Anthropology Optional Questions + Model Answers : (Free Sample)

Selective for Anthropology Optional :

- **Questions + Model Answers (Covers all 20 Units with selective questions and model answers)**
- **Approximately: 200 Questions with Model ANSWERS**

: Maintain INTRO-BODY-CONCLUSION format when possible
: Use Heading and Subheading for answer clarity (better presentation and understanding)
: Stick to the Keywords (what the question demands?)
: Use Maps / diagrams/ flowcharts to enhance the quality of content.
: You must practice writing in timely and economical manner

- **10 Marks: 150 words**
- **20 Marks: 250 -300 words**
- **60 Marks: approx. 6 pages or 1000 words**

: Use paragraph style of writing instead of bullet form
: Note: The model answers may exceed the word limit sometime. Thus, whenever you are writing you can shorten the answers through writing crisp answers (eliminating detailed explanation). ***Otherwise, you can use map, diagram or chart to explain the same answers in short.***

Question 1:

(a) Criteria of racial classification. 20 marks

Sample Model Answer:

How to write?

Understanding the question:

Context: Classification

Topic: Race

Purpose: Criteria

- *So, our focus should be criteria*
- *Since this is 20 marks question, we cannot touch maximum dimensions as OPSC specifically mentions 200 words.*
- *However, you should try to touch maximum dimensions without crossing word limit.*
- *If you have enough content in your mind about **criteria (**Criteria of racial classification**)**, go straight away with it, in the first line of your body.*

- *If not, you can write about definition classification in slight detail and then write about criteria.*
- *You may skip subtopics or examples to adhere to word limit, but try to cover all broad dimensions.*

Structure of answer:

Introduction: definition or brief explanation of racial criteria.

Body:

- Touching maximum dimensions
- You need to touch maximum number of dimensions based on viability of time and word limit to fetch maximum marks.
- Structure of the body should be mentally pre-planned to maintain flow of the answer.

Conclusion: concluding in relation to the context of the question

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Answer:

Introduction:

Hooton (1926) defined race as a great division of mankind, the members of which, though individually varying, are characterised as a group with a certain combination of morphological and metrical features, primarily non-adaptive, which have been derived from their common decent.

Dobzhansky(1944) provided a genetic definition of human race. According to him "Races are defined as populations differing in the incidence of certain genes, capable of exchanging genes across boundaries that separate them".

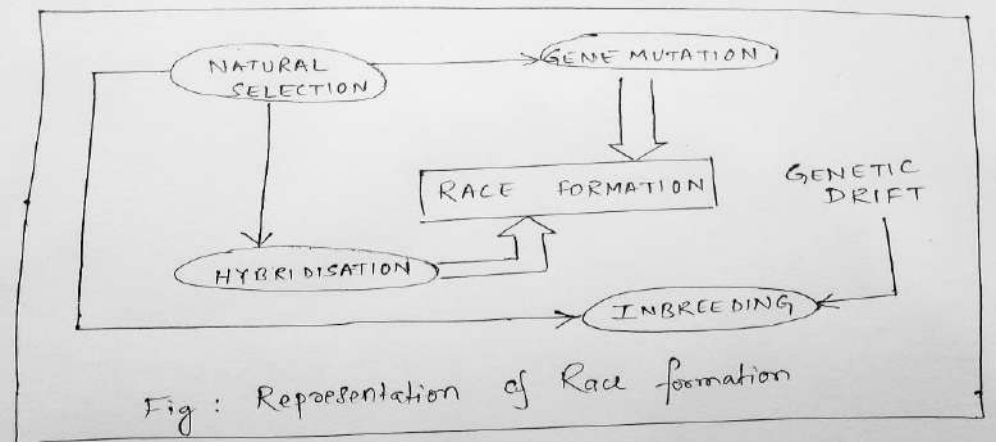

Fig : Representation of Race formation

Racial classification is important for understanding relationship between prehistoric groups, biological adaptations, evolution, diseases associated with a group or race. For racial classification racial criteria becomes important.

In accordance with the definitions based on physical features and genetics the racial criteria also were broadly divided as Morphological criteria and Genetic criteria.

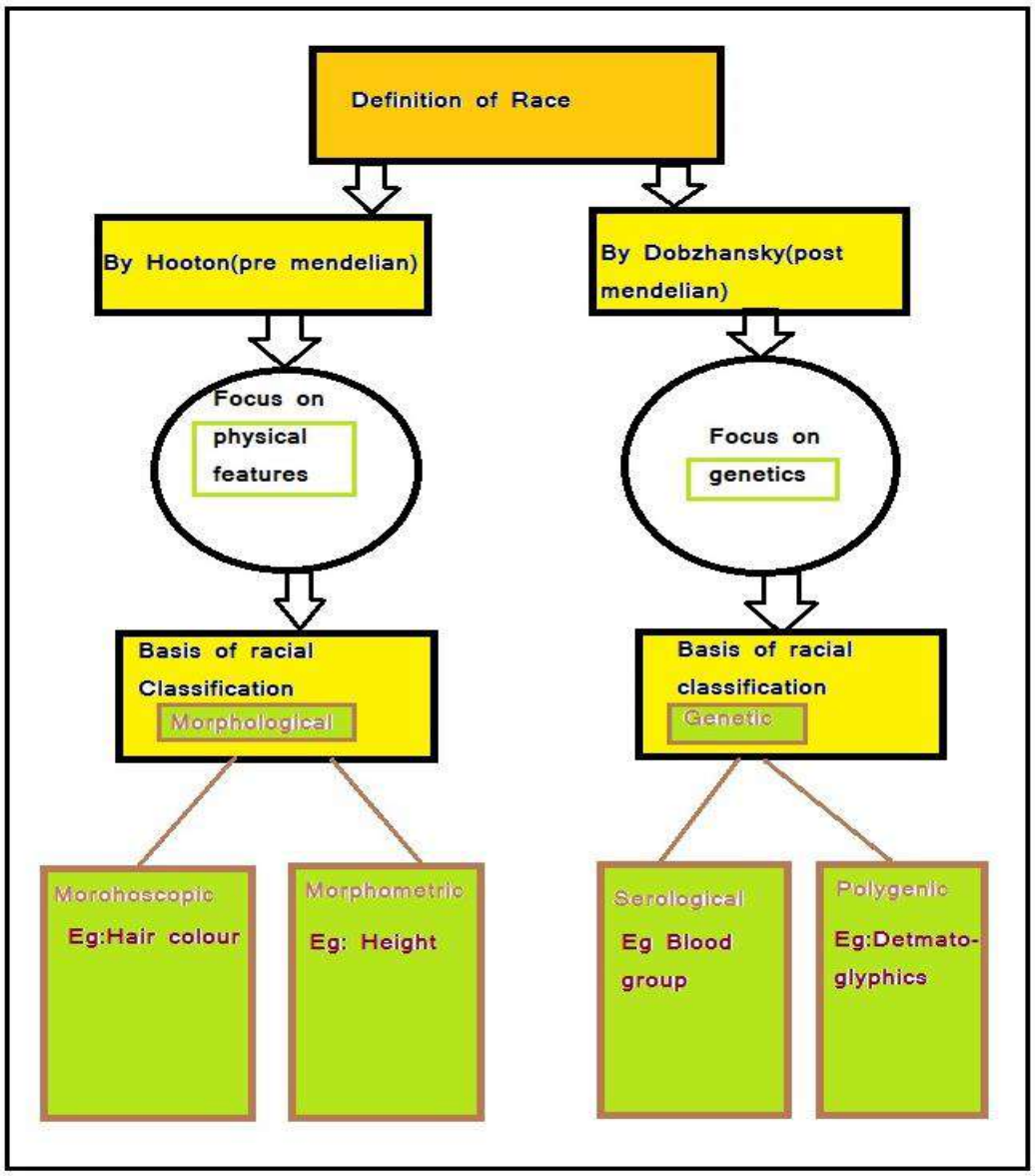

Figure 1: Origin of racial criteria.

Body:

Racial criteria is largely divided into two which a further subdivided as depicted in the chart below.

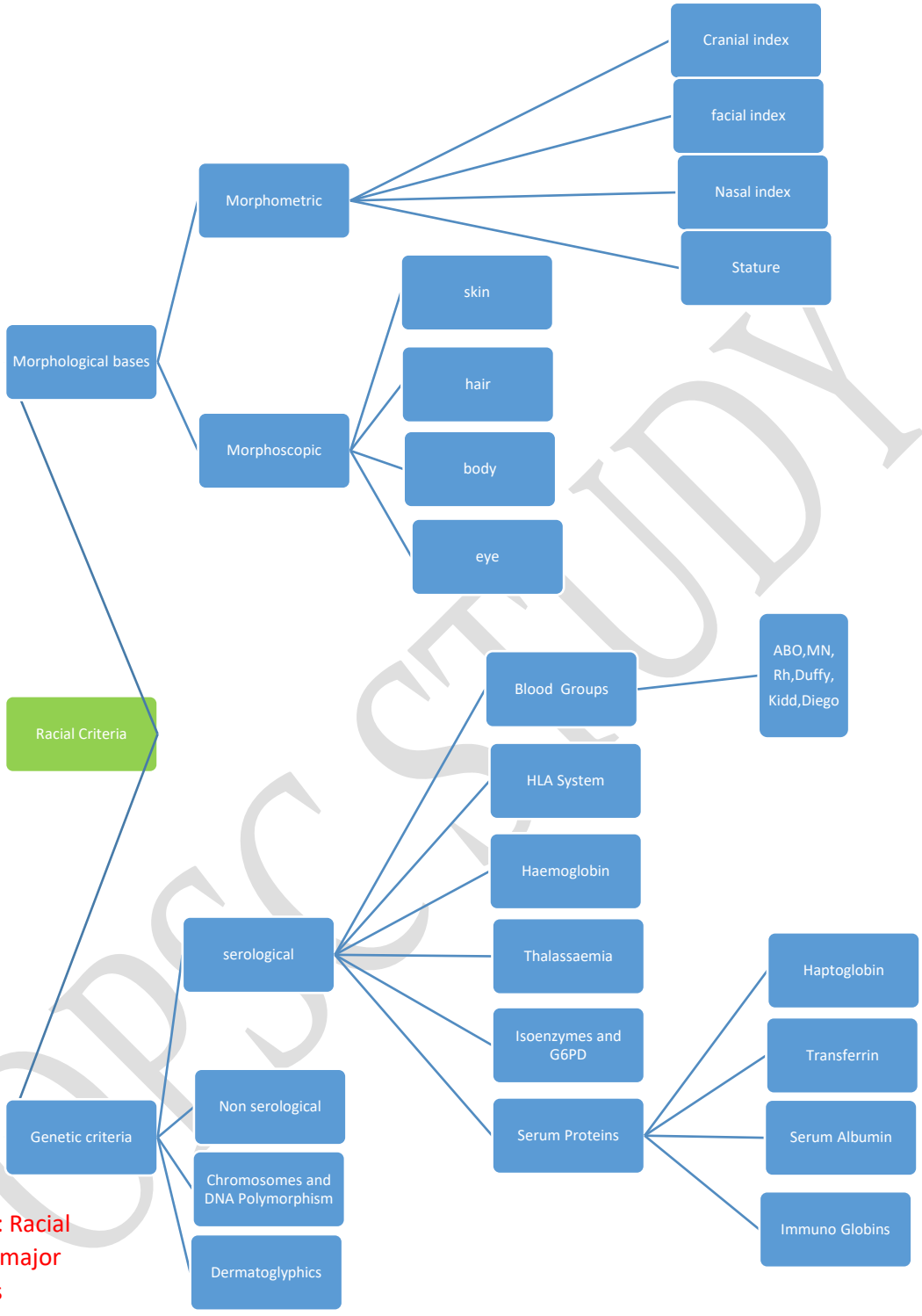

Figure 2: Racial criteria: major divisions

Morphological criteria of Race:

It includes easily observable physical traits like skin and hair colour, hair form, characteristic features of nose, eyes, lips etc.

The morphological traits have polygenic inheritance, where genotype-phenotype relationships are not clearly known. These characters are adaptive in nature, and that is a fundamental criticism used against these traits to measure genetic distance between human populations.

Oliver and Howells (1957) emphasised the use of metric traits and morphological averages as an exploratory device in human taxonomy.

The morphological traits fall into two major categories:

1) *Somatoscopic/Morphoscopic traits:* Not based on exact measurement and based on visual observation alone
2) *Anthropometric/Morphometric traits:* Based on exactly measured standardized methods, like stature, head length, head breadth and other body measurements.

Skin Colour:

Skin colour determines the amount of skin pigments like melanin, melanoid, carotene and factors like haemoglobin, oxyhaemoglobin and optic effect due to scattering.

Skin/hair/eye pigmentation genes are: Albino - TYR,

Global distribution of skin colour reveal that different human populations of the world may be classified into three major groups:

- White Skinned People or Leucoderms: Europeans, some groups of Western Asia
- Yellow Skinned People or Xanthoderms: Asiatic Mongoloids, Bushmen
- Black skinned People or Melanoderms: Negroes: Africa

Hair

Hair colour: Majority of people have darker shades of hair colour. Blonde and red shades are predominantly found in the Western Europe. There is a gradient of increasing blondness from South to North Italy.

Scotland is the country with the highest content of red haired people, as about 13% of them have red hair. (gene melanocortin-1 receptor (MC1R))

Each race has its own dominant colour.

- *Negeroids: Brown Black*
- *Mongoloids: Brown to Brown Black*
- *Caucasoids: Lighter shades*

Hair Texture:

Hair texture is traditionally divided into three categories:

Coarse: Common among mongoloids Negroids

Medium: Coucasoids

Fine : Coucasoids

Hair Form There are about 12 types of head hair forms broadly categorized under three major groups:

- Leiotrichous: stretched- thick straight hair; smooth- thin straight hair; flat or slightly wavy- waves having wave length between 5.5 and 6 cm. Such hair are found in the Mongoloids, Amerindians and Eskimos, Polynesians and Ainus.
- Cymotrichous: These can be categorized into: a) Broad wavy- having smaller radius varying from 3.5 to 4 cm.; b) Narrow wavy- short and strongly curved waves having wave length of about 2.5 cm.; c) Curly- broad spirals having waves in different planes. These types of hair are found among people from Western Asia, The Veddas of Sri Lanka, Australians, Indo-Afghans, Indonesians, Ethiopians and Europeans in general.
- Ulotrichous or Woolly Hair: These comprise frizly, pepper corn and spirals. These can be divided into five categories: a) Frizzly- irregular waves in different directions; b) Loose frizzly- circular or flat spiral of about 1.5 cm. in diameter; c) Thick frizzly- circular and flat spirals having about 7-10 mm. diameter; d) Pepper Corn or Filfill: This type has knots of thick rolled hair; e) Spiral: This type consists of hair having very narrow spirals of thick twisted hair of small length.

Christiano (2008) have recently demonstrated that mutations in a gene, known as P2RY5, cause hereditary "woolly hair"- hair that is coarse, dry, tightly curled and sparse.

Morphological Characteristics of Eye

On the basis of shape of eye races can be divided in mongoloid and non mongoloid. A mongoloid eye has Oblique palpebral fissure, outer angle being higher than lower angle, a narrow slit and complete epicanthic fold.

A non mongoloid eye has wide open and strait eye, no eye fold.

Divisions on the basis of Colour of eye:

Caucasoid: light brown to blue

Mongoloid: Light brown to dark brown

Negroid: Dark Brown to brown black.

Nose

Nasal Index

It is a ratio of nasal breadth to nasal length multiplied by one hundred.

Nasal shape is determined from the nasal index value as follows:

Nose Form Index Range

- Leptorrhine (Narrow nose) < 70 E.g.: eskimos
- Mesorrhine (Medium nose) 70.0 – 84.9 E.g.: high castes in India
- Platyrrhine (Broad nose) 85.0 – 99.9 E.g.: Indian tribes

This is basically heat adaptation. Broad nose allows to exit greater quantity of warm air from lungs giving cooling effect.

Morphological Characteristics of Lips

Everted lips seem to have a slight ability to help cool the body because capillaries run very close to the surface of the lips, and the slight moistness of the lips helps in cooling by evaporation. The most everted lips are found on the faces of Negroids and the least everted lips on the faces of some Europeans.

Morphological Characteristics of Face

Facial form is determined with the help of facial index.

Facial Index = Morphological facial height/ Bizygomatic breadth × 100

- *Euryprosopic (Broad face) 79.0 - 83.9 E.g.: Caucasoid*
- *Mesoprosopic (Medium face) 84.0 – 87.9 E.g.: Mongoloid*
- *Leptoprosopic (Narrow face) 88.0 – 92.9 E.g.: Negroid*

Morphological Characteristics of Ear

- Ears are classified depending on the ear's length and breadth as long and narrow, as found in Mongols; short and wide, as found in Negroes, Negritos, Bushmen and Hottentots. Majority of the people belong to intermediate type.
- Europeans and Mongoloids have well developed ear lobes while Negroids have small free lobes.
- The attached ear lobe is found among Whites and Negroids.

Morphometric traits:

Head

The Cephalic Index
C.I. = (Maximum Head breadth/Maximum Head length) ×100.

Head shape has been arbitrarily classified, on the
basis of cephalic index, into three categories as follows:

- Delicocephalic or long headed < 74.99 < 76.99 E.g.: Negroid Caucasoid
- Mesocephalic or mid headed 75-79.99 77-81.99 E.g.: Mongoloid Negroid Caucasoid
- Brachycephalic or broad headed 80 over 82 over E.g.: Mongoloid Caucasoid

Body Build (Stature)

Stature is dependent on paratypical(environmental) and diatypical factors(heriditory). Paratypical plays a secondary role.

Tall : >170cm E.g.: Caucasoid, negro, sikh Rajput of India

Medium: >170-160cm E.g.: Mediterranean Eskimo Dravidian

Short : <160cm E.g.: Andamanese

Nose

Nasal Index
It is a ratio of nasal breadth to nasal length multiplied by one hundred.
Nasal shape is determined from the nasal index value as follows:

Nose Form Index Range

- *Leptorrhine (Narrow nose) < 70 E.g.: eskimos*
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This is basically heat adaptation. Broad nose allows to exit greater quantity of warm air from lungs giving cooling effect.

GENETIC CRITERION OF RACE

During the first half of the 20th Century, the following genetic markers were used to study differences among human races on the basis of their relative phenotypic frequencies.

Serological Criteria:

Blood Groups

ABO blood group has four phenotypes (A, B, AB, and O). The genes for O and A are widespread among all groups of people on the globe, while B is the rarest allele.

The highest frequencies of A are found in small, unrelated populations, especially the Blackfoot Indians of Montana (30-35)

Type O is particularly high in frequency among the indigenous populations of Central and South America, Blood type B is relatively common in Chinese and Indians in about 25% of the population .

