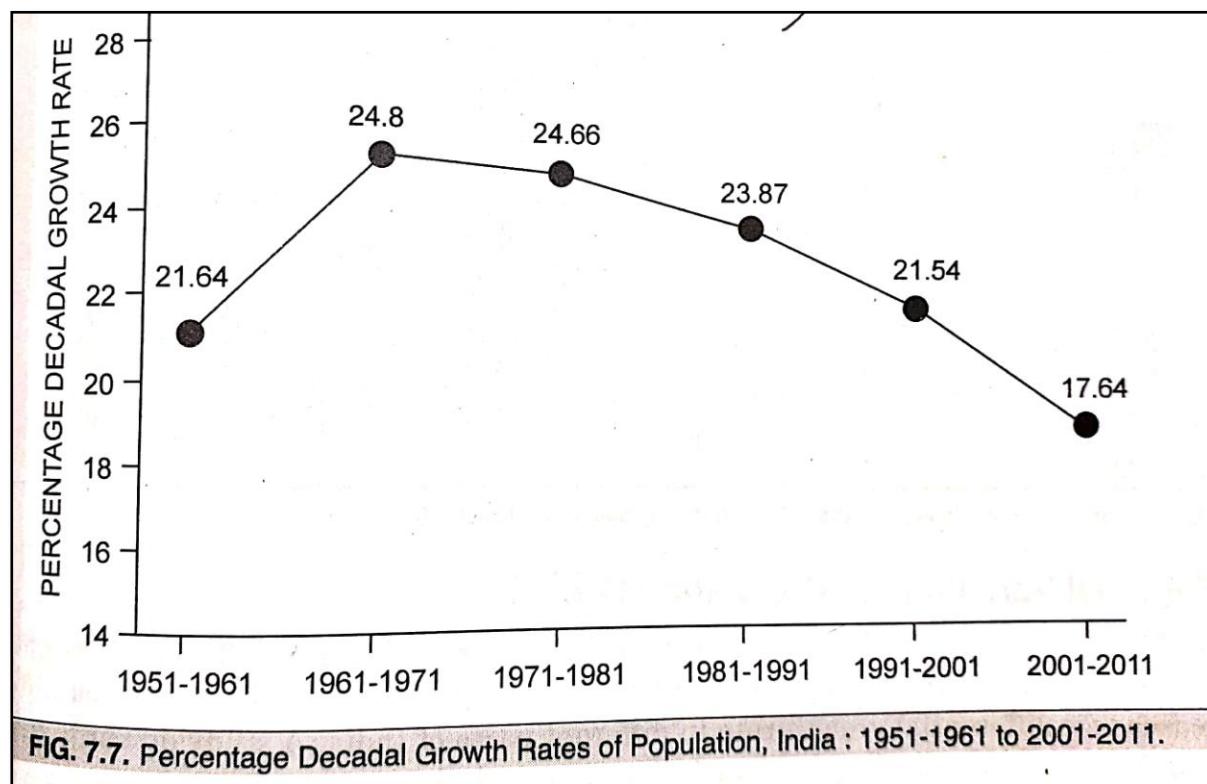
- a) Define-Public Interest Litigation System.
- b) Name any one case of Supreme Court where judicial review was implemented.
- c) State any two provisions as mentioned in the Constitution for the SC & ST's.

GEOGRAPHY
CLASS XII
CHAPTER 7(PART 2)

Population Growth Since 1901: - The demographic history of India since the beginning of the twentieth century can be classified into following four distinct phases:

1. Period of stagnant population (1901 - 1921)
2. Period of steady growth (1921 - 1951)
3. Period of rapid high growth (1951 - 1981)
4. Period of high growth with definite signs of slowing down (1981 - 2001)

1. Period Of Stagnant Population (1901 - 1921): - During most of the 19th century, India witnessed irregular and slow growth of population which drifted into 20th century until 1921. Since then the population of India has been increasing consistently. However Census of 1921 is an exception as it reported a slight decline of 0.03%. Cause of this decline, in place of rise in population that the year 1921 is called the demographic divide in the demographic history of India. This was due to large number of deaths caused by several fatal diseases such as influenza plague smallpox cholera etc.



2. Period of steady growth (1921 - 1951): - India during 1921 to 1951 the population of India increased from 251 million to 361 millions. This duration of 30 years has thus registered a growth of 47.3 percent. Therefore this period is called the period of steady growth rate it was video HD due to the development of medical facilities which reduces deaths caused by epidemics like plague Cholera and malaria. Crude death rate declined, but crude birth rate remained high. It is called mortality induced growth.

3. Period Of Rapid High Growth (1951 - 1981): - In this phase the population of the century increased from 361.1 million in 1951 to standard 83.3 million in 1981. This means that the population of India almost doubled in a short span of 30 years from 1951 to 1981. The growth rate during this period has been as high as 89.3 6%. The average growth rate was over 2% per annum. This unprecedented growth rate was due to the accelerated development activities and for the improvement in health facilities. Living conditions of the people improved enormously. Death rates declined much faster than the birth rate. This situation resulted in high natural increase. Thus, it was fertility induced growth.

4. Period Of High Growth With Definite Signs Of Slowing Down (1981- 2001): - This is the period of high growth within definite sign of slowing down. Although the rate of growth was still very high, it started declining after 1981. The highest ever growth rate of 2.48 % was recorded in 1971 which came down to 2.46 in 1981. It declined 22.3 8% in 1991 22.1 5% in 2001 and for the 21.7 6% in 2011. Is declining trend is a positive indicator of the official efforts of birth control and peoples on inclination to opt for smaller families.