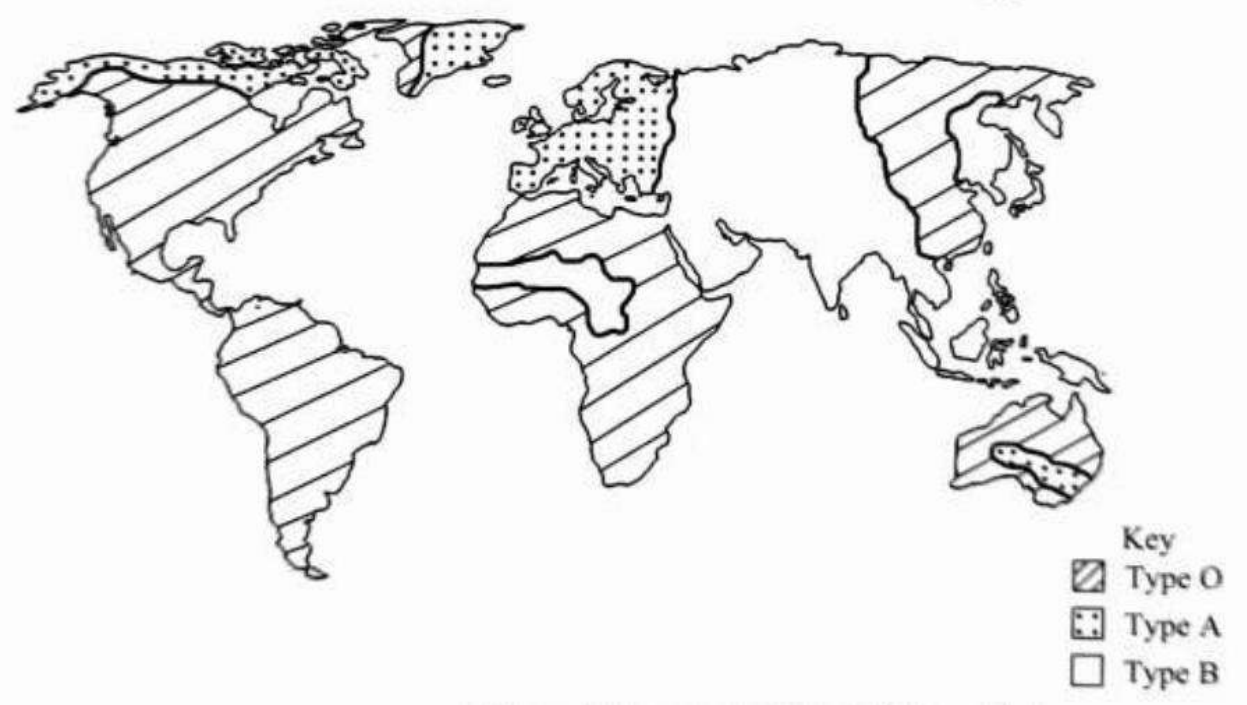

Figure: ABO groups found in the world.

Rh Blood Group System

Rh D blood group has two phenotypes: Rh D positive (Rh+) or Rh D negative (Rh-). Studies have shown that most African populations are around 75% Rh+. Europeans have the lowest frequency of this blood type for any continent; Rh- is rare occurs in caucasoids (15%)

It is relevant in Haemotytic disease in pregnant mothers.

MN Blood Group System

The frequencies of the M and N genes of the MN system have been found to be closely similar up to 50 per cent. There are three phenotypes: M, N and MN with specific variations. Australians have low frequency of M blood group, while American Indians have low N blood group.

Under this system many new antigens have been found, but the Henshaw or He antigen, has great anthropological value, for it appears to be totally limited to populations of African ancestry.

HLA Groups: These are mostly responsible for graft rejection. The alleles that is high in all population is A2 and high especially in Africans is A1

Haemoglobin: It is having over 100 variants. Such huge variations is shown to occur in malaria prone regions especially with Hb-S type. It occurs in tropical countries including Africa and India.

Thalassaemia: It is a blood clot diaorder. It is of two types. Alpha-thalassaemia and Beta-thalassaemia.

These are common in most tropical and sub tropical countries including India, South Ease Asia, Pacific Islands.

Isoenzymes and G6PD:

These are enzymes whose function is same but structure is different. The variability of enzyme G6PD is reflected in the rate of migration of enzyme in an electric field and severity of RBC destruction during intake of certain substances. TH normal forms are GD(B+), GD(B-), GD (A+), GD(A-) prevalent differently in Mediterranean, middle east, Greece, India . The deficiency state is found to be resistant against P talciparum.

Serum Proteins

1.**Haptoglobins:** Concerned with transfer of haemoglobin to liver and ultimate production of salts. Haptoglobin gives three bands in electrophoretic studies. Type 1-1,typre 2-2,type1-2 which are results of combination of Hp1 or Hp2 alleles.

Inciednce of Hp1 is 40% in western Europe and 70% in tropical Africa

2. **Transferrin:** Transports Iron. It has 20 variants. A slow variant TfD1 is common in Africa

3.**Serum Albumin:** This is a fast variant common in USA and Canada

4. **Immuno Globins:** These are humoral antibodies formed by B-lymphocytes in response to presence of foreign substance in body. Its Types are IgM, IgG, IgA,IgD,IgE.

- IgG is the most abundant Immunoglobin in mammal and the only one that crosses human placenta.
- IgA is only antibody found in sweat and tears. It is chief antibody secreted in milk after childbirth.
- IgE is involved in hypersensitivity reaction in cases like asthma
- It has been found that different populations are characterised by different GM characteristics.

Non serological Criteria

a. **Secretor status:** sweat, tear, semen contain a blood group like substance. Secretor gene (S) Is dominant over non secretor gene(s). Thus, Ss or SS will be a secretor.

High frequency of S is found in Caucasoids and s in negroids and Mongoloids are placed in between.

b. Tasting Ability: Ability to taste Phenyltheocarbamide(PTC) classifies taster or non-taster. T is dominant over t (non tasting gene). High frequency of T is found in Caucasoids and t in negroids and Mongoloids are placed in between.

Human Chromosomes and DNA Polymorphism

Large variation is observed in length of Y chromosome. Long Y chromosome is observed in Japanese and short ones in Australian aborigines. C band variation is also observed but its significance is not clear.

Several types of variation in DNA is observed with the use of restriction enzymes. E.g. One of fragments 7.6kb is associated with sickle gene in Kenya and India but in Nigeria, Mediterranean sickle gene is associated with 13 kb fragment.

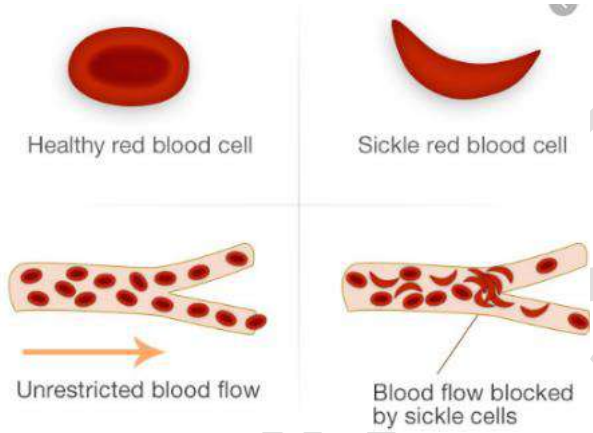

Figure: Sickle cell blocking blood flow.

Dermatoglyphics: Is the study of ridge patterns on skin of fingers, palm toes, soles. These are permanent and does not change with age. Maximum whorls occur in mongoloid, loops in Caucasoid and arches in negroid.

Its inheritance, mutation to change is difficult, being polygenic in nature.

Other Genetic Traits

Ear Wax

The consistency of ear-wax is found to be under genetic control. Dry allele being predominant in the Mongoloid peoples; wet allele in Caucasoids and absent in Negroids.

Urine

Urine is an indicator of internal body chemistry. beta-amino-isobutyric acid (BIAB) is rarely excreted in large amounts by Europeans, while excess excretion is common in Mongoloids.

Conclusion:

Thus, racial criteria's not only helps us in racial classification but also analyse about diseases, its prevention, evolution, reasons behind a biological trait, anthropological reason behind a culture form etc.

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Question:

1(b) Neanderthal Man. 20 marks

Sample Model Answer:

How to write?

Understanding the question:

Context: Touch maximum dimensions and Diagrams

Topic: Neanderthal Man

Purpose: Write in detail

- Since this is open ended question, we can touch maximum dimensions in relevant direction

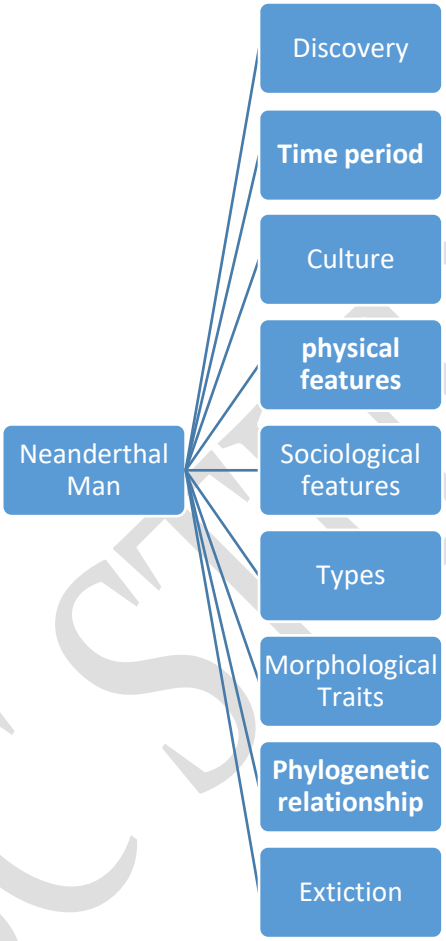
Structure of answer:

Introduction: definition or brief explanation of Neanderthal man

Body:

- Touching maximum dimensions of Neanderthal man
- Structure of the body should be mentally pre-planned to maintain flow of the answer.

A sample structure is given below.



Conclusion: concluding in relation to relevance, importance and significance of Neanderthal man

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Answer:

Introduction:

Neanderthals are an extinct species of genus Homo who appeared between 200,000 and 250,000 years ago (between Homo erectus and modern man). They differ in DNA by just 0.12% from modern humans.

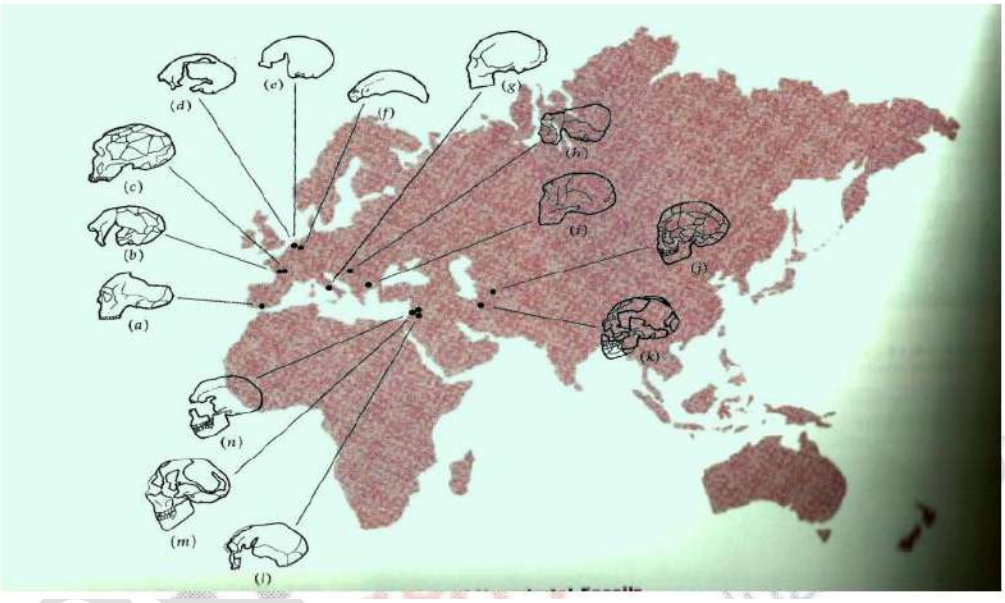
In the year 1864, William King coined the name Homo neanderthalensis. Later, it was named as Homo sapiens neanderthalensis, a subspecies of Homo sapiens.

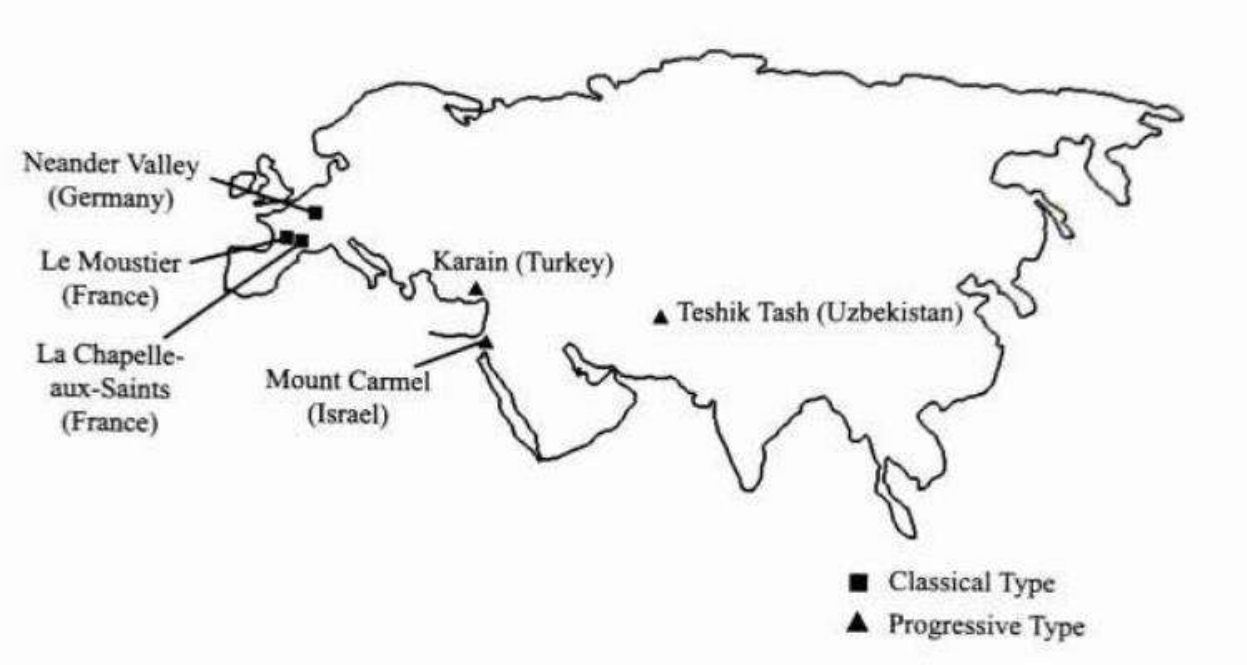
BODY:

Dimension 1: Discovery

Remains were found from places in Eurasia, from Western Europe to Central and Northern Asia in the year 1856 from the Neander valley near Dusseldorf in Germany.

Varieties of Neanderthals and their distribution





Several fossils have been discovered from different parts of the world important sites which have been shown above: (*a) Gibraltar; (b) La Quina, France; (c) La Ferrassie, France; (d) Nearderthal, Germany; (e) Spy I, Belgium; (f) Spy II, Belgium; (g) Monte Circeo, Italy; (h) Krapina, Yugoslavia; (i) Petralona, Greece; (j) Teschik Tasch, Uzbekistan; (k) Shanidar1, Iraq; (l) Skhul IX, Israel; (m) Skhul IV, Israel; (n) Tabun, Israel.*

Dimension 2: Time period

The Neanderthals lived during Last Inter-Glacial (Riss-Wurm) to Last Glaciation (Wurm) period. I.e. between second and third glaciation period.

About 55,000 years ago, the climate began to fluctuate wildly from extreme cold conditions to mild cold and back in a matter of few decades.

The physical structure of the Neanderthal, as evidenced from the fossil records, was found to be well suited for survival in cold climate—their barrelled chests and stocky limbs stored body heat better than the Cro-Magnons. However, the rapid fluctuations of weather caused ecological changes to which the Neanderthals could not adapt; familiar plants and animals would be replaced by completely different ones within a lifetime. Neanderthals' ambush techniques would have failed as grasslands replaced trees.

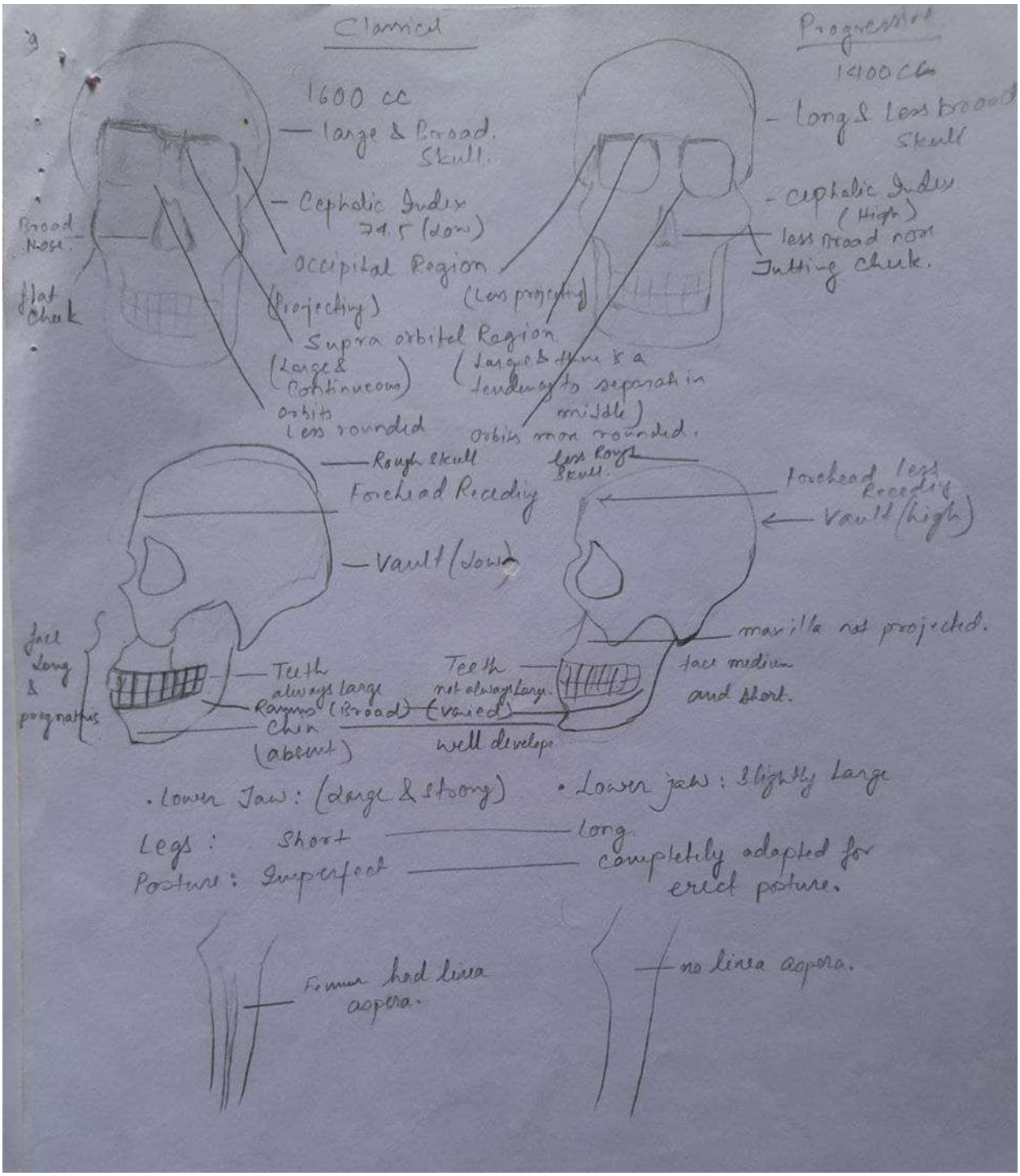
Some scholars argue that H. sapiens may have introduced a disease that contributed to the extinction of Neanderthals, and that may be added to other recent explanations for their extinction.

Dimension 3: Culture

Since lithic tools of Middle Palaeolithic cultural period (especially Mousterian culture) were found along with them, Neanderthals were also referred to as the makers of Mousterian Culture.