Regional Variations In Population Growth: - The average population growth rate of 17.64 person during 2001 to 11 not give a true picture as there are spatial difference in the growth rate. There can be different reasons for differential growth rate in different parts of India. The phenomenon of low growth has spread beyond the boundaries of the southern states during 2001 to 11, where in addition to Andhra Pradesh, Tamil Nadu and Karnataka, in south Himachal Pradesh and Punjab in the north, west Bengal and Odisha in the east and Maharashtra in the West have registered growth rate between 11 and 16% in 2001 to 11. A glaring down trend in the growth has been observed in Nagaland, where 64.5 3% in 1991 to 2001 growth rate of -0.4 7%. The second minimum growth of 4.86 % has been recorded by Kerala. Some of the most populous has been registered very high growth rate of over 20%. Among them Bihar, Jammu Kashmir, Chhattisgarh etc are few examples.

$$* \text{Decadal growth rate: } g = \frac{P_2 - P_1}{P_2} \times 100$$

Where P_1 = population of the base year P_2 = population of the present year

Implication Of Population Growth For Development: - fast growing population has its own implications because it nullifies all achievements in economic and social sphere and largely responsible for Environmental Degradation. In spite of significant progress made by India agriculture and industry, More than one fourth of our population is living below poverty line.. Literacy and education are responsibility good indicators of development in a society. A large proportion of population is living in slum. More than one third of population is illiterate. Over 5 millions families still depend on rivers and Ponds for drinking water. About 44% of India's house does not have electricity. A large proportion of population does not have access to proper Healthcare. Most of the above mentioned problem can be solved by controlling the population growth.

Population Increase And Environmental Degradation:- Since Rapid increasing population means more mouth to feed more house to live in and more infrastructural facilities(industries, transport, education, health etc.), leads to increasing use of natural

resources such as soil, water, air, forest, minerals and power resources etc. Resources are exhaustible and nature has put limits to their utilisation. Over exploitation of natural resources such as oil vegetation minerals etc leads to environmental degradation. This is partly the case with developing countries like India which supports about 17.5 % of the world population over a meagre 2.4 % of the world surface area. Population increase and poverty of its masses are twin problems which India is facing at present.

Population Increase And Ecological Imbalance: - Ecology involves all the organisms that live and grow on the earth surface, and left to themselves Indian natural habitat, the maintain a perfect balance. Human's growing interference resulting from fast increasing population has disturbed this balance and a state of ecological imbalance is created. Increasing human pressure on the Natural Resources like soil, vegetation, water, mineral DTC leaves to the depression and results in ecological imbalance. For example tracts of forest in the Ganga plain of North India have been cleared to provide land for agriculture. Similarly soil resources are over exploited to obtain high yields of Agricultural crops. This has turned what was fertile lands into bad and unproductive land. Large scale mining in mineral rich states like Jharkhand, Madhya Pradesh, Bihar and Andhra Pradesh etc has also led to loss of biodiversity and resulted in ecological imbalance.

Home Assignment 7(part 2):-

5. Mention the period of Stagnant Population and Period of population Explosion in India.
6. What is meant by growth rate of population? How is it calculated?
7. What are the two factors that led to the decreasing growth rate of population from 1981-2011?
8. Mention four effects of rapidly growing population on development.

Commerce Class XII

Chapter : Management (Part -5)

3.22. Scientific management

Management based on careful observations, objective analysis and an innovative outlook is called *scientific management*. It is the art of knowing exactly what is to be done and the best way of doing it. It may be regarded as a set of scientific techniques which are supposed to increase the efficiency of an enterprise. F.W. Taylor is regarded as the father of scientific management.

Definitions of management given by eminent management experts :

- ↳ "Scientific management is the art of knowing exactly what you want your men to do and then seeing that they do it in the best and cheapest way." [F.W.Taylor]
- ↳ "Scientific management is a conscious orderly human approach to the performance of management responsibilities as contrasted with the day-in and day-out rule of thumb, hit or miss approach." [Lawrence A. Appley]



3.22.1. Principles of scientific management

Scientific management is based on the following principles :

- (i) **Scientific study and planning of work** : The manager should adopt scientific attitude and use scientific methods for solving problems. It requires scientific study and analysis of each element of a job for finding a solution. Old method of doing work (i.e., *rule of thumb*) and intuitive decisions should be substituted by decisions based on facts.
- (ii) **Harmony in group action** : There should be complete harmony in the functioning of all workers and departments. Dissatisfaction of any worker is to be avoided. Any kind of disagreement should not be allowed to crop in and if it arises, should be reduced to minimum.
- (iii) **Scientific selection, training and development of employees** : Employees should be selected and trained in accordance with the requirements of the jobs. Proper training and development programmes should be designed to improve employees' efficiency. Development of employees is necessary for the improvement of the organisation.
- (iv) **Cooperation between employees and management** : Close cooperation between employees and management is necessary so as to create a mutually beneficial relationship. The objectives of the management can be achieved through whole-hearted cooperation and commitment of all employees. On the other hand, the management should also protect the interests of employees and acknowledge their indispensability in raising productivity.
- (v) **Maximum prosperity for both employees and management** : Maximum output and optimum utilisation of resources will bring higher profits to the organisation coupled with higher remuneration for employees. Maximum prosperity can be possible when efficiency of employees and output are maximised.
- (vi) **Division of work and fixing responsibility** : Maximum output is achieved through division of work (i.e., specialisation). Management should fix responsibility for planning and supervision of the work. The role of employees should be confined to implementation of these plans.
- (vii) **Standardisation of tools, equipment, etc.** : Standardisation is made in respect of tools, equipment, working hours, working conditions, etc., for improving efficiency of employees.

(viii) **Mental revolution** : This refers to change in thinking both on the part of the management and employees. Mental revolution of both employees and the management is desired to get maximum benefit of scientific management.



3.22.2. Aims and objectives of scientific management

The aims and objectives of scientific management are as follows :

- (i) To achieve increased production at reduced cost ;
- (ii) To standardise methods of work and working conditions ;
- (iii) To select, train and educate workmen scientifically ;
- (iv) To develop a science for each element of a man's work ;
- (v) To promote teamwork and ensure co-operation amongst workmen ;
- (vi) To ensure division of work (i.e., specialisation) and fixing responsibility ;
- (vii) To provide a trained and efficient workforce to get maximum efficiency ;
- (viii) To replace old rule of thumb ;
- (ix) To develop a sound cost accounting system ;
- (x) To put emphasis on rational thinking on the part of management ;
- (xi) To effect new and scientific techniques in production ;
- (xii) To reduce the possibility of slackness in production, accidents, etc.
- (xiii) To help the workers in overcoming their difficulties ;
- (xiv) To serve the society in a manner in which the society expects.



3.22.3. Benefits (or utility) of scientific management

The benefits arising out of scientific management are as follows :

- (i) Increase in production and productivity ;
- (ii) Reduction in cost of production and thereby increase in profit ;
- (iii) Better utilisation of available resources ;
- (iv) Benefits of specialisation (i.e., development of workers' efficiency) ;
- (v) Better quality products to consumers ;
- (vi) Increased wages and incentives to workers ;
- (vii) Better relationship between workers and employers ;
- (viii) Increase in national income and rapid industrial development ;
- (ix) Plentiful supply of cheaper quality goods ;
- (x) Improvement in standard of living of the nation as a whole.



3.22.4. Criticism of scientific management

- (i) It is an excessively expensive plan ;
- (ii) It takes a long time to be introduced effectively ;
- (iii) It creates the problem of monotony among workers ;

- (iv) It involves the problem of autocracy ;
- (v) It undermines the importance of trade unions ;
- (vi) It is not suitable for small-scale organisations ;
- (vii) It does not emphasize cost and financial control ;
- (viii) It creates confusion among the workers due to lack of unity of direction ;
- (ix) It creates a sense of insecurity and uncertainty among workers ;
- (x) It does not involve any scope for initiative on the part of workers.



3.23. Modern management

Henry Fayol is regarded as the father of modern management. Through his long practical experience as a successful industrialist, Fayol developed a general theory of management in his book titled '*General and Industrial Management*'.

Fayol's major contribution in management are as follows :

- (i) To identify and classify business activities into six groups, such as,
 - (a) Technical activities ;
 - (b) Commercial activities ;
 - (c) Financial activities ;
 - (d) Security activities ;
 - (e) Accounting activities ; and
 - (f) Managerial activities.
 - (ii) To identify management as a separate set of functions ;
 - (iii) To classify functions of management into five elements, such as, (a) Forecasting and planning ;
(b) Organising ; (c) Commanding ; (d) Co-ordinating ; and (e) Controlling.
 - (iv) To develop fourteen principles of management such as — (a) Division of work ; (b) Authority and responsibility ; (c) Discipline ; (d) Unity of command ; (e) Unity of direction ; (f) Subordination of individual interest to general interest ; (g) Fair remuneration to workers ; (h) Effective centralisation ; (i) Scalar chain ; (j) Order ; (k) Equity ; (l) Stability in the tenure of personnel ; (m) Initiative ; and, (n) *Esprit de corps* (i.e., teamwork).
- [Discussed in detail in Section—3.15.]
- (v) To put emphasis on six managerial qualities, such as, (a) Physical qualities ; (b) Mental qualities ; (c) Moral qualities ; (d) Educational qualities ; (e) Technical qualities ; (f) Work experience.



3.24. Points of similarity between Taylor's scientific management and Fayol's modern management

- (i) Both realised the universality of the principles of management ;
 - (ii) Both aimed at improving the prevailing conditions of management ;
 - (iii) Both recognised the importance of the human factor in management ;
 - (iv) Both applied scientific methods to the problems of management ;
 - (v) Both of them developed their ideas through practical experience ;
 - (vi) Both emphasised mental revolution (i.e., mutual co-operation between employees and employers).
- (vii) Both wanted to improve management practice.





3.25. Points of distinctions between Taylor's scientific management and Fayol's modern management

Serial number	Basis of distinction	Taylor's scientific management	Fayol's modern management
1.	Purpose	Increasing productivity of workers.	Developing general theory of administration.
2.	Level of management emphasised	Operating level.	Top level.
3.	Contribution	Analysed scientific management on the basis of scientific techniques.	Explained five functions and fourteen principles of management.
4.	Evaluation	Analysed the way of doing work technically.	Improved managerial activities technically.
5.	Beginning	Began from the operating level and moved upwards.	Began from top level and proceeded downwards.
6.	Name of work done	Scientific management.	General theory of administration.
7.	Rigidity	Relatively rigid.	Flexible in nature.
8.	Importance	Mental revolution of management and workers.	Ability of managers to perform functions smoothly and effectively.



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Home assignment :

1. Discuss any four principles of scientific management as formulated by F.W.Taylor.
2. Bring out the distinction between the principles of Taylor and Fayol.