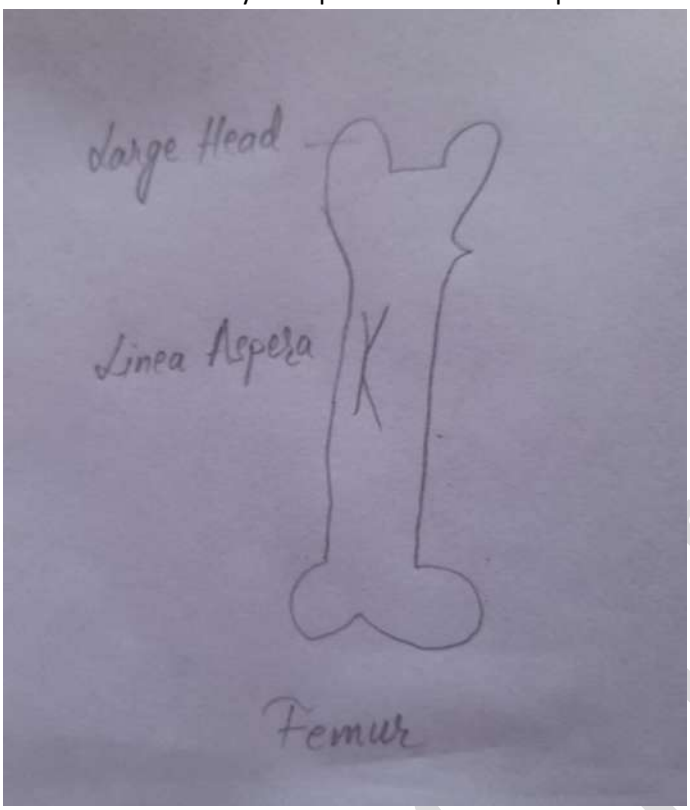
Dimension 4: General physical features of the Neanderthals

1. Height: Males 164-168 cm (65-66 inch); females 152-156 cm (60-61 inch).
2. Skull was dolichocephalic.

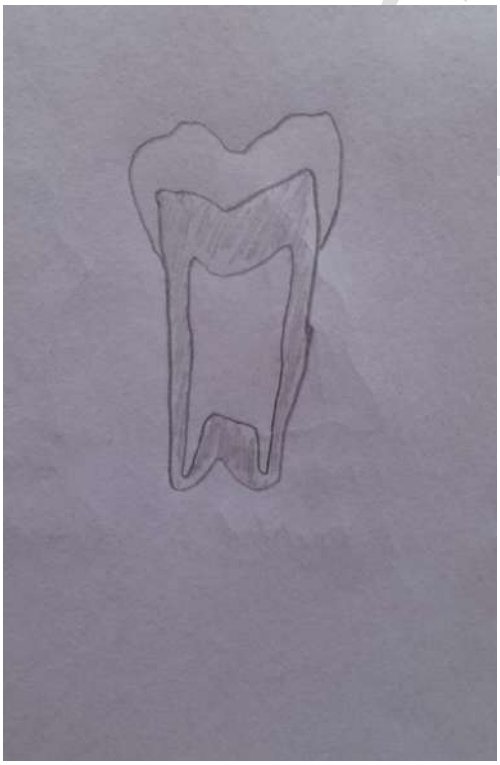


3. Average length and breadth of the skull were 208 mm and 156 mm respectively.
4. The average cranial capacity was 1650 cc.
5. The posterior part of the skull was comparatively broader than the anterior part for which it looks like a barrel from the back.
6. Forehead region was retreating and the nuchal region was rugged.
7. Face as a whole was robust and projecting forward having large incisors and canines

8. Post cranial anatomy: The presence of linea aspera shows bipedalism.



9.
10. Dentition: Both types show tourodontism(enlarged pulp chamber in post canine teeth) and dental arcade



Dimension 5: Sociological features of the Neanderthals

Speech: Some scholars arguing that they were incapable of human speech as they had little poorly developed pharynx. But, current consensus is that Neanderthals were capable to articulate speech.

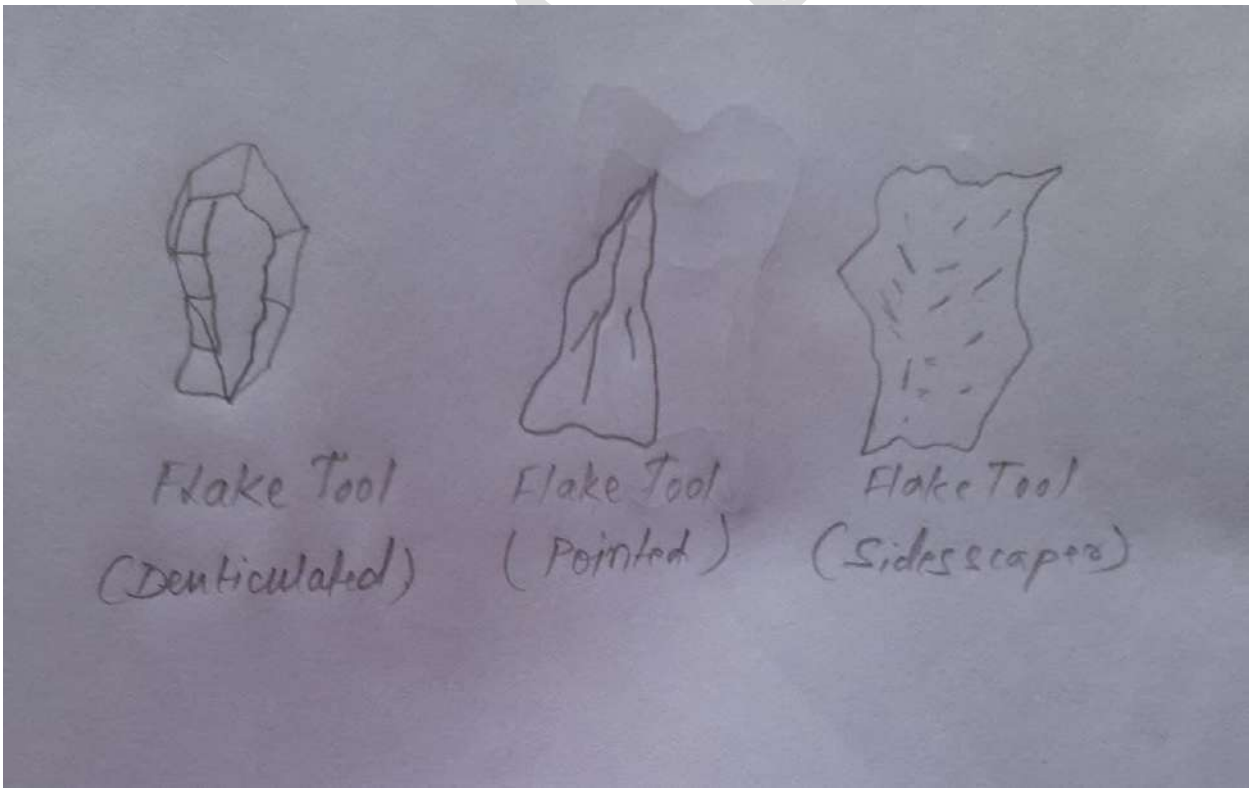
Burial

Neanderthals have been characterized as the first hominid to systematically and perhaps ritually bury their dead.

Some paleoanthropologists interpret artefacts associated with Neanderthal skeletal remains as grave goods. Taking this one step further, grave goods can be seen as indicating a belief in the afterword.

The evidences of flower burial were also found. The objects would aid the dead in a supposed next world

Mousterian Culture Tool Making: Most of the time these flake tools accompanied skeletal remains. These tools were used for killing, butchering, food processing.



Cave Dwelling: As the sheet from scandenavian coultries advanced toward Europe they beagan living in caves and also burnt fire in caves using charcoal.

Winter cloathing: Bone needles and tailored coathes found.

Bear cult: They probably followed bear cult. Skulls of bear found in rectangular fashion in a pit.

Society and religion: Nomadic society with hunting. Possibly had a political system, to keep harmony. There was awareness of dignity of individual and dependence on society. This was evident from the fact that La chapelle aux saints showed treatment of arthritis and Shanidar I showed a surgical operation

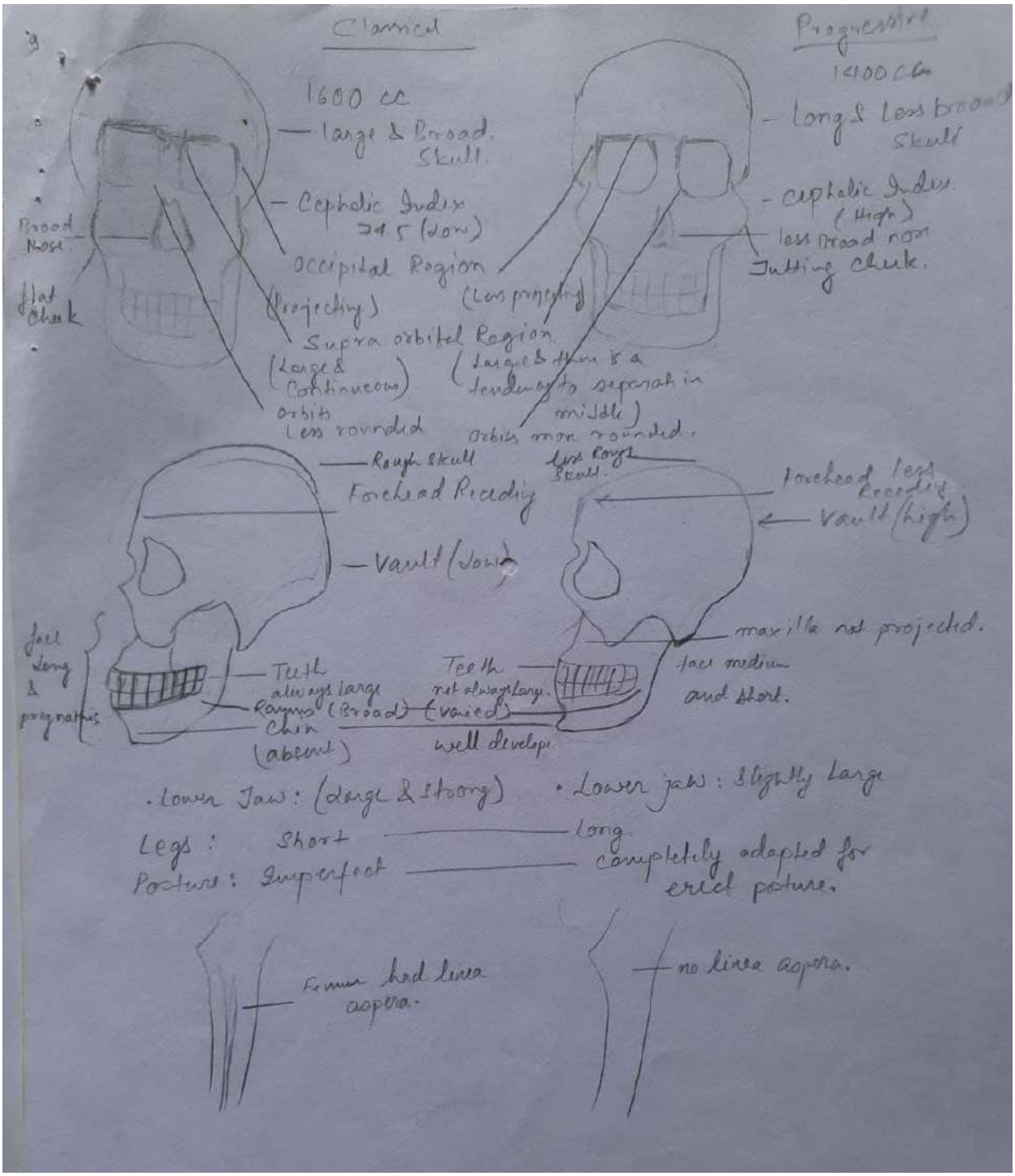
Dimension 6: Types: Classical and Progressive varieties

There is a range of variation in fossil Neanderthals.

Some of the Neanderthals had pronounced ridges over their eye sockets (brow ridges) and more muscular than modern humans. They had flatter, broader noses than modern humans. They had receding chins. Their brains were somewhat larger than those of modern humans (not necessarily intelligence). These characteristics are most strongly displayed in specimens from Europe, so-called Classic (La Chapelle-aux-Saints) Neanderthals.

These characteristics were less pronounced in the Neanderthals of the Middle East, known as Progressive (Tabun, Skhul) Neanderthals.

The progressive varieties lived much earlier than the classical one. The more massive build of Neanderthals, and other features such as flatter noses, especially of the Classic form, has been interpreted as an adaptation to the harsh glacial climates of Ice Age Europe.



Dimension 7: Morphological Traits

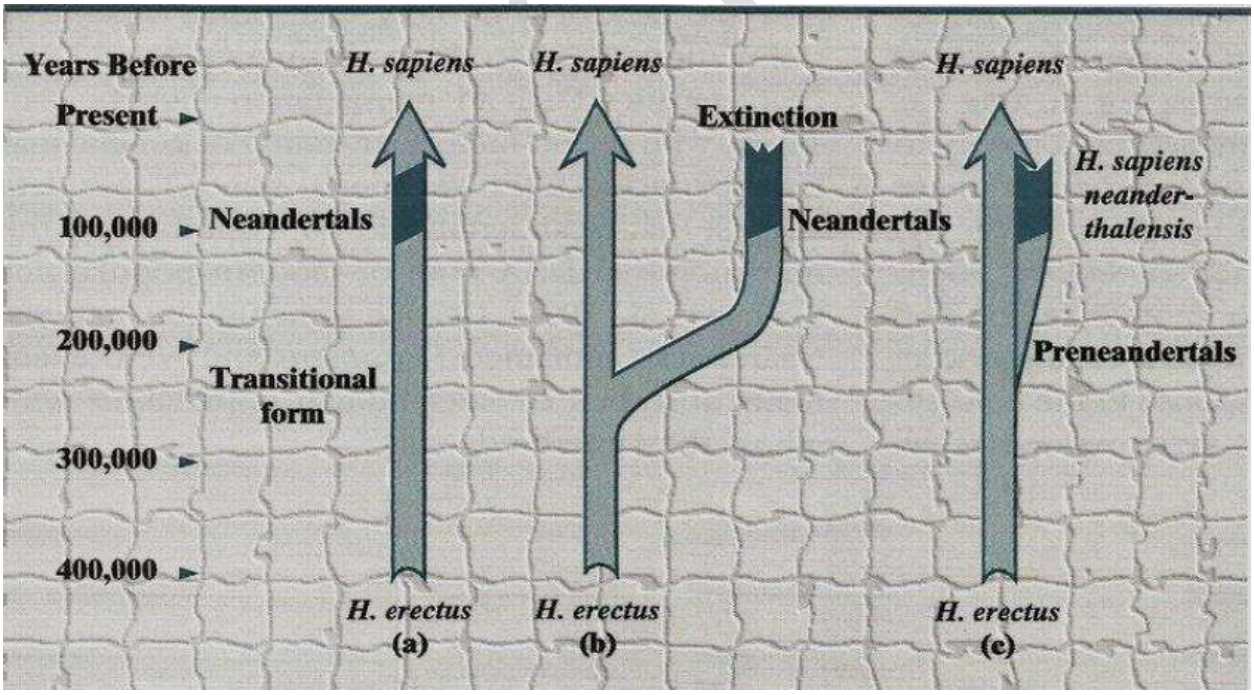
The morphological traits of the Neanderthal did not appear to be solely climatically forced based on the data of the study done by Bradley D. M. (2005).

Classic-type morphological traits were consistently seen in northwestern Europe at times of cooler temperatures. However, generous intermingling of Classic-type and Progressive-type amongst both cool and warm reconstructed palaeoclimate limits the idea of mutual exclusivity. Both Classic-type and Progressive-type morphological traits appear almost simultaneously in the same region amongst similar temperature occurrences. Progressive-type traits are notably absent at the beginning of the 29-25Ka time-slice, but this study does not reveal a major correlative decrease in temperatures as predicted by the study.

Dimension 8: Phylogenetic relationship

The evolutionary relationships between the various forms of *Homo* have been the subject of great speculation and controversy. Prior to 2010, it was largely accepted that Neanderthals were a separate species from Homo sapiens, both having evolved from a common ancestor – H.erectus (specifically H. erectus heidelbergensis). But the findings of the

Neanderthal Genome Project (2010) and gene pool studies suggest that ancestors of modern humans may have mated with at least two groups of archaic humans: Neanderthals and Denisovans. Thus, recent studies like that of Dr Krause (2017) argue that Neanderthals should be included within our species (that is Homo sapiens neanderthalensis).



Three interpretations of the evolutionary relationships between Neanderthals and modern humans: (a) unilinear evolution, (b) separate lineages, and (c) pre-neanderthals.

The most relevant being pre-Neanderthal *H. sapiens* population, possibly originating in another region and migrating to the classic Neanderthal area, underwent a severe natural selection in response to the cold environment of Europe. In this view, natural selection and lack of gene flow with other *H. sapiens* populations produced the distinctive Neanderthal characteristics. Such an interpretation might be consistent with recent molecular testing of g genetic material extracted from Neanderthal bone.

Dimension 9 : Extinction of Neanderthal

According to the study of Thomas Higham (2014) Neanderthal bones and tools indicates that Neanderthals died out in Europe between 41,000 and 39,000 years ago, and that *Homo sapiens* arrived in Europe between 45,000 and 43,000 years ago,

It is now apparent that the two different human populations shared Europe for as long as 5,000 years. The exact nature of biological and cultural interaction between Neanderthals and other human groups has been contested.

Possible scenarios for the extinction of the Neanderthals are:

1. Neanderthals were a separate species from modern humans, and became extinct (because of climate change or interaction with humans) and were replaced by modern humans moving into their habitat between 45,000 and 40,000 years ago.
2. Jared Diamond has suggested a scenario of violent conflict and displacement.
3. Neanderthals were a contemporary subspecies that bred with modern humans and disappeared through absorption (interbreeding theory).

Conclusion: Thus, Neanderthal represents a mixture of primitive and modern traits which makes him a very complex human group.

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Question:

1(c) Scope of anthropology. 20 marks

Sample Model Answer:

How to write?

Understanding the question:

Context: Scope

Topic: Anthropology

Purpose: Write in detail

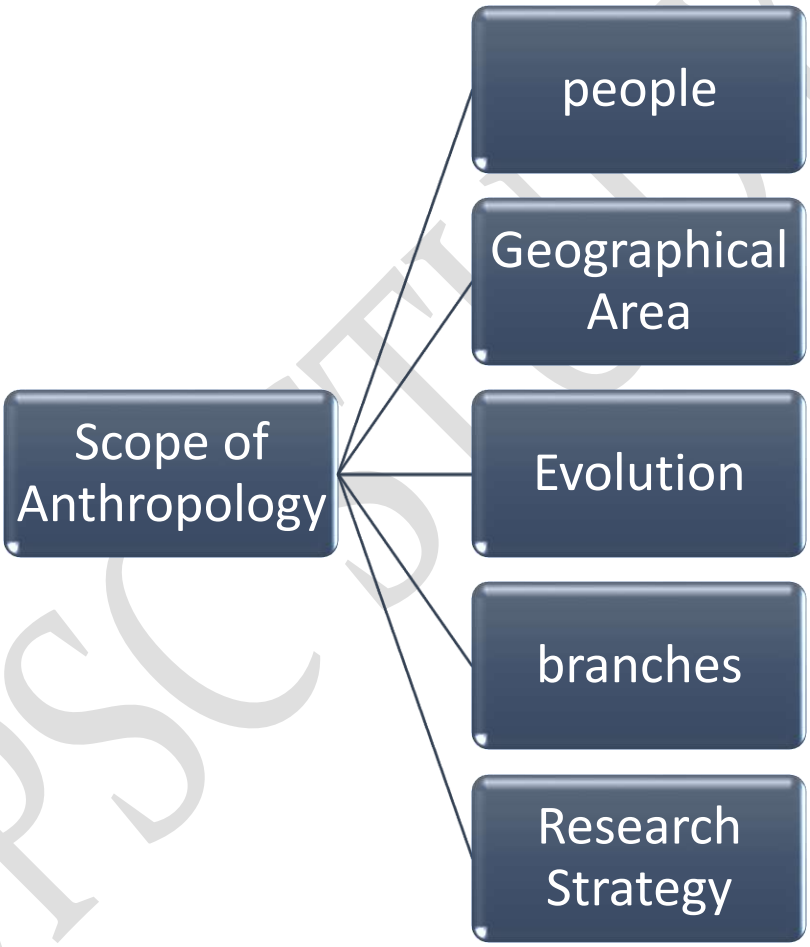
Structure of answer:

Introduction: definition or brief explanation of anthropology

Body:

- Touching maximum dimensions of Scope of anthropology
- Structure of the body should be mentally pre-planned to maintain flow of the answer.