CLASS - 12
COMPUTER SCIENCE
COMPUTER HARDWARE
MUX

Multiplexer (MUX) :

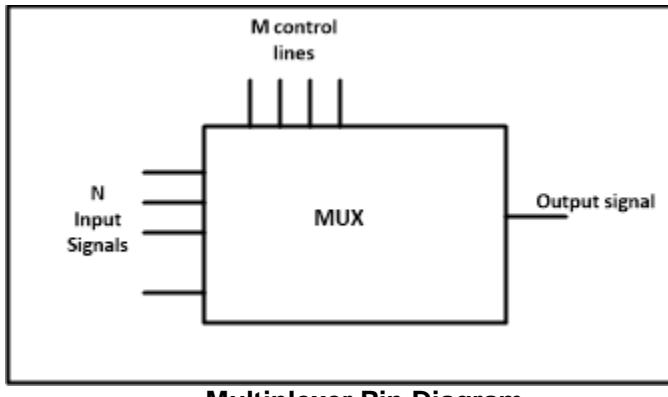
A Multiplexer (MUX) can be described as a combinational circuit that receives binary information from one of the 2^n input data lines and directs it to a single output line.

The selection of a particular input data line for the output is decided on the basis of selection lines.

The multiplexer is often called as data selector since it selects only one of many data inputs.

This combinational circuit have many data inputs and single output depending on control or select inputs. we can say that for 2^n input lines, n selection lines are required.

Following figure shows the general idea of a multiplexer with n input signal, m control signals and one output signal.

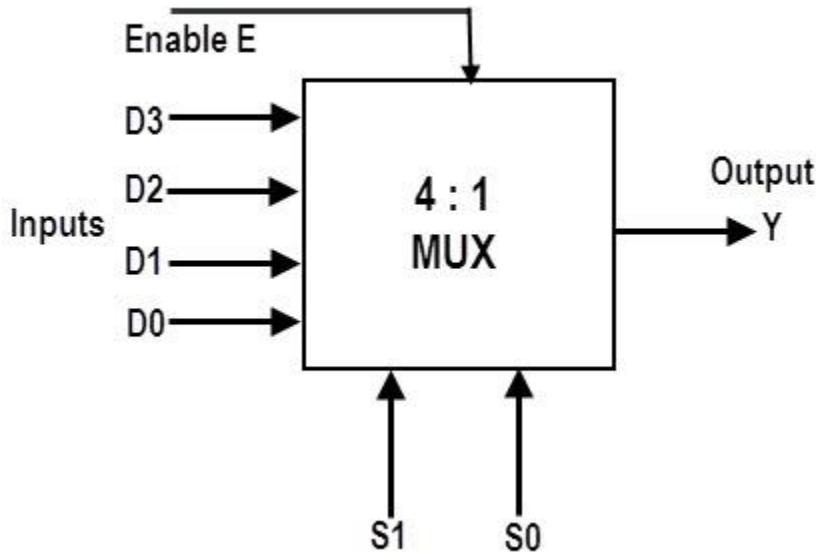


Multiplexer Pin Diagram

4-to-1 Multiplexer

A 4-to-1 multiplexer (also known as 4:1 MUX) consists four data input lines as D0 to D3, two select lines as S0 and S1 and a single output line Y. The select lines S1 and S2 select one of the four input lines to connect the output line. The particular input combination on select lines selects one of input (D0 through D3) to the output.

The figure below shows the block diagram of a 4-to-1 multiplexer in which the multiplexer decodes the input through select line.

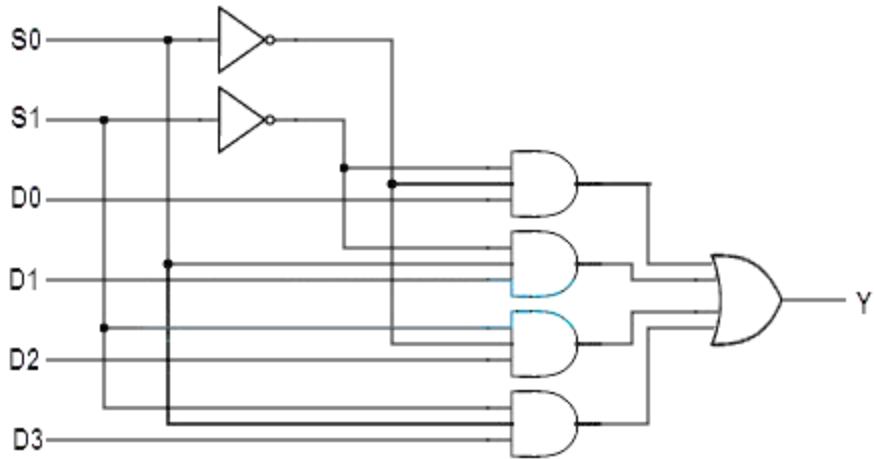


The truth table of a 4-to-1 multiplexer is shown below in which four input combinations 00, 10, 01 and 11 on the select lines respectively switches the inputs D0, D2, D1 and D3 to the output. That means when S1=0 and S0 =0, the output at Y is D0, similarly Y is D1 if the select inputs S1=0 and S0= 1 and so on.

Select Data Inputs		Output
S ₁	S ₀	Y
0	0	D ₀
0	1	D ₁
1	0	D ₂
1	1	D ₃

From the above truth table, the final Boolean expression of this multiplexer is given as