A sample structure is given below.



Conclusion: concluding in relation to relevance, importance and significance of linguistic anthropology

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Answer:

Introduction:

Aristotle coined the term Anthropology. Anthropology is the study of human beings in space and time. So, anything that refers to, forms, affects or results from man is a subject matter of Anthropology

Body

Anthropology strives to understand the humankind in its totality. Anthropology not only describes and analyses but also synthesizes knowledge on the biological, cultural and social aspects of humankind in all places at all times. Moreover, the scope of anthropology is universal.

Dimension 1: Anthropology and people

It does not limit itself to any one group of people, it searches out primitive communities, peasant villages and in the urban settings of modern civilization.

It covers the humans in pre-historic, proto-historic, historic, present and future times.

Dimension 2: Anthropology and geographical Area and Time

It does not confine to any one portion of earth; it covers human beings in pre-historic landscapes, historic settings and contemporary arctic snows, desert wastes, temperate prairies and woodlands. So, anthropology studies human beings right from their emergence till today and in future wherever they live.

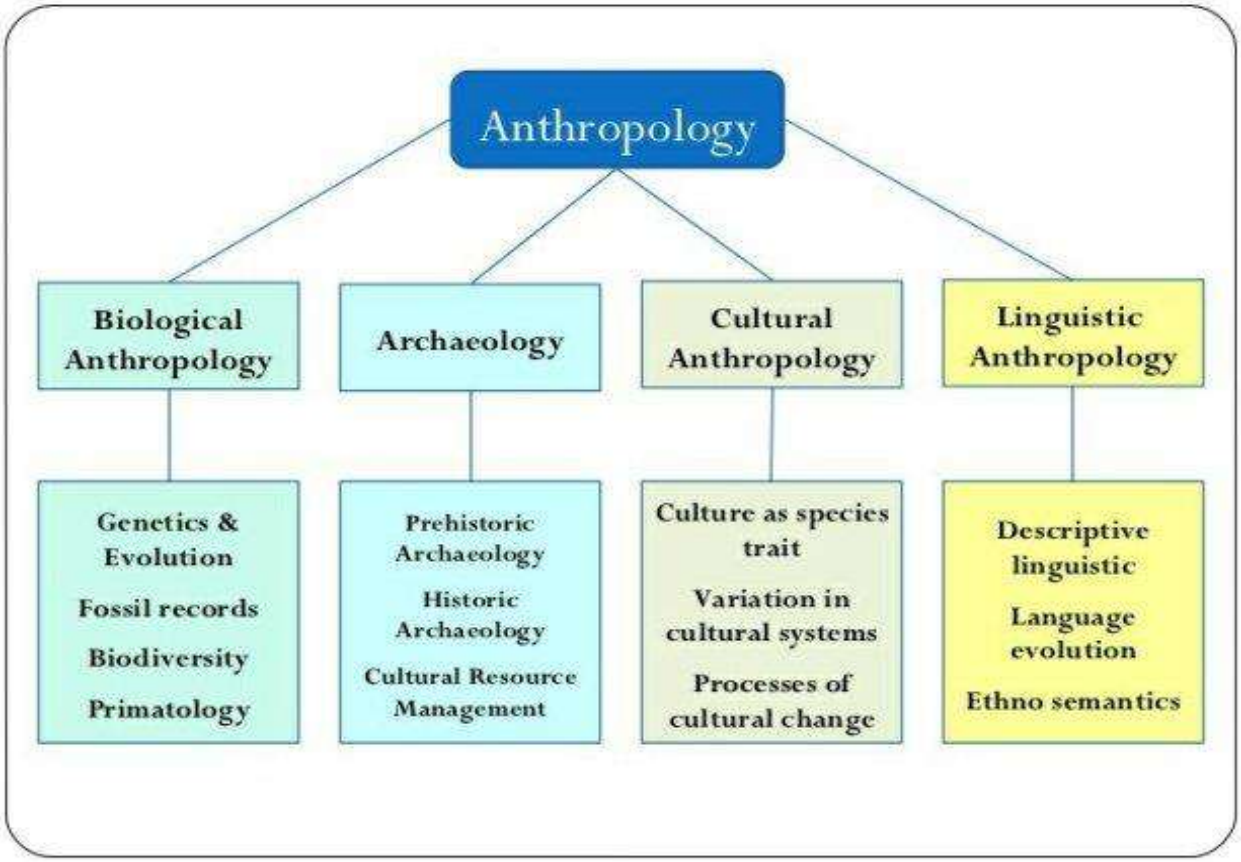
Dimension 3: Anthropology and evolution of humans

Anthropology is concerned with extinct humans and living people. Thus, the scope of anthropology examines:

1. How humans are basically organisms,
2. How humans in order to transcend their animal origins have adapter themselves to their environment by creating culture
3. How humans, while creating culture and group life, have evolved and used language as an effective means of communication,
4. How humans in their adaptation to diverse environments have created an amazing variety of cultures and group lives, and
5. How humans in their fascinating variety of cultures and group living display solutions to problems which are rooted in their indivisible unity in all places, at all times.

Dimension 4: Scope of Anthropology under its branches

Scope of Anthropology can be broadly described under its sub branches.



(1) Biological/Physical Anthropology

(2) Sociocultural Anthropology

(3) Archaeological Anthropology

(4) Linguistic Anthropology

(1) Biological Anthropology

Biological Anthropology: Studies humans in relation to culture and society at all places at all times. It includes human evolution, race, genetics etc.

It is studied through various theories (Darwin's theory, Synthetic theory etc.) to conclude on biological evolution and biological variation.

(2) Sociocultural Anthropology: It studies society and culture at all levels of development in all places.

(3) Archaeological Anthropology: It does systematic analysis of fossils and arts and artefacts to conclude on evolution of material culture

(4) Linguistic anthropology: examines languages in the full range of social and cultural settings. It also studies by evolution and variation in languages and its relation to culture. How culture modifies language and vice versa.

Basically, Scope of anthropology involves study of man in totality. Thus, unlike other studies which studies in part, anthropology studies whole science or all aspects of humankind. For this reason, they are called "part sciences" and anthropology as whole science".

Dimension 5: Research Strategy

To deal with such vast and universal scope, anthropology has adopted a research strategy in terms of several approaches, namely the field-work approach, the holistic approach, the comparative approach, the systems and processes approach, the emic and etic approach and the case study approach. The fieldwork approach deals with the process of collecting information about the biology, culture and society of people extinct or present, wherever they lived or live presently. It highlights collection of raw material for the use of anthropology

The holistic approach tries to understand every aspect of humankind in relation to the whole and the whole in relation to every aspect. This enables us to have a full understanding of the subject matter of anthropology.

The comparative approach compares the biology and culture and society of different people in order to learn how people came to be.This approach enables us to have a clear-cut understanding of the universal, general and particular features of human biology, culture and society of humankind.

The systems and processes approach tries to understand each aspect in terms of its major systems: morphological, anatomical, serological, genetic, respiratory, digestive, reproductive and other systems in human biology: marriage, family, kinship, economic, political, religious and other systems in culture and status, role, structural, organizational and functional and other systems in society. The focus of attention is on the study of the nature and working of every system in relation to every other system and ultimately gaining understanding of the whole aspect. This approach reinforces the holistic understanding of the subject matter of anthropology

The emic and etic approach deals with the "emic" or the people's view and the "etic" or the anthropologist's view about the biology, culture and society. It tries to translate the people's view into anthropological view so as to communicate the perspectives of the people in terms of the perspectives of anthropology. Thus, this approach provides completeness to description, analysis and interpretation of the subject matter of anthropology.

The case study approach examines in depth the biological, cultural or social aspects of an individual, a family, an association, a community or a single episode. By analysing several case studies from the same society on the same topic, one can learn much about the subject matter of anthropology

Conclusion:

Thus, anthropology arrives at the most complete understanding of humankind. It studies each and every aspect of the life of humans whereas it is not so by other disciplines. Moreover, unique features of anthropology such as holism, cultural relativism, cross-cultural studies and participant observation distinguish it from other social sciences.

Everything under the sun is grist to the mill of anthropology . The distinctiveness of anthropology lies in its over-arching, comprehensive and universal scope intertwined with the field-work oriented, comparative and holistic approaches in order to have a special synthesizing body of knowledge that presents a profound and composite understanding of humankind.

It is here one has to recapitulate what Kenneth E. Boulding had to say about the scope of anthropology:

So the net that they takes as big as the lake, Let the fish get away, If "The whole vast perspective of man is what anthropologists scan, they can"

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Question:

1(d) Relationship of archaeological anthropology with Geology. 20 marks

Sample Model Answer:

How to write?

Understanding the question:

Context: Archaeological anthropology and Geology

Topic: Archaeological anthropology

Purpose: Relationship

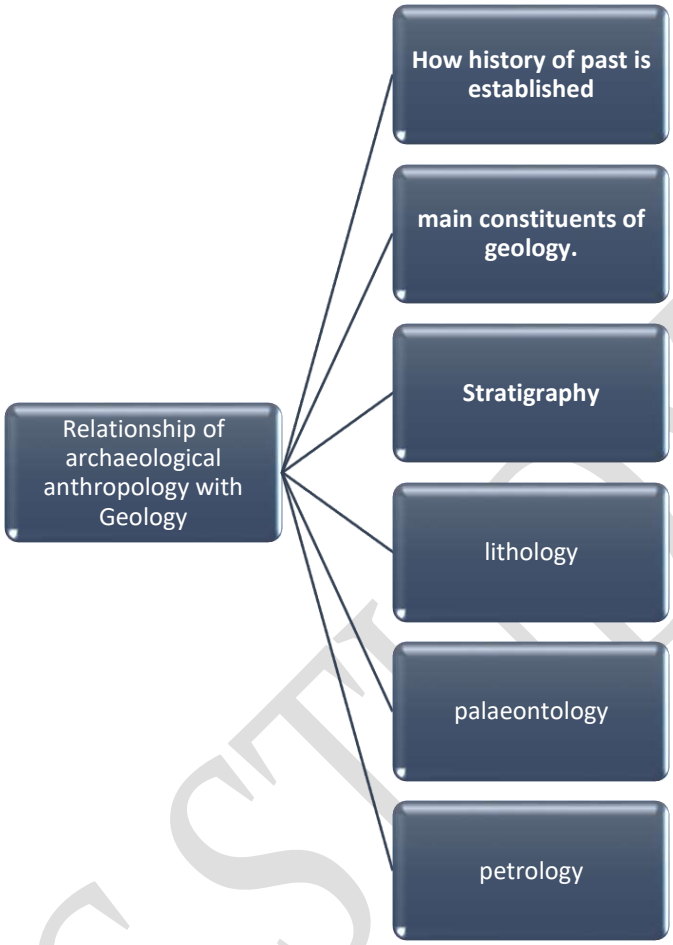
Structure of answer:

Introduction: Definition or brief explanation of archaeological anthropology and Geology

Body:

- Touching maximum dimensions of Relationship of archaeological anthropology with Geology
- Structure of the body should be mentally pre planned to maintain flow of the answer.

A sample structure is given below.



Conclusion: concluding in relation to Relationship of archaeological anthropology with Geology.

****

Answer:

Introduction:

Archaeological Anthropology is the study of sociocultural behaviour in the proto-historic and pre-historic past. The archaeologist deals with such remains from the past societies such as tools, shelters, remains of plants and animals eaten as food, and other objects that have survived. These remains are termed artefacts and are used to reconstruct past behaviour. Archaeological anthropology is a part of socio-cultural anthropology but the main difference is that it is study of the past culture.

Geology provides chronology. It answers the question "when" man and culture originated and evolved.

Body

Let us now analyse the Relationship of archaeological anthropology with Geology.

With archaeological Anthropology, Anthropologists and Archaeologist rely on concept of geology in analysing archaeological sites, in dating the past and establishing the chronology of their findings to form an idea on the past culture. For this they use the concepts of geology such as pedology(soil), petrology(rocks), and stratigraphy(layers).

Dimension 1: How history of past is established

Man and culture in archaeological anthropology is reconstructed from bits and pieces of early man himself and his material remains found scattered over different spaces over the surface of the earth and below the surface as well.

Method of reconstruction of anthropology of early man is done with the help of a number of sciences. A large number of sciences are involved in the methodology. Most important of the disciplines are as follows; Geography, Geology, Archaeology, History, Botany, Zoology, Chemistry, Physics, Mathematics and many other natural sciences. Anthropology of course is a very important part of the study of archaeological anthropology because it is the mother discipline and has evolved its own methodology.

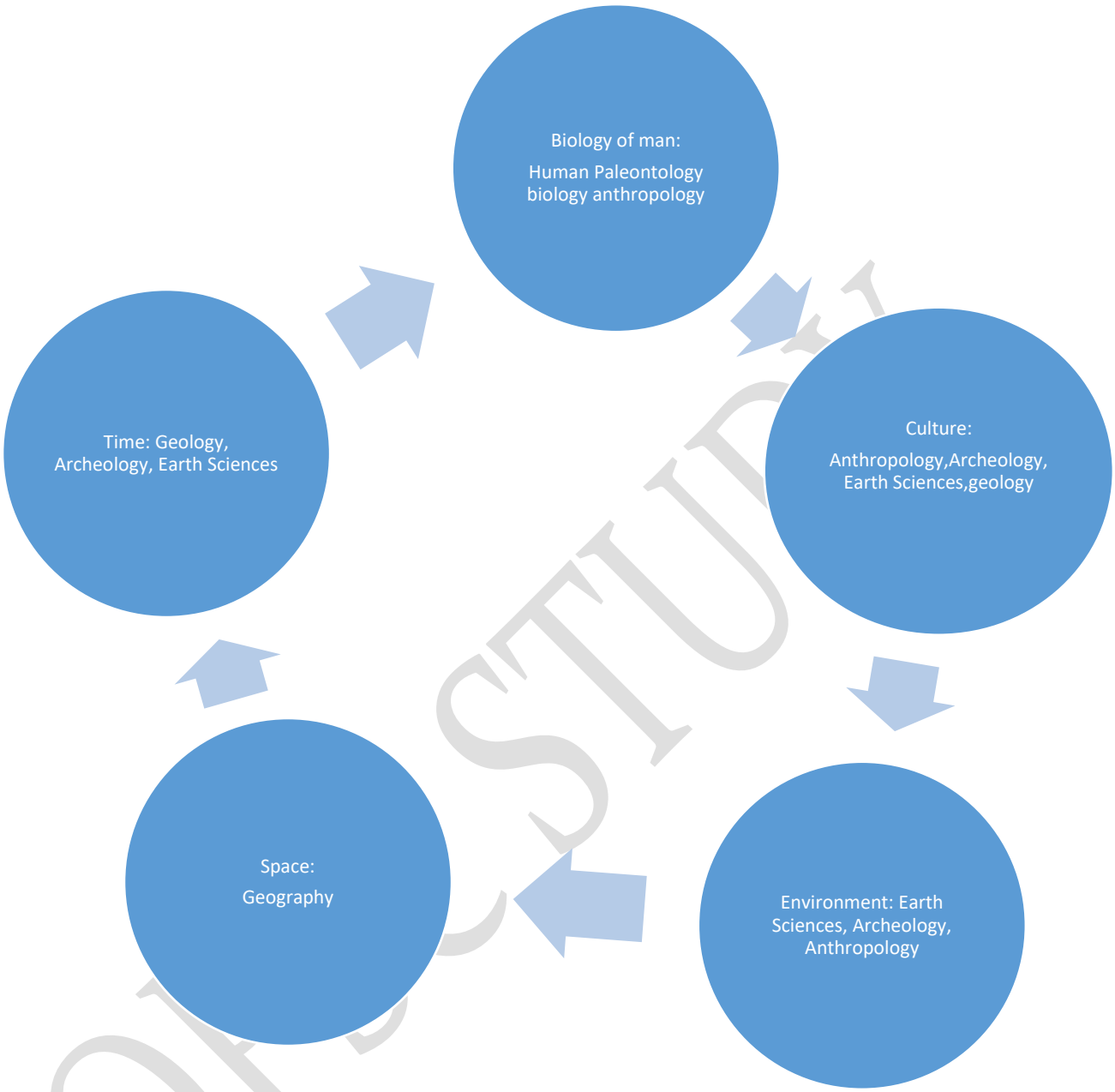
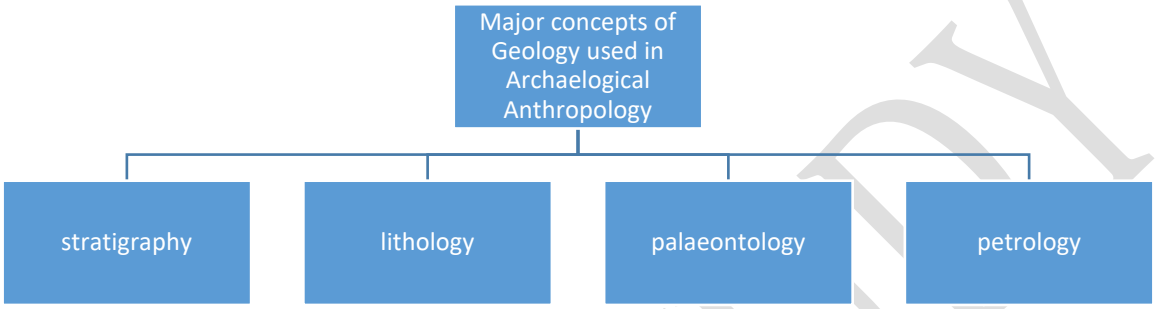


Figure: Scope of Prehistoric/Archaeological Anthropology and the Relationship with other Sciences to Reach the Goal of Reconstructing Anthropology of the Past

Dimension 2: Archaeological anthropology and main constituents of geology.

Geology provides chronology. It answers the question "when" man and culture originated and evolved. Main constituents of geology, which are essential for the present study are; stratigraphy, lithology,

palaeontology and petrology. Each of the branches of geology mentioned has equal importance in relation to archaeological anthropology



Dimension 3: Archaeological anthropology and Stratigraphy

Stratigraphy: this is based on geological law of superimposition. It was first put forward by Charles Lyell in 1830.

- The principle is that layers of earth or strata are superimposed one on top of the other; lower the strata earlier the age. This is true for undisturbed deposits.
- Time dimension found in this way is relative, mainly in terms of earlier or later and in terms of the geological layer within which an artifact or fossil remains are found.
- Since the formation of the earth all the evidences are stored in geological stratigraphy. Stratigraphy is observed either through excavation or at a naturally exposed surface, such as cliff sections along river beds, gorges, gullies etc.
- Biological characters of human being and its culture are divided into several stages on the basis of certain fundamental issues of geology. *Even when we talk of archaeological or cultural stratigraphy, the underlying idea is borrowed from geology.*
- Study of change and development in archaeological anthropology is meaningless without time dimension.

Thus, Stratigraphy provides time dimension, which helps to understand the process of continuity of biology and culture through time, encompassing change, and development. The concept of time is an essential factor for determining diffusion mechanism

Dimension 4: Archaeological anthropology and Lithology

Lithology: *It gives information about the composition of each stratum. Example may be given of a stratum which is composed of materials which could only be brought down and deposited under a glacial condition. If any archaeological material is found from that stratum, we can say that the people who made them lived under a cold climate. Many more inferences can be drawn about men and their culture from lithology, especially about climatic changes and environment.*

- Quality of stratum is studied through analysis of sediments. This involves three elements;
  i) components of the layer;
  ii) degree of humus present; and
  iii) physical properties of the layer.
  Various methods are involved in it which themselves are related to other disciplines, such as, soil science, chemistry, microbiology, botany, zoology etc.

- The composition of the stratum signifies issues related to the formation of the stratum, explaining the composition and formation of stratum, and understanding of contemporary environment.

Thus, Lithology points out changes in the climate that had taken place through time. In this way ecology and process of adjustment by human being under specific environment and under changed condition is reconstructed. It also gives an idea about patterns of culture, its growth and development with cause and effect in the given environmental background.

Dimension 5: Archaeological anthropology and Palaeontology

Main objective of Palaeontology is study of fossils. Fossilisation takes place under fossiliferous environment. Bones of living creatures are made up of organic and inorganic materials. The organic material is bony protein, called ossein. The inorganic materials are minerals in different compositions. Ossein is replaced by silica particles present in the soil in which the bone is buried. The replacement is molecule by molecule. In this process the forms are perfectly preserved, whereas chemical composition changes.

- Fossils provide data about the morphology of the animals and even about human being, in case a human fossil is found. Skull not only provides information about its shape and form but the

endocranial casts give estimation of cranial capacity. At present DNA are being extracted from fossil bones and important data on evolution and other biological aspects are coming out.

Major relation of palaeontology with archaeological anthropology is dating, possible reconstruction of past environment and recovery of remains of early man.

Two kinds of animal fossil remain have importance for archaeological anthropologists. They are as follows:

- Some fossil remains continued from one geological period to another and
- Some fossils are restricted to one particular period of time.

The former are considered as 'index fossil' for a particular time period. When any form of human remains either biological or cultural or both are found to be associated, directly or indirectly, in a proper geological (stratigraphical) context, the human remains may be dated in terms of the associated palaeontological materials.

Example may be given of villafranchian fauna, which is index fossil for Pleistocene period. This group of fauna consists of the genus ofequus (horse), bos (cattle), elephas (elephant) and camelus (camel). Human remains found from any geological stratum bearing any one of the fauna will be considered as Pleistocene in date.

- Animals of the contemporary period indicate generalized environmental condition of the time. From the environment cultural ecology can be reconstructed. Even ecological niche of early man can be understood. *Presence of woolly rhinoceros and mammoth indicates very cold climate.*

- Butzer (1964) has given a chart of animal assemblages found at present in- different environmental zones of the world. Human beings possess greater and better capacity to adjust themselves to the changed condition of environment than the animals. Such adjustment is done with *cultural innovations, such as, lighting fire and /or covering the body with fur* or materials taken and fashioned from the natural resources.

Man and animal relationship can be established with the help of palaeontology. Types of animals' early men hunted or the types they domesticated at a later date. Human palaeontology is part and parcel of palaeoanthropology/ archaeological anthropology.

Different stages of evolution are reconstructed on the basis of comparative anatomy of the modern man with those of fossil findings of early man. Human palaeontologists reconstruct the whole history of human evolution together with development of culture.

Dimension 6: Archaeological anthropology and Petrology

Petrology *This branch of geology studies rock types. Larger portion of human history belongs to Stone Age. Rock types played a major role in fashioning of stone tools.*

- Petrologists make thin sections of different types of rocks and identify them into different categories. Petrologists provide information about suitability of rock types for preparation of stone tools. For a stone tool maker there could be bad or good rocks. Through this kind of study, it was found that early man was capable of selecting ideal rock types for preparation of tools.

The selection of rock types was very much connected with relevant technique of manufacture and of course availability in the locality.

E.g.: Quartz and quartzite were favoured in India and Africa for making lower palaeolithic tools like hand axe etc but with the development of prepared core technique (Levalloisian) they preferred finer grained raw material like cherty quartzite, chert etc.

- The heavy woodcutting implements like axe and adze of Neolithic times were made on hard grained rocks, for example, epidiorite, diorite or altered basalt.
- Technique of tool making and functions of the tools had changed with agriculture during Neolithic times. This necessitated for the change in raw materials.

Petrology speaks about man's capacity for resource utilisation, its exploitation as well as migration in search of raw materials and new resources.

Finally, petrology throws a lot of light on understanding of stone tool making techniques, also known as reduction technology. Petrology is very important for archaeological anthropologists who are working on experimental reduction technology.

Conclusion:

Thus, with archaeological Anthropology, Anthropologists and Archaeologist rely on concepts of geology (such as Palaeontolgy, lithology, pedology, petrology, and stratigraphy) in analysing archaeological sites, in dating the past and establishing the chronology of their findings to form an idea on the past culture.

Question:

2. Throw light on phylogeny of man and apes with focus on evolution of important organs and parts of body. 60 marks

Sample Model Answer:

How to write?

Understanding the question:

Context: Evolution

Topic: Man, and apes

Purpose: Explain in context of important organs and parts of body

Structure of answer:

Introduction: definition or brief explanation of man and apes

Body:

- *Touching maximum dimensions in context of important organs and parts of body of man and apes and their evolution*
- *Structure of the body should be mentally pre planned to maintain flow of the answer.*

Conclusion: concluding in relation to man and apes with focus on evolution of important organs and parts of body

****

Answer:

Introduction:

The difference in Ape and man is due to their habitats since long time and has resulted in differences along locomotive pattern, dietary habits, hand, structure, skull, brain, culture etc.

Body

Dimension 1: Evolution of hand

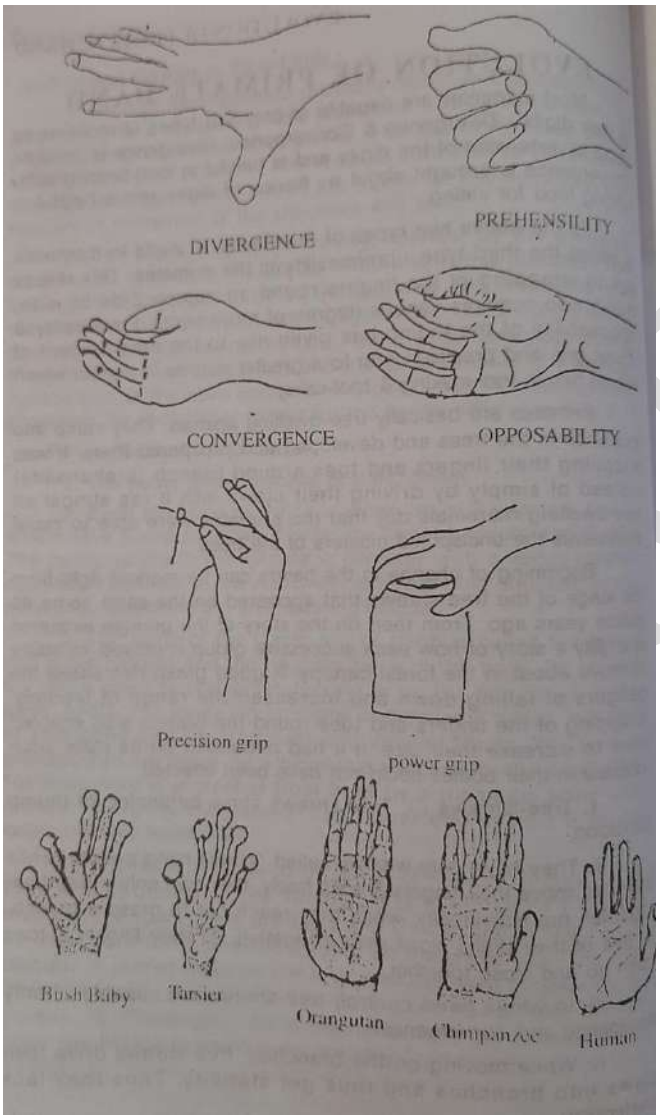
Humans hand is capable of all types of movements convergence divergence prehensility and opposability. Both the components of prehensility - namely power grip and precision grip have reached highest degree of development

In ape it is not much developed in varied direction as they are just using it for swinging and locomotive purpose. Man used it for making stones, knives. Development of brain facilitated precision grip.

To facilitate such an unique development of precision grip the phalanges of the hand have undergone following changes.

I. Phalanges decrease in curvature from monkey & apes to man
II. Terminal phalanx of thumb increase in length and in breadth
III. The length of thumb and the angle between thumb and index finger also increases.

There are present strong muscles in the hand, adductor pollicis and abductor pollicis. Adductor pollicis bring the thumb in alignment with other fingers, particularly with index finger and palm. Abductor pollicis take it away from fingers and palm. A saddle joint between the trapezium (a bone of wrist, one of the carpals) and the metacarpals of thumb is such that it allows movement of the thumb by 45°.

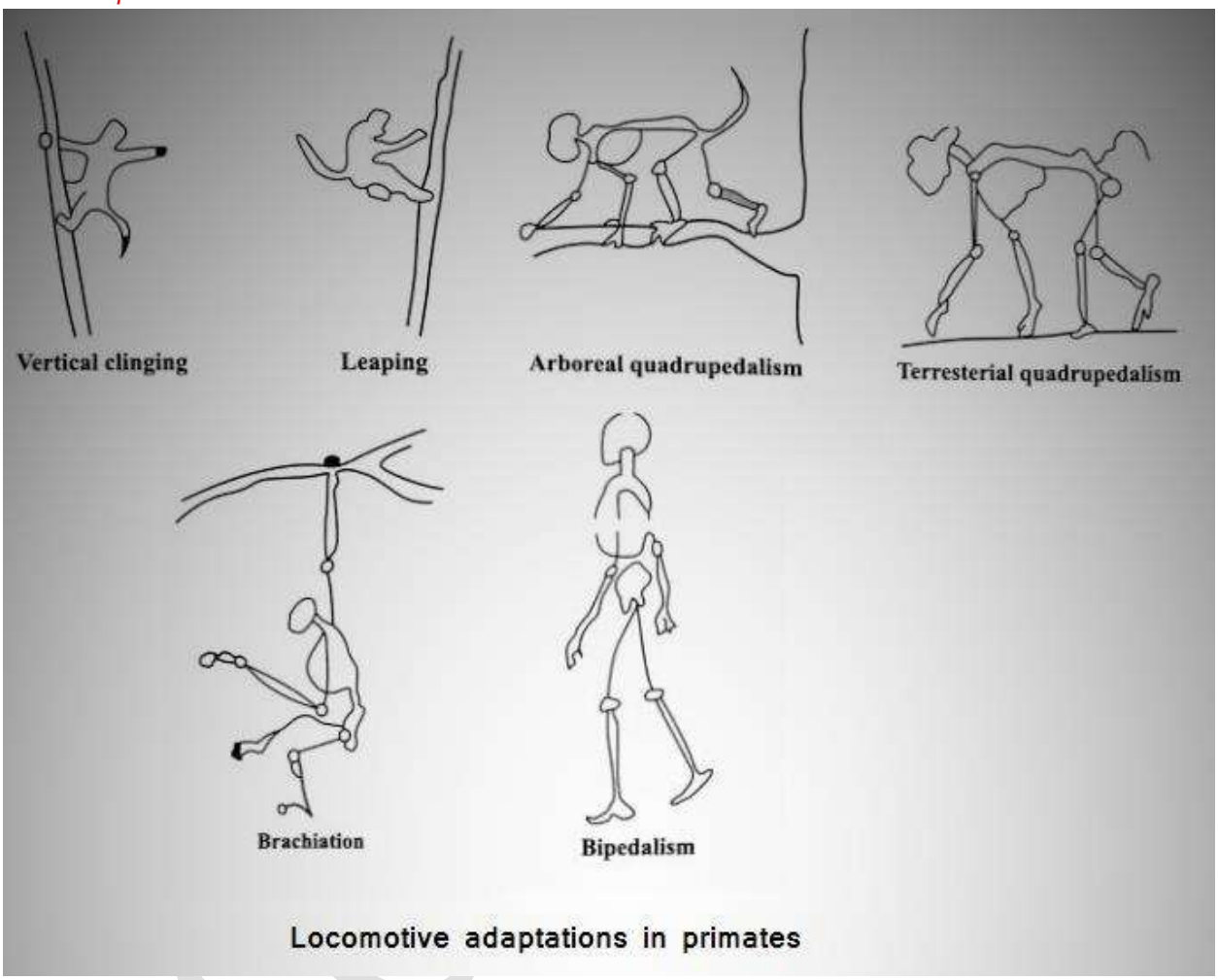


Dimension 2 : Evolution of foot and locomotion

Primates show four types of locomotion

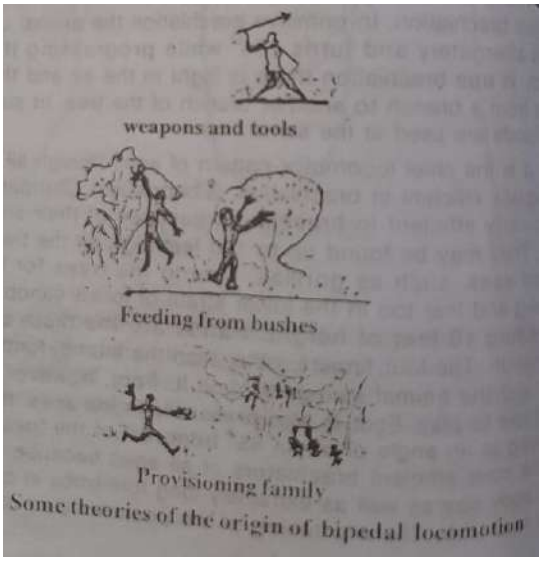
1. *vertical clinging*
2. *quadrapedalism*

3. *brachiation*
4. *bipedalism*



Ape moved towards brachiation and man towards bipedalism. In brachiation ape either used their hand alternatively and turned 180 to swing further on tree branches or jumped altogether using their bath hand limbs.

Humans when moved from forests to grasslands for hunting to long distances they preferred using two limbs only as it demands lesser energy (Washburn). Also, they can use other two limbs to carry food
etc. (Gordon).



According to Napier human bipedalism has evolved due to anatomical changes such as shortening and broadening of pelvis, elongation of hand limb compared to fore limb, adjustment of musculature of hip.

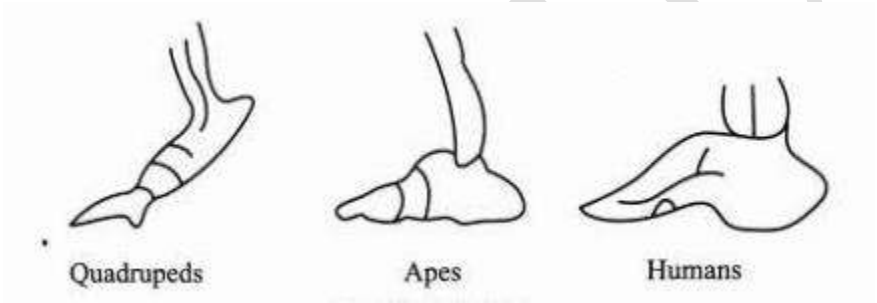


Figure: Foot Evolution

Due to bipedalism, there was changes in many other parts of the body
E.g.: formation of four spinal curves, the vertebrae of sacrum region unite with the ilium of pelvis, increasing in vertebral dimension, forward shifting of foramen magnum of skull.

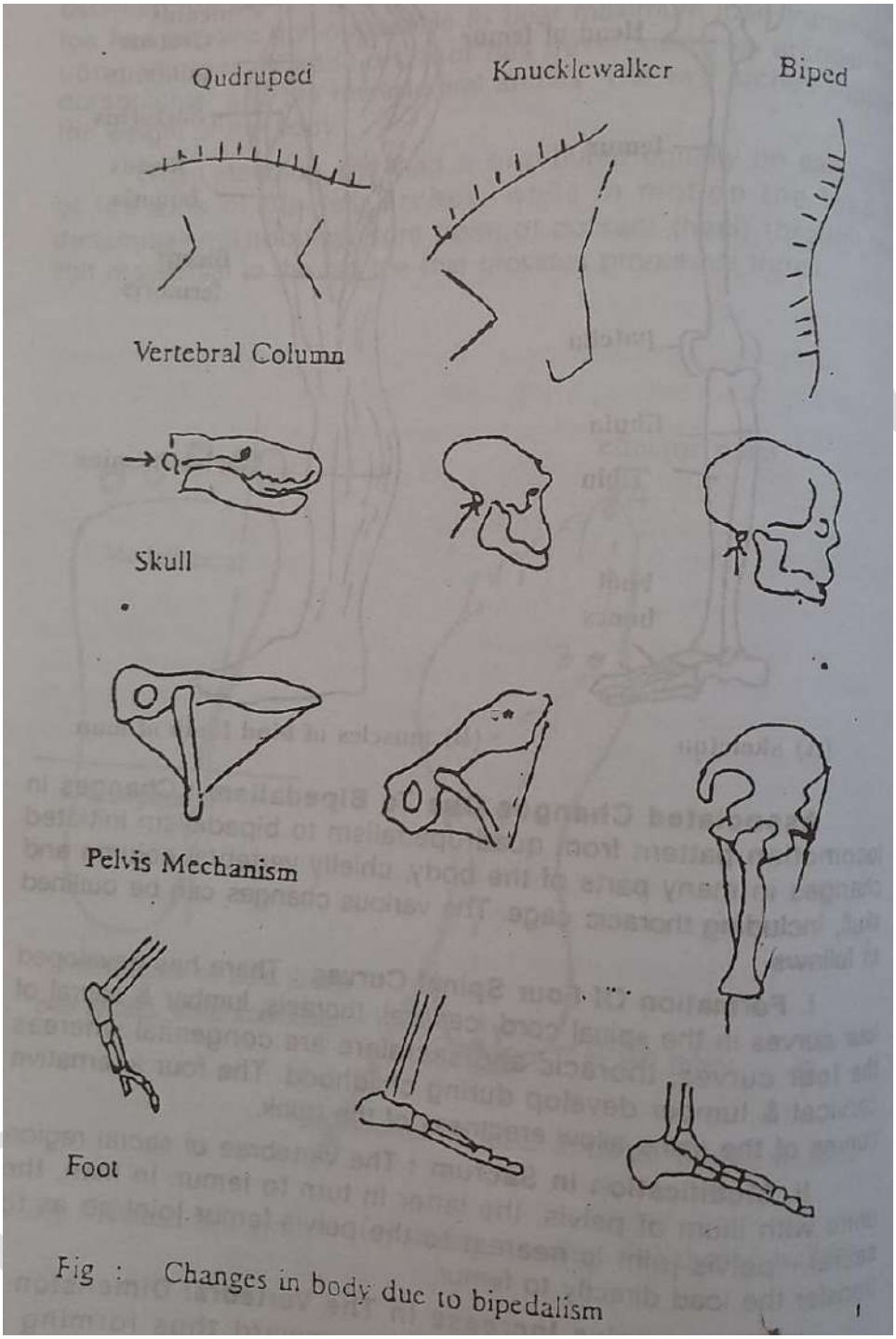


Fig : Changes in body due to bipedalism

Dimension 3: Evolution of jaw

Magnum Man is Omnivorous whereas apes are frugivorous. Due to this man has dental adaptations, alimentary adaptations.

This difference in diet has caused many dissimilarities in the masticatory apparatus of the two.

1. In apes incisors are broad spatula-like that makes the jaw broad U-shaped. In man, small incisors make the dental arcade smooth rounded parabola.
2. In apes, canines are large, projecting above the level of other teeth, the lower canines fitting into a gap. simian gap or diastema, between lateral incisors and canines of upper jaw. The canine interlocking in apes, thus, allows only vertical motion of the jaws whereas the motion is rotatory in man
3. In apes, face is prognathous without chin in man, face is Orthognathous with chin.
4. Sagittal crest and supra orbital ridges in the skull well developed in apes for attachment of jaw muscles.