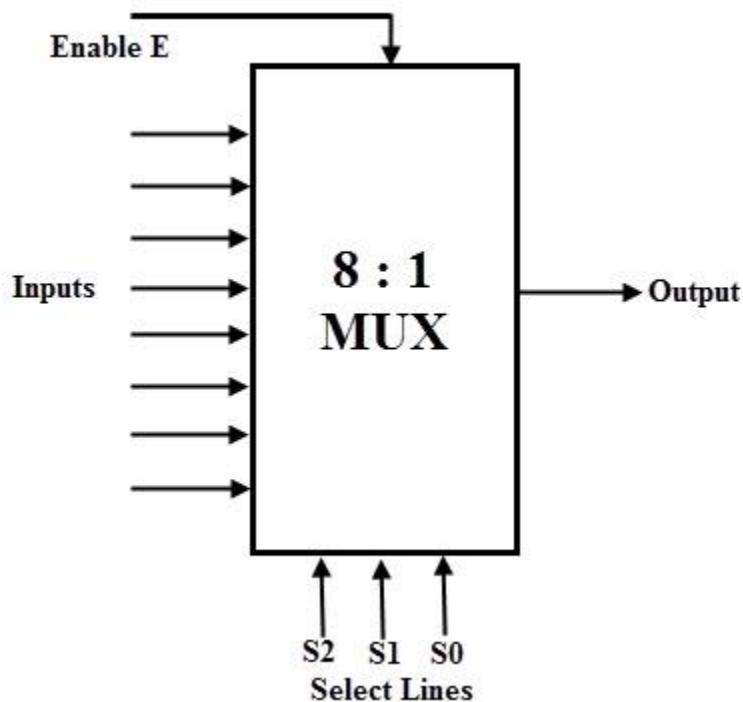
$$Y = D_0 \bar{S}_1 \bar{S}_0 + D_1 \bar{S}_1 S_0 + D_2 S_1 \bar{S}_0 + D_3 S_1 S_0$$



8-to-1 Multiplexer

An 8-to-1 multiplexer consists of eight data inputs D0 through D7, three input select lines S2 through S0 and a single output line Y. Depending on the select lines combinations, multiplexer decodes the inputs. Also known as 8:1MUX

The below figure shows the block diagram of an 8-to-1 multiplexer with enable input that enable or disable the multiplexer. Since the number data bits given to the MUX are eight then 3 bits ($2^3=8$) are needed to select one of the eight data bits.



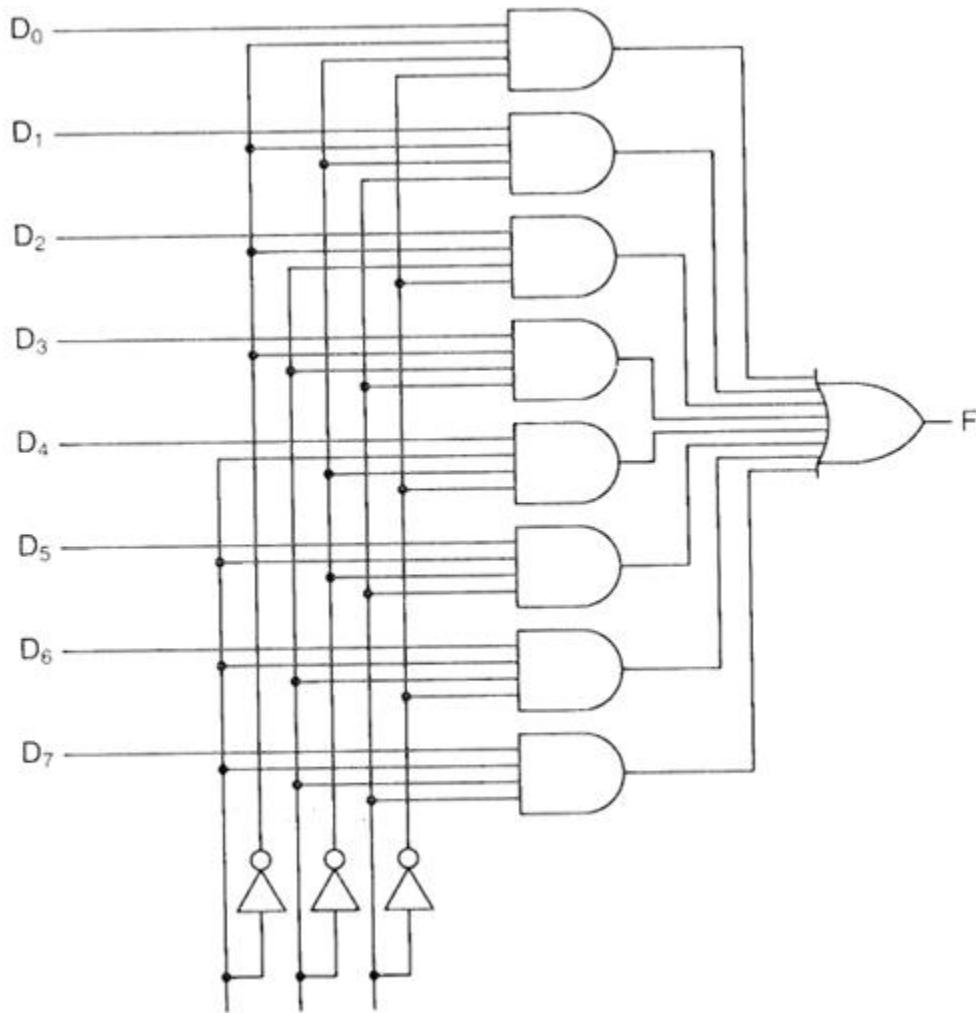
The truth table for an 8-to1 multiplexer is given below with eight combinations of inputs so as to generate each output corresponds to input.

For example, if $S_2=0$, $S_1=1$ and $S_0=0$ then the data output Y is equal to D_2 . Similarly the data outputs D_0 to D_7 will be selected through the combinations of S_2 , S_1 and S_0 as shown in below figure.