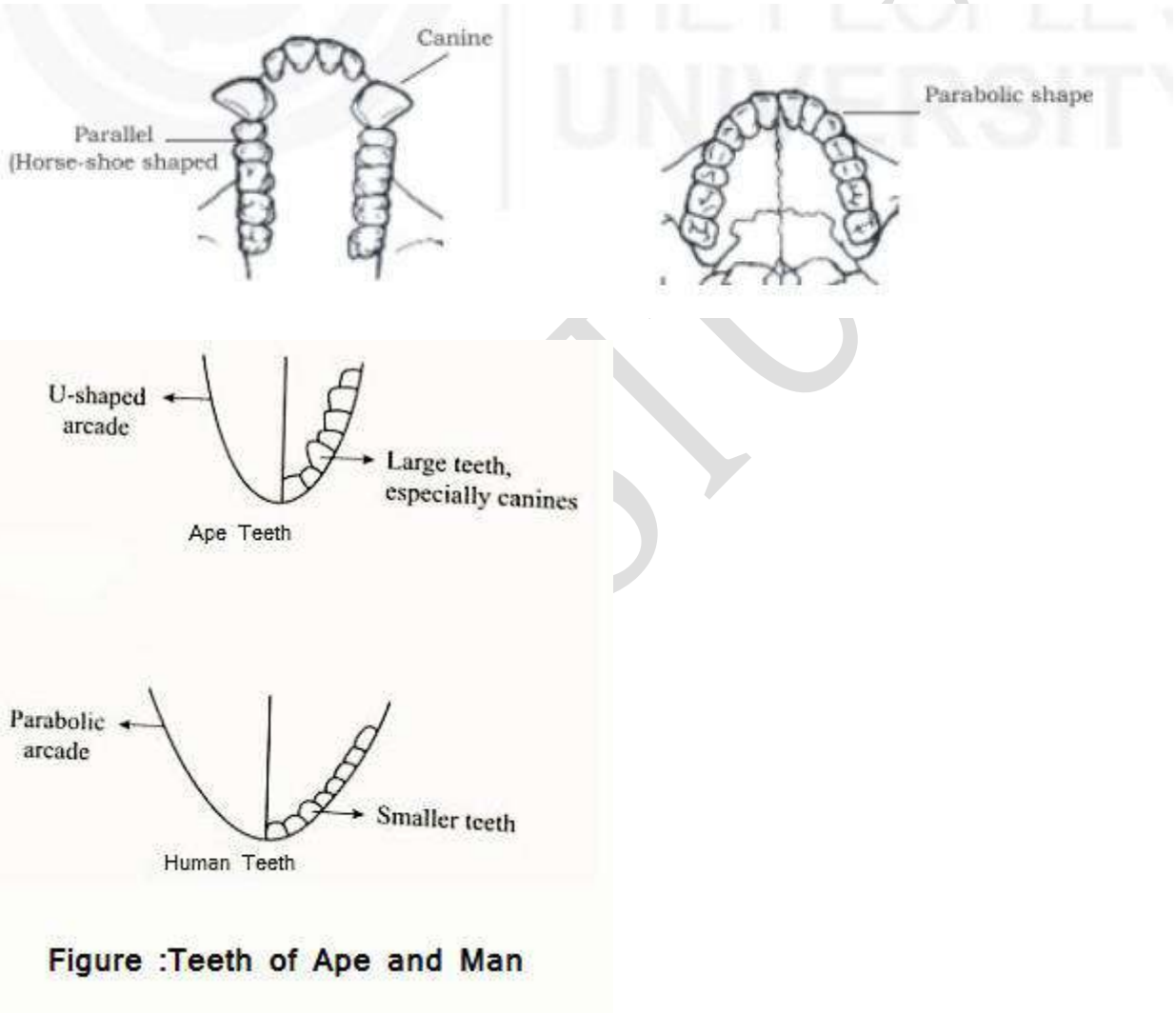


Figure :Teeth of Ape and Man

Dimension 4: Evolution of Skull

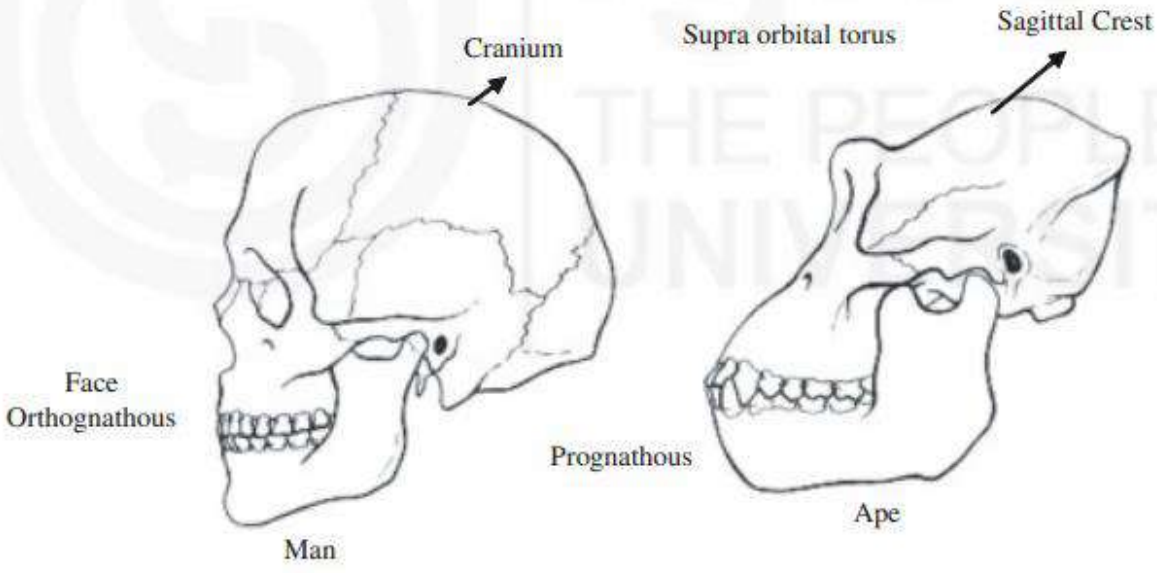
Differences in Skull:

1. Nuchal crest, present at the back of skull, is lesser developed in man. Skulls is well balanced in man hence nuchal muscles are also reduced resulting in slender neck in man. Slender neck can perform maximum rotation.

2. Sagittal crest is not much developed in man, whereas in apes it is developed. The crest serves to attach jaw muscles which are heavy in apes

3. In man, cranial part of the skull is large than the facial part whereas reverse is true for the apes

4 Cranial capacity of man is 1400cc whereas 500-600cc in apes because of larger development of different lobes in brain.



Lateral view of human and ape skull.

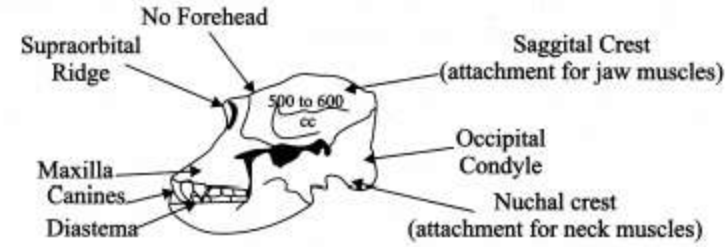


Figure : Skull of Ape

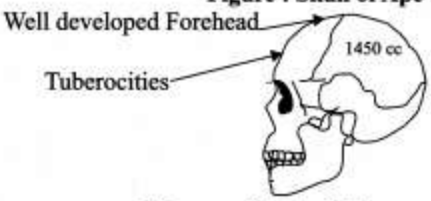


Figure : Skull of Man

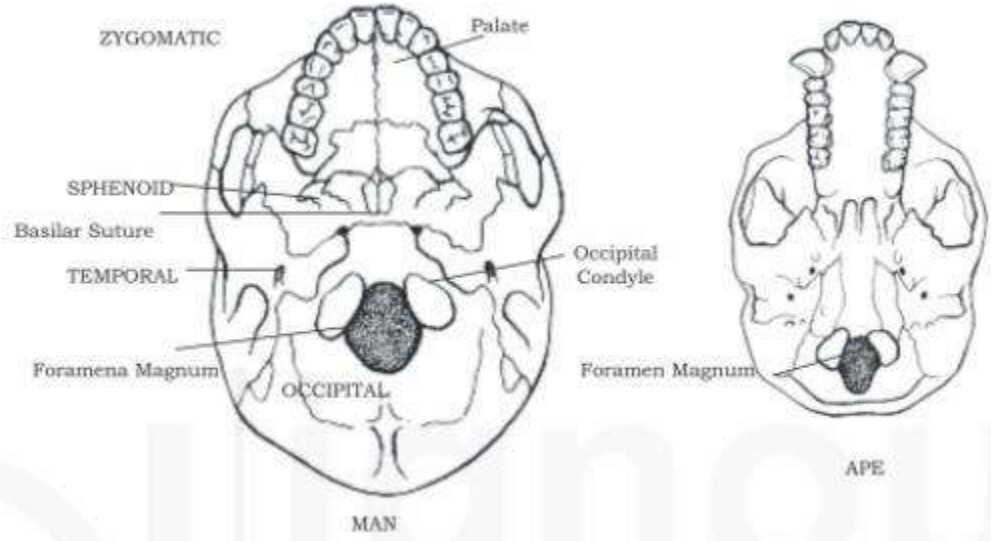
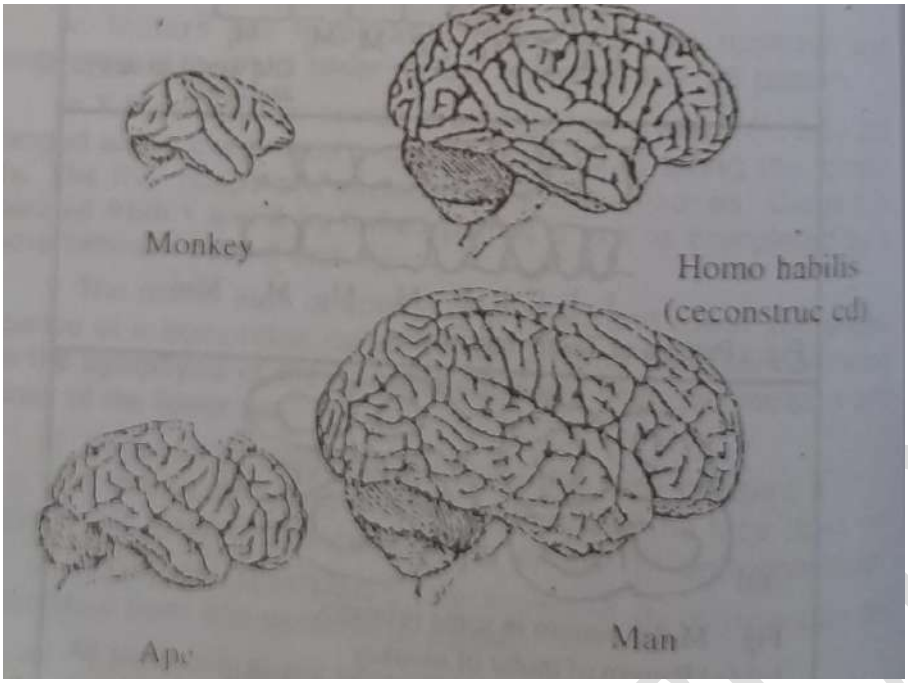


Fig. 3.4: Basal view of Human and ape skulls

Dimension 5 : Evolution of Brain

Association areas, the seat of memory, intelligence, reasoning learning etc. constitute large areas in frontal lobe. This seat of higher intellectual faculties are particularly well-developed in man.



2. Greater chunk of somatosensory areas and motor areas are devoted to hands, lips and mouth because the selective advantage it confers through flexible hands and vocal communication, and the size of the chunk increases from monkeys to apes to man (Campbell, 1974).

3. Visual cortex in occipital lobe more developed and olfactory lobes less developed in man than apes

4. Nerve-fibre connection between cerebellum and cortex is maximum in man hence man has maximum conscious control of co-ordinated muscular movement

5. The limbic system of brain is brought more under conscious control in man because of interconnections of the system with cortex (The system translates sensory stimuli into states of arousal, caring for child, mating, fighting etc.

Cerebrum: It is well developed in man and feebly developed in apes. Its primary use is memory and intelligence.

Occipital lobe is greater in ape than man. It is for visual perception and is or great importance for tree dwelling animals.

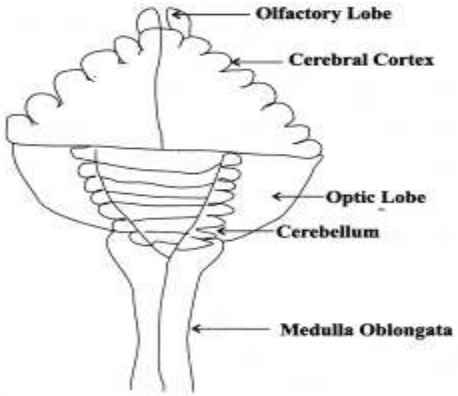


Figure : Primate Brain (Coronal Section)

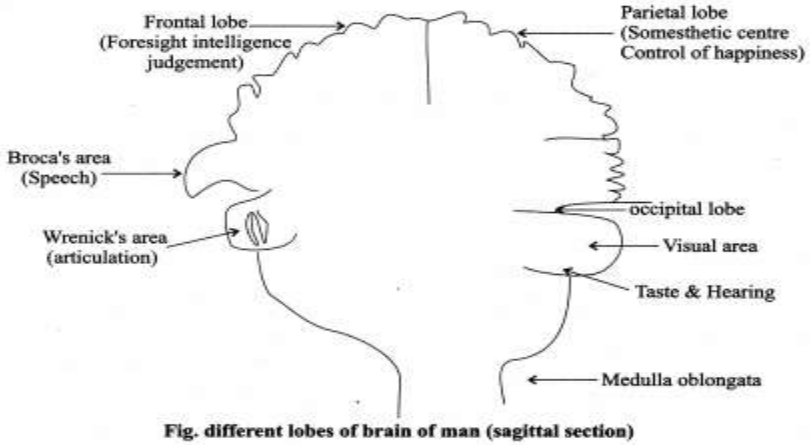


Fig. different lobes of brain of man (sagittal section)

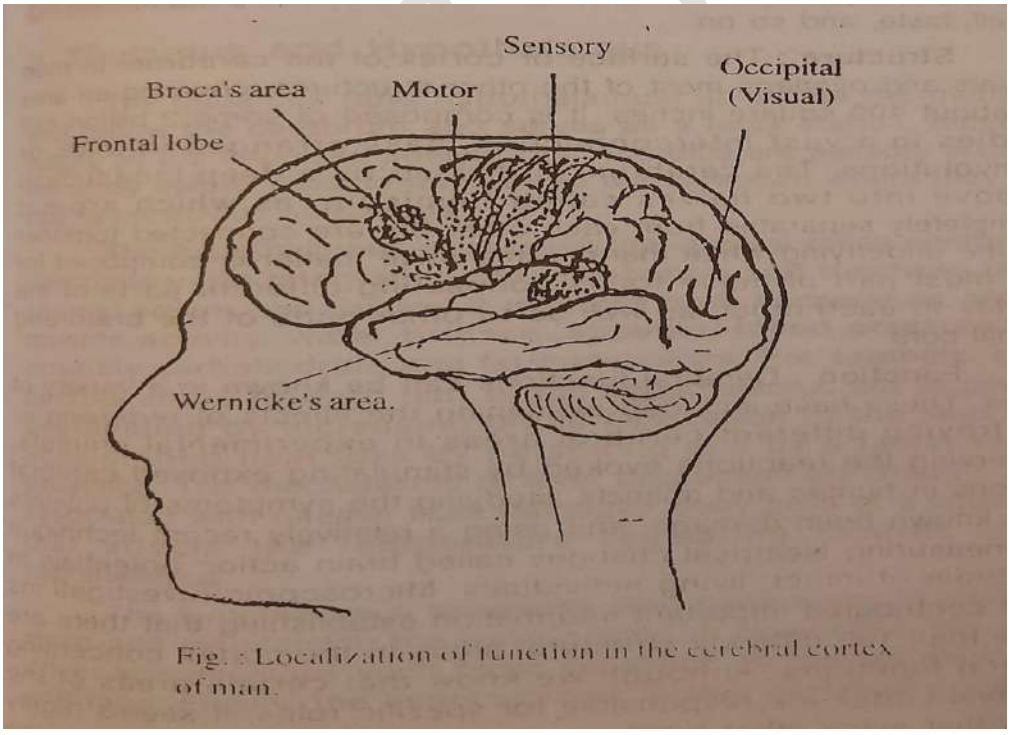


Fig. : Localization of function in the cerebral cortex of man.

Evolutionary features of human Brain

Evolutionary Features Of Human Brain : Besides decrease in size of olfactory lobe, the human brain is differentiated from other primates brain by its several functional uniqueness. Several theories have been extended to explain the uniqueness (After Deacon, 1992)

a) Expansion of the brain to increase intelligence and memory, enabling humans to learn complicated skills such as tool-making and language.
b) Addition of new brain structures to provide new functions such as specialized language abilities.
c) Reorganisation of the connections of existing brain structures to allow them to serve novel functions such as the analysis of grammar.
d) Changes in the relative sizes of different brain areas, expanding certain structures to augment particular abilities.

Dimension 6: Evolution through cultural developments

1. The ability to concentrate has developed in response to hunting in the frontal lobe. High intelligence and ability to concentrate has played a great role in development of culture.

2. Acquisition of languages and script has led to complex social life, enhanced the dichotomy between man and apes.

3. In man, due to vocalization lips are well developed and reddish compared to having less fat in lips in apes.

4. In apes facial muscles are at very low level of development compared to man which has better development to show expressions.

5. More prolonged period of gestation, infancy and childhood and slowness of skeletal maturation mark human beings. Prolonged infancy and childhood aids in social-learning and intellectual growth and hence contributes to the growth of culture.

Conclusion:

Thus, Due to change in habitats man and ape were exposed to different habitats and developed different culture. This change in lifestyle compelled for use and disuse of various organs and parts of body leading to their evolution. This has led to development of two different looking beings with different characteristics.

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Question:

3. Write in detail about various classification of primates. Discuss major characteristics of these primates. 60 marks (30+30)

Sample Model Answer:

How to write?

Understanding the question:

Context: Classification

Topic: Primates

Purpose: Explain

Structure of answer:

Introduction: brief explanation on classification of primates

Body:

- Touching maximum dimensions in context of classification of primates
- Structure of the body should be mentally pre planned to maintain flow of the answer.

Conclusion: concluding in relation to classification of primates

****

Answer:

Introduction:

The term classification is often used interchangeably with terms 'systematics' and 'taxonomy'. Simpson (1961) defined Systematics as the scientific study of the kinds and diversity of organisms and of any and all relationships among them.

classification of primates simply implies ordering of primates into groups on the basis of their relationship to each other though descent from a common ancestor. The prime motive of any classification is therefore to develop a hierarchical system of categories of increasing rank.

There are two types of classification:

1.*Grade based classification or gradualistic classification* (Prosimii and Anthropoidea)

2.*Clade based classification*. (paromomyiformes, strepsirhini, haplorhini)

Body

Grade based classification:

Types It was given by simpson in 1945 whereby he divided primates into two.

Prosimii and Anthropoidea. Prosimii was further divided into four infraorders. The system is grade based because it considers evolutionary rate as the main basis of classification.

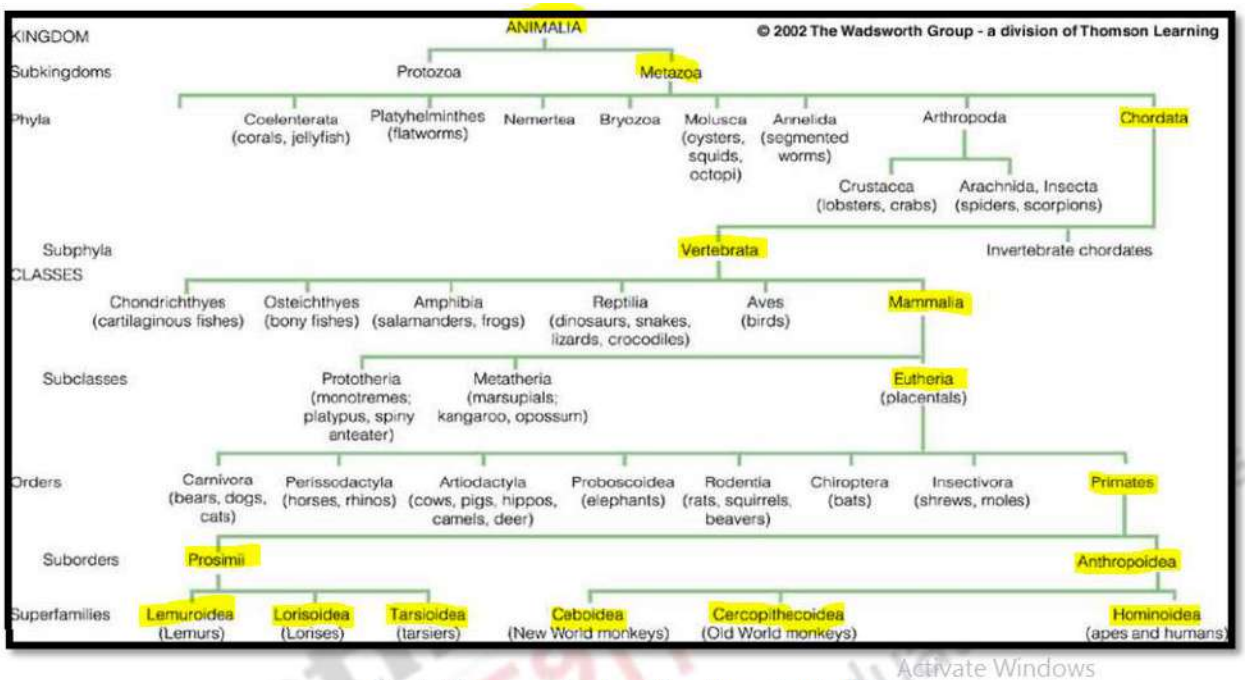


Fig I: Taxonomic classification of animals

Prosimii: *Characteristics:* vertical clinging and leaping movements, small brained, upper lip attached to gums, presence of toilet claws, insectivorous or frugivorous.

Infraorder Plesiadpiformes. The infraorder consists entirely of extinct forms and has been discussed with origin & evolution of prosimians

Infraorder Lemuriformes.

- They are found in the tropical forests of Africa and the island of Madagascar, Indonesian islands and Philippines
- **Lemurs** are small animals of the size of cat or mouse. Arboreal insectivorous or frugivorous, coated with furry covering and a large bushy tail which are not prehensile but help in balancing on a body.
- All digits of the hand and feet with nails except the second digits of hind limb which bear claw (Toilet claw)
- Typical dental formula is 2133/2133 It is divided into five families
    a. Cheirogaleidao: Anterior carotid artery present upper incisors not reduced, elongated calcaneum and navicular egPhaner, Mirza Chcirogalcus (dwarf lemur). Microcebus (mouse Icmur).

b. Lemuridae Full set of dental complement use reserve food of tail eg Lemur
c. Indriidae Marked by numerical reduction in dentition hind limbs are relatively strong e.g. Propithecus, Indra
d. Daubentonidae Large and rodent like incisor teeth gross roduction of the rest teeth e.g. Aye Aye (Daubentonia)
e. Megaladupidue Specialised mandibular condyle near jaw. eg Lepilemur. Megalada

Infraorder Lorisiformes The group is differentiated from Lemurs on one ground. Less pneumatization of tympanic floor. It has two sub families

a Lorisinae Tail is either greatly reduced or absent. limbs are of equal length slow climbers eg Loris, Nycticebus in South Asia; Perodictus, Arctocebus in tropical Africa.

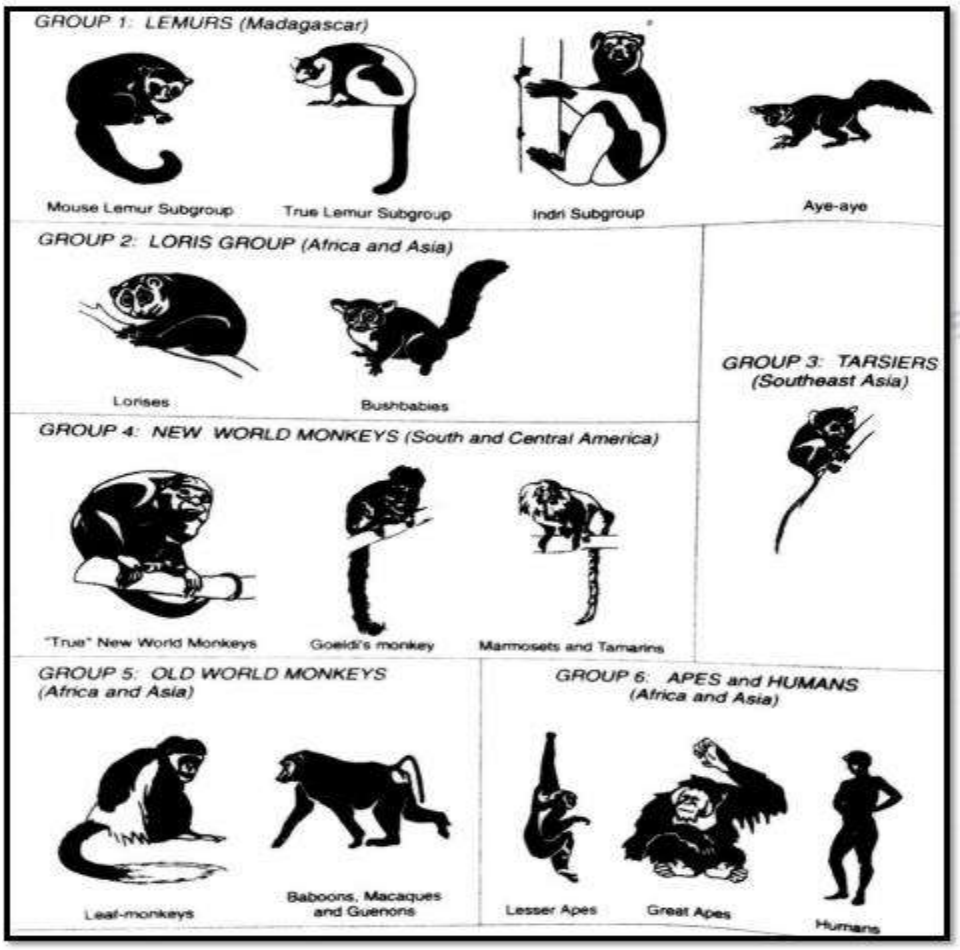
b Galaginae : Hind limb modified and elongated for jumping

Galago. Euoticus.

Infraorder Tarsiiformes : It comprises of only a single family which has single genus Tarsius and are contined to Malayan island eg Sumatra. Sara, Bornee, Celebes. Phillipines, etc.

- They are small nocturnal and completely arboreal. It can rotate its head 180° Another important feature is its salfatory or frog like leaping movement.
- The second and third digits of the feet bear toilet claws while other digits are provided with flat nails. The claws are not modified nails as is case in Lemurs.
- The post orbital wall is present lachrymal foramen is outside the orbit, orbits are large and completely directed forward
- It is divided into two families

  - Omomyidae (Tarsier-like primates) - It is an extinct group with Sub families Omomyinae, microchoerinae and Anaplomorphinae.
  - Tarsiidae - It includes Tarsiers Sub-order bl.anthropoidea Arboreal with branchiation or bipedal locomotion or quadrupedalism



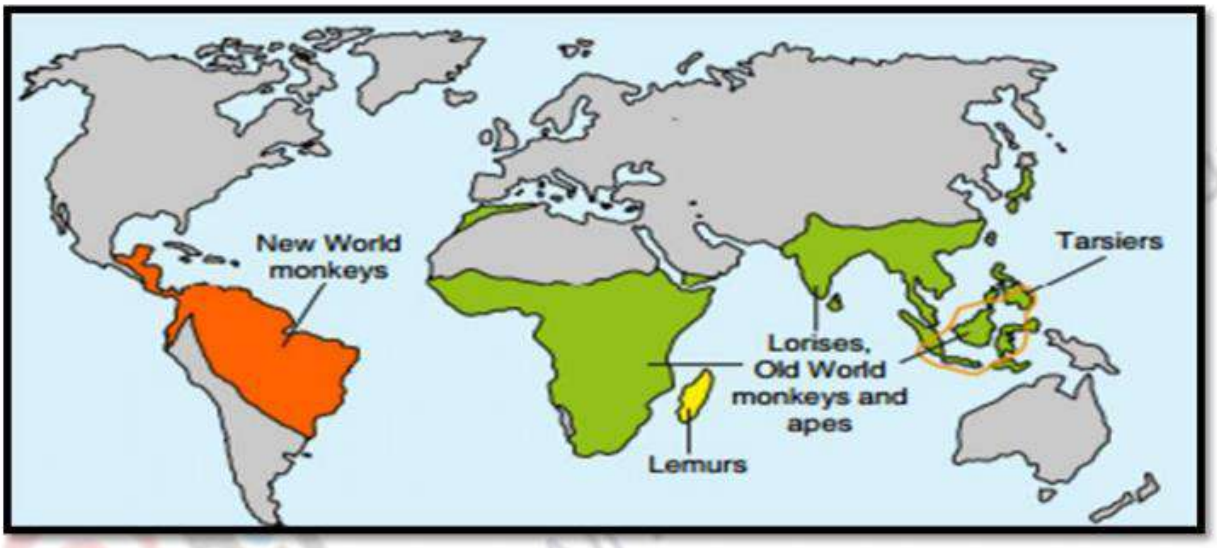
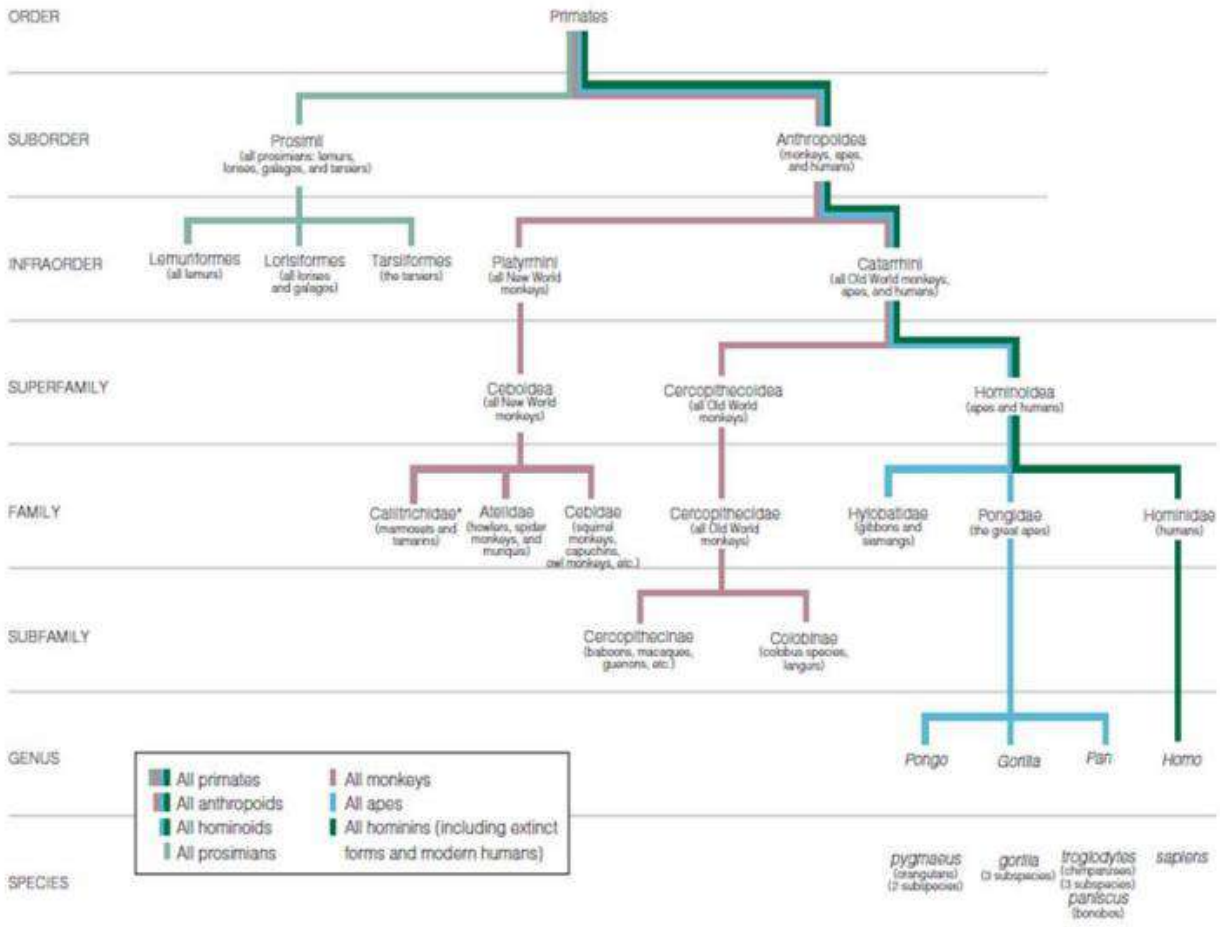


Fig V: Geographical distribution of extant nonhuman primates

Anthropoidea Characteristics: Frugivorous or omnivorous, Complex brained , Upper lip not cleft and not attached to upper gums. Rhinarium dry and hairy



Platyrrhini (New World Simians): Tympanic ring not elongated into tube, Premolars three in number, No Canine premolar sectorial system,

Super Family Ceboidea (Or New World Monkeys) Characteristics:

(distinct nose shape, thumb non-opposable or absent, Tail often prehensile, Cheek pouches absent, Retain yolksac in embryo, Tail is modified, sparsely haired below with rat like scale, Enlarged eyes without cones, Ear is enlarged and mobile

It consists of two families (a. Callitrichidae b. Cebidae)

Callitrichidae . They are of small size with long prehensile tail Their body is covered with soft fur. All digits have sharp laterally compressed claws with the exception of the big toe which has flattened nail Thumb is not opposable. ischial callosiles are present. No third molars Dental Formula 213272132 eg Marmosets and Tamarins.

b. Cebidae Members are larger in size. They have prehensile tail, all digits have flat nails and thumb is more opposable. Ischial callosities are absent. Third malars present, but may be reduced Dental Formula 2133/2133.

Catarrhini (Old World Simians) Characteristics:

(Elongation of tympanic ting into a tube, Absence of tail, Interstitial placentation, Presence of vermiform appendix, Sperm mitochondria with few gyres, Very large complex brain, Locomotion by brachiation quadrupedalism, bipedalism)

Hylobatidae: Characteristics **(**Commonly called "lesser apes", they are represented bygibbon and Siamang, distributed in the forests of S. E Asia, Predominantly tree dweller, frugivorous, Very short faces and reduced jaw cheek teeth, Both arms and legs elongated beyond allometric trends. Live in small family groups. No sexual dimorphism or behavioural dominance of either throat pouches etc. Gibbons vocalize beautifully while swinging. This is also a territorial signal that helps to space the family groups.

Symphalangus (Siamang) differ from gibbons in having larger body weight. Shorter trunk broader chest, presence of callosities (also occasionally present in the Ponginae).

"Lesser apes are characterised by presence of ischial callosites

Family Pongidae: The pongids are the apes and comprise of orangutan, gorillas,chinpanzees.

- predominantly quadrupedal (nuckle walker), brachiation on trees.

Orangutan: (heavy body, rudimentary thumbs, unsocial, all four limbs are used on branches, loud calls, adult male patriarch.)

Gorilla: (largest of all primates, considerably longer forelimbs, overhanging tip to nose, chest beating equalizes anger.)

Chinpanzee: (Extroverts, slim body, can hunt alone,)

Gradualistic Classification is more accepted one as the division is based on notion that prosimian is more primitive and hence easily accommodates new fossils findings based on age.

Clade based classification:

In this there is no extra emphasis on evolutionary rate or phylogeny but totally of characteristics of living form. Different characteristics of anatomy is considered along with foetal membranes, nature of placentation, eye structure.

There are two new ranks in cladistics classification: Insertae sedis and plesion.

The classification divides primates into three sub orders:

1. Paromomyformers(small brain,no post orbital wall,laterally facing orbits,claws on all digits,marked post orbital constriction of skull)
2. Strepsirhini(non hairy nose,no gum on upper lip,no post orbital plate,synthesize vit C, nails not on all digits,dental comb in lower jaw)
3. Haplorhini(hairy nose,gum on upper lip,post orbital plate present,can not synthesize vit C, nails on all digits,no dental comb)

In this system tarsiers and anthropoids are lumped together and placed against lemurs. Thus the system bifurcates prosimii and considers tarsiers with anthropoids. The system was proposed by Pocock and Hill.

Conclusion:

Thus, various classification helps us understand the attributs of primates in an organised manner and conclude on its behaviour, communication, evolution and relationship with man.

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Question 4:

Compare and contrast race and racism. Examine the relevance of racial classification in Indian context. 60(45+15)

Sample Model Answer:

How to write?

Understanding the question: Part I

Context: Similarities and Dissimilarities

Topic: Race and Racism

Purpose: list

Part II

Context: Indian Context

Topic: Race and Racial Classification

Purpose: Examine its relevance

- *So, Part I should be covered in around 500 words and part II in 200 words*
- *Part I can be hit by listing the similarities and differences (in the body).*
- *In second part emphasis should be given on analysis.*

Structure of answer:

Introduction: definition or brief explanation of race and racism.

Body:

Part I

- Touching maximum dimensions while writing similarities and Dissimilarities.
- You need to touch maximum number of dimensions based on viability of time and word limit to fetch maximum marks.
- Structure of the body should be mentally preplanned to maintain flow of the answer.
- A short conclusion or significance

Part II

- Introducing racial classification and moving towards Indian context.
- Detailed content based on India.
- Analysis on Indian racial classification, showing its relevance.
- A short conclusion or significance for this part.