Select Data Inputs			Output
S_2	S_1	S_0	Y
0	0	0	D_0
0	0	1	D_1
0	1	0	D_2
0	1	1	D_3
1	0	0	D_4
1	0	1	D_5
1	1	0	D_6
1	1	1	D_7

From the above truth table, the Boolean equation for the output is given as

$$Y = D_0 \overline{S_2} \overline{S_1} \overline{S_0} + D_1 \overline{S_2} \overline{S_1} S_0 + D_2 \overline{S_2} S_1 \overline{S_0} + D_3 \overline{S_2} S_1 S_0 + D_4 S_2 \overline{S_1} \overline{S_0} + D_5 S_2 \overline{S_1} S_0 \\ + D_6 S_2 S_1 \overline{S_0} + D_7 S_2 S_1 S_0$$



ASSIGNMENT IV (PART – 5)

16. What is a multiplexer?
17. Draw the circuit diagram for a 8:1 MUX
18. Draw the block diagram of a 4-to-1 multiplexer
19. Draw the circuit diagram for a 4:1 MUX

Assignment-13

Maths Class - 12

Differentiation

Rolle's Theorem

Let $f(x)$ be the function of x in $[a, b]$.

And (i) $f(x)$ is continuous on $[a, b]$.

(ii) $f(x)$ is differentiable on (a, b)

such that $f(a) = f(b)$ (or at least one element)

Then there exists some $c \in (a, b)$

such that $f'(c) = 0$.

Ex Verify Rolle's theorem for the function

$$f(x) = x^2 - 4x + 3 \text{ on } [1, 3].$$

Ans Given $f(x) = x^2 - 4x + 3$,

(i) $f(x)$ being a polynomial function is continuous in $[1, 3]$.

(ii) $f(x)$ being a polynomial function is differentiable in $(1, 3)$.

$$(iii) f(3) = 3^2 - 4 \cdot 3 + 3 = 9 - 12 + 3$$

$$\text{and } f(1) = 1^2 - 4 \cdot 1 + 3 = 1 - 4 + 3 = 0.$$

Hence $f(3) = f(1)$.

$$\text{Now } f'(x) = 2x - 4$$

$$\text{and } f'(x) = 0 \Rightarrow 2x - 4 = 0$$

$$\text{Hence } x = \frac{4}{2} = 2 \\ c = 2 \in (1, 3).$$

Hence, Rolle's theorem is verified.

H.W ① verify Rolle's theorem for the function $f(x) = \sqrt{4-x^2}$ on $[-2, 2]$.

② verify Rolle's theorem for the function $f(x) = x^2 - 5x + 6$ on the interval $[2, 3]$.

Lagrange's Mean value theorem

Let $f(x)$ be the function of x on $[a, b]$

and (i) $f(x)$ is continuous on $[a, b]$

(ii) $f(x)$ is differentiable on (a, b)

then there exists at least one element

$c \in (a, b)$ such that $f'(c) = \frac{f(b) - f(a)}{b - a}$

Ex.1. Verify Lagrange's mean value theorem

for the function on the indicated interval

$$f(x) = 2 \sin x + \sin 2x \text{ on } [0, \pi]$$

Ans (i) $f(x)$ is continuous in $[0, \pi]$

(ii) $f(x)$ is differentiable in $(0, \pi)$.

Because $\sin x$ and $\sin 2x$ are continuous and differentiable.

$$\text{Now } f'(x) = 2 \cos x + 2 \cos 2x$$

$$\text{and } f(0) = 2 \sin 0 + \sin 2 \cdot 0 = 0 .$$

$$f(\pi) = 2 \sin \pi + \sin 2\pi = 0 .$$

$$\text{Now } f'(x) = \frac{0 - 0}{\pi - 0} = 0 .$$

$$0 \Rightarrow c_3 x + 2c_2 x = 0$$

$$\Rightarrow c_3 x = -2c_2 x$$

$$\Rightarrow c_3 x = -c_2 x = c_3 (\pi - 2x)$$

$$\Rightarrow x = \pi - 2x$$

$$\text{or } x = \frac{\pi}{3} \in (0, \pi)$$

$$\text{or } x = \frac{\pi}{3} \in (0, \pi)$$

$$\text{Hence } c = \frac{\pi}{3}$$

Hence Lagrange's mean value theorem is verified.

H.W Verify Lagrange's mean value theorem for the function on the indicated interval for the function $f(x) = \sin x - \sin 2x$ on $[0, \pi]$.

$$f(x) = \sin x - \sin 2x \text{ on } [0, \pi]$$

Verify Lagrange's mean value theorem

for the function $f(x) = (x-3)(x-6)(x-9)$

on the interval $[3, 5]$.

Lagrange's mean value theorem

for the function $f(x) = (x-3)(x-6)(x-9)$

on the interval $[3, 5]$.

RSB Sat 12/12/2018 10:51 AM

10 = $x^2 + 0.5x^2 - 10x^2 = 0.5x^2$

10 = $x^2 + 0.5x^2 - 10x^2 = 0.5x^2$

DREAMLAND SCHOOL
CLASS XII (session 2020-21)
BIOLOGY HOME WORK-3D

Date-06.05.2020

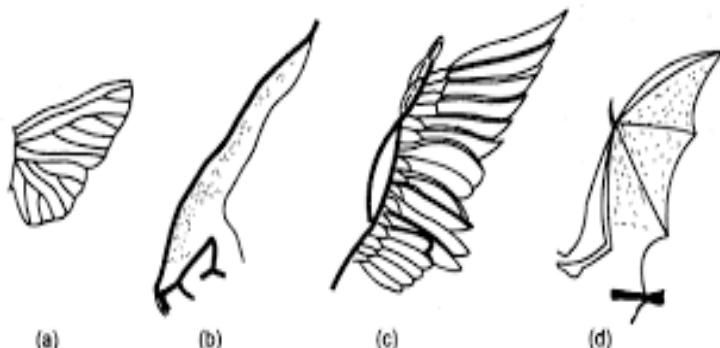
Chapter 7: EVOLUTION(Contd..)

Quick review of the content

- Evidence for evolution comes from many different areas of biology:-

B. Evidences from comparative Anatomy and Morphology(Contd..)

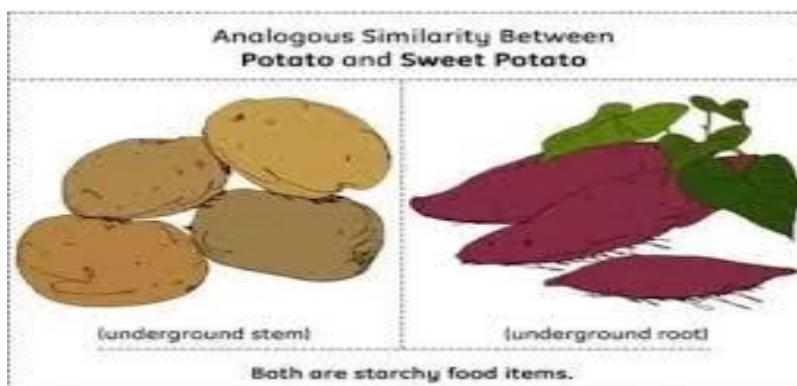
2. Analogous organs- These organs have different anatomy but perform similar functions. This shows that different species evolved to adapt to a particular environment. This type of evolution is called convergent evolution.



Analogous organs (a) Wing of insect (b) Wing of Pterodactyl (c) Wing of bird (d) Wing of bat

(If we compare the wing structure of Insect(a) ,it is made up of Chitin not a true wing,Wing of Pterodactyl and bat(b,d) is made of skin fold called ptagium, Birds wing is actual wing made up of feather)

- For example, the wings of different birds,insects and bats. The wings of birds are formed of hollow bones and have feathers for flight whereas, bats have wings made up of cartilages and lack feathers,known as ptagium.in insect it is made up of chitin.So the wings of bird is the onle “true wings” But, all serve the function of flight.
- They have evolved independently in different organisms because the organisms lived in similar environments or experienced similar selective pressures. This process is called **convergent evolution**



Another example is of analogy between potato and sweet potato-they both have similar tuberous appearance due to storage of food but potato is a modified underground stem and sweet potato is a modified root.

3. Atavism or Reversion

An atavism is the occasional reappearance of an ancestral character in an individual in a descendant species when the immediate ancestors of that species lacked the character. Such as

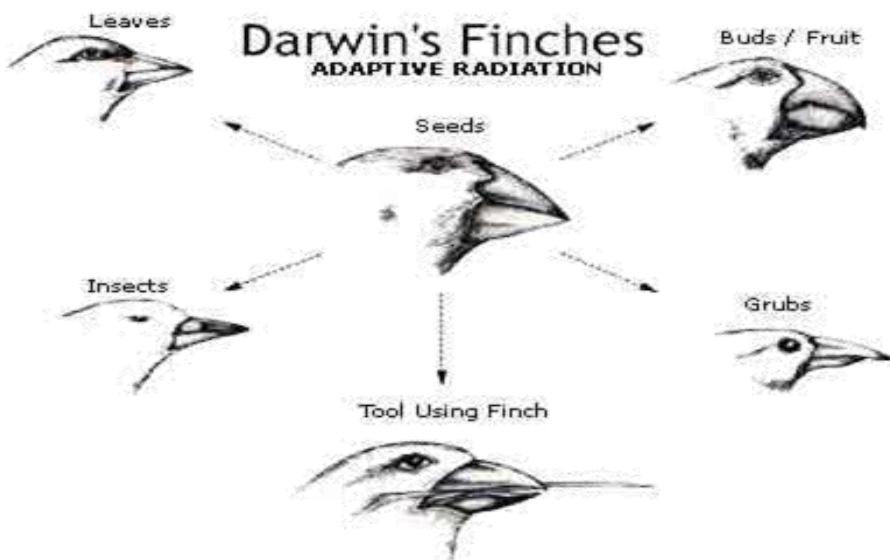
1. Presence of short tail in some human babies.
2. Power of moving pinna in some persons.
3. Long and dense hair in body of some individuals.
4. Reappearance of large canines in some human. Etc.



Dollo's law of irreversibility (also known as **Dollo's law** and **Dollo's principle** an organism never returns exactly to a former state, even if it finds itself placed in conditions of existence identical to those in which it has previously lived ... it always keeps some trace of the intermediate stages through which it has passed."

- **Evidences from Darwin's Finches-An Evidence from Morphology**

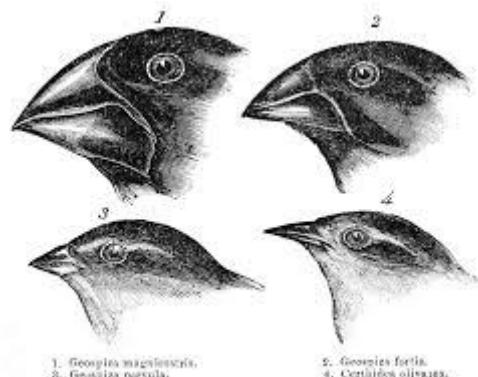
Darwin on his voyage to Galapagos island by H.M.S Beagle observed 13 species of ground finches. These species differ from each other in shape and size of beaks and type of food they eat. The following types of beaks have evolved from stout, conical beaks of parental finches that lived on main land of Africa and used to feed on crushed seeds.



Darwin proposed that species can change over time, that new species come from pre-existing species, and that all species share a common ancestor.

In this model, each species has its own unique set of heritable (genetic) differences from the common ancestor, which have accumulated gradually over very long time periods. Repeated branching events, in which new species split off from a common ancestor, produce a multi-level "tree" that links all living organisms.

- 1 .Insectivorous Warbler Finches.-Slnder warbler like beak
2. Insectivorous tree finches –short,thick parrot like beak.
3. Vegetarian tree finches-parrot like fed on leaves,buds.
- 4.Wood pecker finches-short , stout beak
5. Cactus ground Finches-long,decurved beak.



- **Evidences from Connecting Links**

Fossil animals exhibitig characters of two adjacent taxonomic groups are called fossil connecting links. There are various type of fossil connecting links Ichthyostegia ,Seymouria

1. **Living connecting link:**

Balanoglossus: It is a connecting link between invertebrates and vertebrates. Dipnoi is living connecting link between in fishes and amphibians. Evolutionary Significance It help to understand evolution in the major group of animals It support the statement of Herbert spencer and Darwin

2. **Perpatus:** It is a connecting link between annelida and Arthropoda. Annelida charecters: Body is segmented and worm like Arthropods charecters: Jointed legs with claw and trachea is respiratory organ



- 3.Duck Bill Playtipus: It is living connecting link It is a connecting link between reptiles and Mammals. It possess charecters of reptiles and Mammals. Mammal charecters: They are definatly mammals because have mammalian charecters , Mammary gland ,hair, Diaphragm ,single aortic arches

C. Evidences from embryology

- 1 .Similarity between early development of embryo-The early developmental stages that is-morula,blastula,gastrula of all the multicellular organisms are almost same.
2. Resemblance among vertebrate embryo-Darwin noted the striking similarity among embryos of complex animals such as humans, chickens, frogs, reptiles, and fish. He wrote that the uniformity is evidence for evolution. He pointed out that human embryos pass through a number of embryonic stages inherited from their ancestors because they have



inherited the developmental mechanisms from a common ancestor. These mechanisms are modified in a way that is unique to an organism's way of life.

The similarities in comparative embryology are also evident in the early stages of development. For example, fish, bird, rabbit, and human embryos are similar in appearance in the early stages.

They all have gill slits, a two-chambered heart, and a tail with muscles to move it.

Later on, as the embryos grow and develop, they become less and less similar. The branch of biology that focuses on embryos and their development is called **embryology**.

Assignment Questions

- 1..Write differences between homologous and analogous organs.
- 2.What do you mean by atavism explain with suitable example.
3. Write the role of Darwin's Finches as evolutionary evidence.
- 4.Explain the resemblance between vertebrate embryo structures.

DATE-06.05.2020 (WEDNESDAY)

CLASS-XII

SUBJECT-PHYSICS

CHAPTER- 8.TORQUE ON A CURRENT-LOOP-MOVING-COIL GALVANOMETER (1st CLASS)

Torque on a current carrying loop in a uniform magnetic field

$$\tau = NiAB\sin\Theta$$

(Where N=number of turns in loop, i=current flowing though the wire of the loop, A=area of the loop, B=uniform magnetic field, Θ =angle between area and magnetic field)

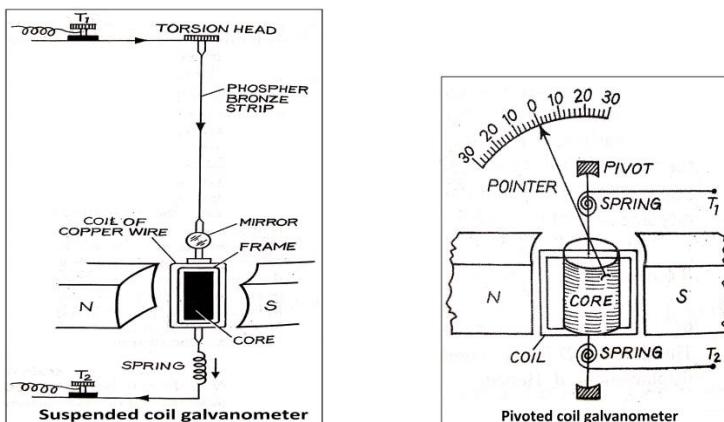
Vector form $\vec{\tau} = \vec{m} \times \vec{B}$.

(Where m= magnetic dipole moment=NiA)

Moving coil galvanometer:

Principle: when electric current flows in a coil placed in a magnetic field, a deflecting torque acts upon the coil whose magnitude depends upon the strength of the current.

Different types: (i) Suspended-coil Galvanometer, (ii) Pivoted coil Galvanometer.



Sensitivity: In case of moving coil galvanometer, if the number of turns in the coil be N, are of the coil A, magnetic field parallel to the coil B, current through the coil I and the coil comes to rest at an angle Θ , then

$$I = \frac{C}{BNA} \theta$$

(Here, c= restoring torque per unit deflection=constant)

- Current sensitivity = $\frac{\theta}{I} = \frac{BNA}{C}$
- Voltage sensitivity = $\frac{\theta}{V} = \frac{BNA}{CR}$

(Where R=resistance of the coil of the galvanometer)

DATE-06.05.2020 (WEDNESDAY)

CLASS-XII

SUBJECT-PHYSICS

ASSIGNMENT-7

CHAPTER- 8.TORQUE ON A CURRENT-LOOP-MOVING-COIL GALVANOMETER (1st 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. Write the dimensional formula of magnetic dipole moment.
2. How is radial magnetic field achieved in a moving coil galvanometer?
3. Prove that, torque on a current carrying loop in a uniform magnetic field $\tau = NiAB\sin\Theta$. Where symbols have their usual meanings.
4. Two moving coil meters M_1 and M_2 have following particulars-
(i) $R_1=10\Omega$, $N_1=30$, $A_1=3.6\times10^{-3} \text{ m}^2$, $B_1=0.25 \text{ T}$
(ii) $R_2=14\Omega$, $N_2=42$, $A_2=1.8\times10^{-3} \text{ m}^2$, $B_2=0.50 \text{ T}$
Find the ratio of (a) current sensitivities and (b) voltage sensitivities.

Tanmoy Rana