Conclusion: Overall Conclusion in relation to the context of the question

Answer:

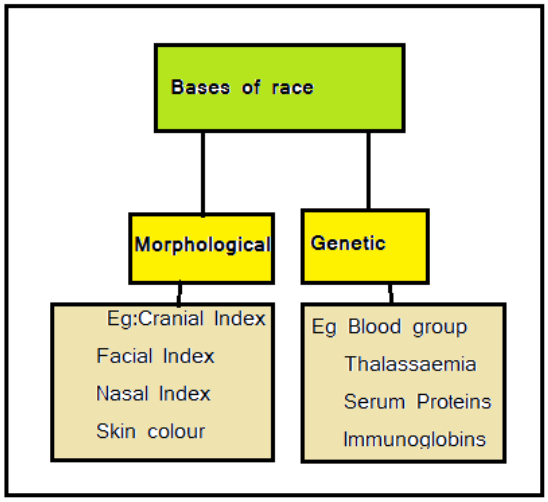
Introduction:

Definition:

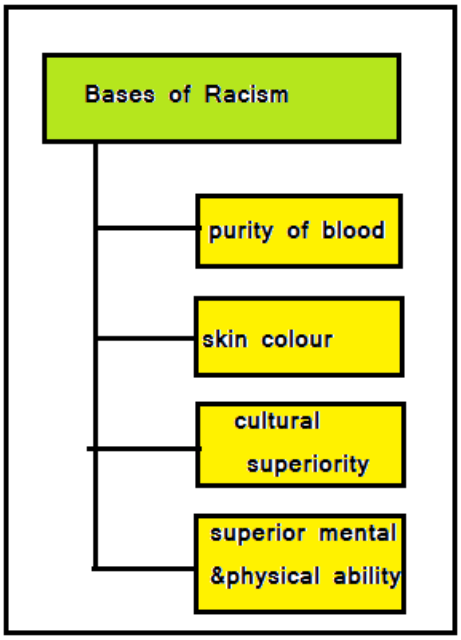
- Dobzhansky defined race as a group of population which are reproductively isolated to the extent that the exchange of genes between them is absent or so slow that genetic differences are not diminished.
- In the famous book Origins of Man, Buettner-Janusch (1969) defined race as "Mendelian population separated from another by major geographical barriers; breeding isolate; a population distinguished from another by demonstration of differences in allele frequencies."
- The concept of race gave birth to racism.
- Racism is a false belief of superiority and purity of one culture over other and have four main bases
  a. purity and superiority of blood
  b. fine colour
  c. physical ability
  d. cultural superiority

BODY

Bases of Race and Racism:



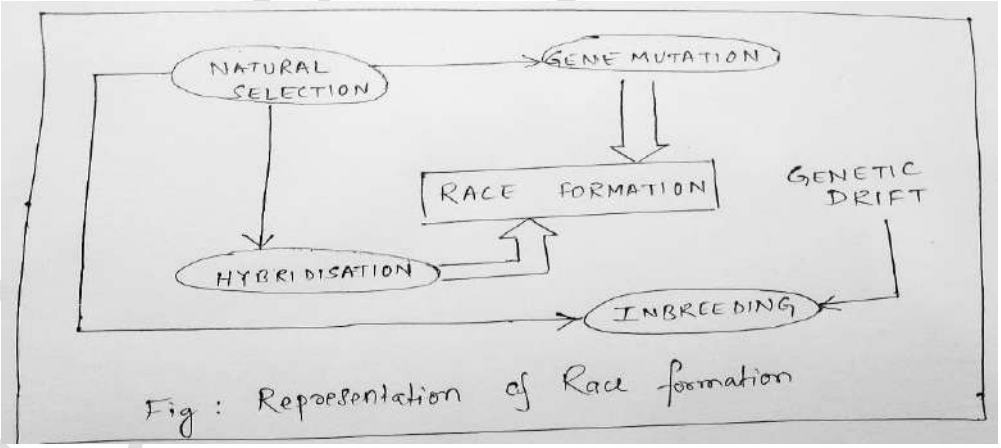
(Diagram: Bases of Race)



(Diagram –Bases of racism)

Concept:

- As per Franz boas, Race is strictly a biological concept and racism is a cultural concept
- According to Montague, Race is formed through micro evolutionary process.



- Race is the difference in gene frequency under different environmental condition due to mutation, recombination, hybridization, genetic drift etc.
- But racism is determined only on hereditary characters, races are high and low in birth, hereditary factor regulate every aspect of cultural life. This thinking leads to several social injustices and strengthens the feeling of upper and lower, which is known as racism.

Consequences of race and racism:

- Racially based physical characteristics were erroneously thought to be tightly bound to mental, emotional, intellectual and cultural attributes as well. In this manner, some races were identified as clearly inferior to the others — primitive vs advanced. E.g. Indians being called Natives and Black and Whites in USA. (Mac Master, 2001).

Social Cultural perspective:

- Racism involves prejudice or discrimination. It is normally based on a stereotype that people of a particular genetic background all behave in some unappealing way; they all do, they have no choice, it is in the genes (Reilly et al., 2003).

Various anthropologists on race and racism:

- Voices against Racism (Race to Racism) British-born anthropologist Ashley Montagu, a student of both Franz Boas and Ruth Benedict, was the first scientist who criticized the concept of race. "He earned fame in the 1940s by arguing that race was a social construct, a product of perceptions, rather than a biological fact.
- To go by the words of Jacques Barzun (1965) on racial classification "No argument has ever been advanced by any reasonable man against the fact of differences among men. The whole argument is about what difference exists and how they are to be gauged" (Molnar, 2015).

- Thus, the use of the word 'race' has long been, and remains controversial and the anthropologists have never been comfortable with this topic.

UNESCO Statement (1951) UNESCO statement on race

- Was drafted at UNESCO house, 1951. was drafted by a group of scholars from various disciplines like Morris Ginsberg (United Kingdom), Humayun Kabir (India) and Levi-Strauss (France).
- The two major points of UNESCO statement on race (1951) are:
  a) Physical variations in any given trait tend to occur gradually rather than abruptly over geographic areas. And because physical traits are inherited independently of one another, knowing the range of one trait does not predict the presence of others.
  b) "Race" evolved as a worldview, a body of prejudgments that distorts our ideas about human differences and group behavior. Racial beliefs constitute myths about the diversity in the human species and about the abilities and behavior of people homogenized into "racial" categories. Racial myths bear no relationship to the reality of human capabilities or behavior

Thus Racism is a myth, being unscientific and imaginary, and has no spirituality attached to any race. It has caused major harm to world peace and brotherhood and therefor many thinkers has advocated the use of term ethnic groups instead of race.

PART II

Relevance of racial classification in Indian context.

Introduction

Origin: The very first attempt to identify the physical features of some human populations Racial Classification is found in ancient Sanskrit literature. The dark complexion Nishads (Australoids) were distinguished from the yellow coloured Kiratas (Indo-Mongoloids).

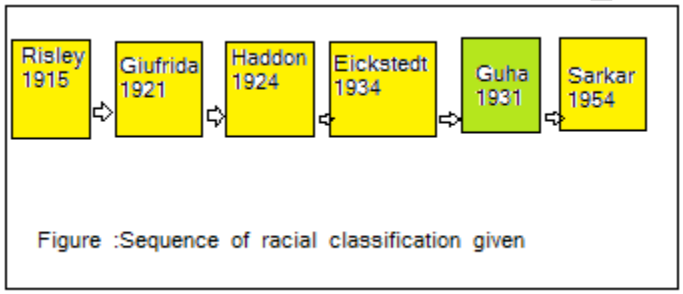
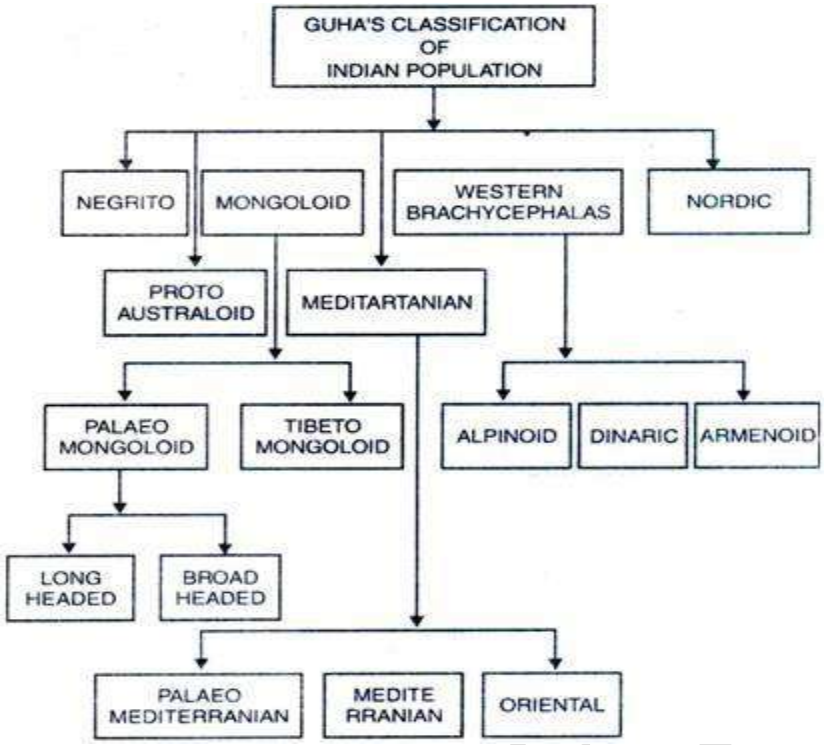


Figure :Sequence of racial classification given

Body

- The first attempt for systematic classification of Indian population was made by Sir H.H. Risley in 1915. He attempted to solve the racial problem with the help of anthropometry. In 1915, he classified Indian people into seven ethnic types such as-The Turko-Iranian, Indo-Aryans, Scytho Dravidian, Aryo-Dravidian, Mongolo-Dravidian, Mongoloid and Dravidian.
- A.C. Haddon's classification: classified India into three main geographic regions and has distinguished many races confined to these geographical zones. The Himalayan Zone, Northern Zone (Hindustan), and Deccan,
- Eickstedt's (1934) classification: He studied both physical characteristics as well as the cultural material. He classified the people of India into four main divisions as follows: Weddid, Melanid, Indid, and Palaeo Mongoloid.
- B.S. Guha's (1931) Classification: He classified Indian ethnic types into six divisions. This is based on the original anthropometric measurements made by him during the 1931 census operation. The six ethnic types are as follows: Negrito, Proto-Australoid, Mongoloid, Mediterranean, Western Brachycephals, and Nordic.
- *S.S. Sarkar's (1954) classification:* classification based on cephalic index. Classified six ethnic elements: Australoid, Indo-Aryan, Irano-Scythian, Mundari speaking people, Far Eastern, and Mongolian.
- The most accepted one today is by Guha

B S Guha classification –significant outcomes



Studying his classification, it was found that

- Palaeo-Mediterranean: people probably introduced megalithic culture to India. The Dravidian speaking people of South India exhibit the main concentration of this type. Eg:The Tamil Brahmins of Madura, Nairs of Cochin, and Telugu Brahmins

- The Mediterranean: Eg: Numbudiri Brahmins of Cochin, Brahmins of Allahabad and Bengali Brahmins. Probably this type was responsible for the building up of Indus Valley civilization.

- Both the Alpino and the dinaric people entered into India through Baluchistan, Sind, Gujarat, and Maharashtra. They penetrated Ceylon from Kannada. The presence of this type has been noted in the Indus Valley site, Tinnevalley and Hyderabad.

- The Nordics came from the north, probably from Southeast Russia and Southwest Siberia, thereafter penetrated into India through Central Asia.

India's present racial profile

Presently some others add one more division as Dravidian and includes Indo Aryan in Nordics.

Criticism from different Anthropologists --significant outcomes

Regarding the disagreement of Sarkar on Guha about the presence of Negrito in Indian soil, we cannot rule out completely the possibility of penetrance of Negrito traits into certain coastal group.

- Mutation, natural selection, genetic drift, migration, isolation, hybridization, sexual selection and social selection are main responsible for the formation of races, these factors may happen at any time and affect the population in various ways. Therefore, there must be a Negrito element in Indian population.

Genetics –significant outcomes

These classification and studies done for classification reveal some very important outcomes regarding origin of a race, migration, biological attributes in a region or race, genetics which can

be used for research purposes and give insights to help mankind medically, socially etc. . Also these can help understand origin of man, history of man and reason for his movements, evolution etc.
Some of them are discussed below.

genetic markers

After 1950s with the introduction of blood grouping techniques, the studies revealed marked regional and ethnic differences in the distribution of blood groups and other genetic markers.

DNA

- A study by Basu et al., (2003) using 58 DNA markers revealed that there was an underlying unity of female lineages in India, indicating that the initial number of female settlers may have been small.
- the tribal and the caste populations were highly differentiated.
- The result also revealed that Austro-Asiatic tribal were the earliest settlers in India.
- a major wave of humans entered India through the northeast and the Tibeto-Burman tribal shared considerable genetic similarities with the Austro-Asiatic tribal, supporting the hypothesis that they may have shared a common habitat in southern China,
- Dravidian tribal were possibly widespread throughout India before the arrival of the Indo-European-speaking nomads, but retreated to southern India to avoid dominance.
- Moreover the analysis of DNA markers also demonstrated that the upper castes showed closer genetic affinities with central Asian populations, although those of southern India were more distant than those of northern India.

A study by Kashyap et al., (2006) in 54 endogamous Indian populations revealed that genetic sub-structuring was observed among populations originating from northeastern and southern India, which was reflective of their migrational histories and genetic isolation, respectively

Conclusion:

Thus, based on studies on criteria for racial classification and racial classifications itself, we get important insights using which we can conclude that India's present-day population is a conglomeration of people belonging to different racial groups with different ethnic backgrounds. The people entered India from different parts of the world at different time periods with their ethnic and cultural substrata in adopting themselves. India has been a meeting point of different races and tribes from times immemorial. Almost all the major races of the world are visible in India. As a result, India has a varied population and diversified ethnic composition.

Question:

5(a) Linguistic anthropology. 20 marks

Sample Model Answer:

How to write?

Understanding the question:

Context: Touch maximum dimensions.

Topic: Linguistic anthropology

Purpose: Write in detail

- Since this is open ended question, we can touch maximum dimensions in relevant direction

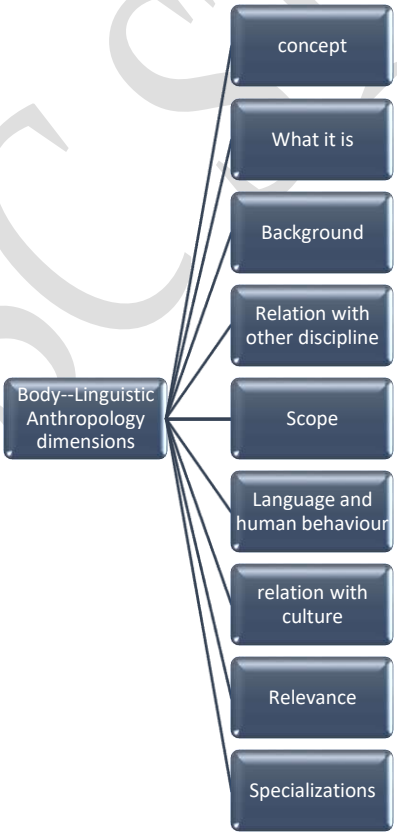
Structure of answer:

Introduction: definition or brief explanation of Linguistic anthropology

Body:

- Touching maximum dimensions of Linguistic anthropology
- Structure of the body should be mentally preplanned to maintain flow of the answer.

A sample structure is given below.



Conclusion: concluding in relation to relevance, importance and significance of linguistic anthropology

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Answer:

Introduction:

Linguistic Anthropology is the study of speech and languages as socio cultural phenomena in all places at all times. It studies primitive and modern languages.

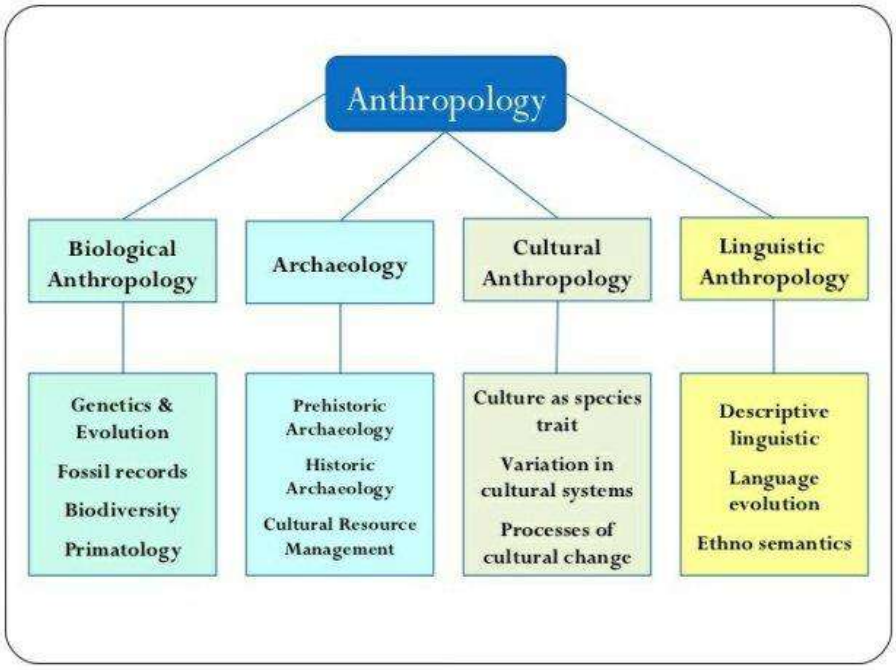
Body

Dimension 1: Explanation of concept (Different from linguists)

- Linguistic anthropology widely differs from linguists. Linguistic anthropology studies language as part culture whereas linguists studies language as a phenomena, independent of culture and society.
- Linguistic Anthropology analyses the usage and evolution of human language across culture and time, by its sub branches of descriptive, historical, ethno and sociolinguists.

Dimension 2: What it is

It is one of the branches of Anthropology, after classification given by Franz Boaz.



Dimension 3: Background of linguistic Anthropology

Initially the branch was called Anthropological linguistics and dealt with origin and language classification. After works like Sapir Whorf Hypothesis and structuralism by Claude Levi-Strauss gained popularity in 1930's, the focus changed to relation between thought process and culture and behavior. Later in 1950's focus shifted towards studying language as a vehicle of culture, relation between speech and behavior.

EB Tylor in researches into early history of mankind was the first anthropologist to show some interest in origin of language but Dell Hymes was the first to rename the field to linguistic anthropology in 1960's

Dimension 4: Relationship with related or other discipline

- Today linguistic anthropology as an interdisciplinary science works in collaboration with anthropological linguistics, ethno-linguistics and socio-linguistics.

Dimension 5: Scope of linguistic anthropology

Scope of linguistic anthropology is universal. It deals with, origin, evolution, distribution and variation of language in space and time.

linguistic anthropology mainly lies in the study of past and present languages. Linguistic anthropologists not only study the written languages but they also try to decipher cultures through unwritten languages.

Dimension 6: Human behavior

- It tries to understand relationship between language and human behavior, how language is used within society and how human brain acquires and uses language

Dimension 7 : Linguistic Anthropology and culture

- It examines the influence of human communication on society and culture and vice versa. Particularly the non-verbal communication, its structure function and history of languages, dialects etc.
- It tries to understand how non verbal communication manifests into pidgin and creoles and explore links between different culture by examining various language components primarily phonetics and morphology.

Dimension 9: Relevance of Linguistic Anthropology

- Helps in understanding continuity of culture and culture of simple societies

- Helps anthropologists explain the structure of society.

Dimension 8: Areas of research or specializations:

- The areas of research or specializations include historical or comparative linguistics, theoretical and Structural linguistics, sociolinguistics, Ethno semantics, Psycholinguists, and applied linguistics Anthropology.

1. Historical or comparative linguistics
   It studies emergence divergence and dynamics of language in context of culture. Structural syntactic and grammatical aspects of particular language in different parts of the world. Basically It studies evolution of language
2. Theoretical linguistics and Structural Linguists: Shoes how language works.
3. Socio-linguistics: studies dialects, dialect boundaries and dialect differences reflecting cultural differences.
4. Ethno semantics: shows how language structures communication, how language, thought patterns, perceptions about world and how culture and language are interconnected.
5. Psycholinguists: Studies idiolects, language learning and emotive quality of language.

6. Applied linguistics Anthropology: It has made many contributions for practical human situations. It developed methods for study of unwritten languages, prepared aids in educational programs, created text books to enable studies in unwritten languages to read and write in their

own languages, designed programs to deal with speech pathology and helped administration in translation of languages.

Conclusion:

Thus, Linguistic anthropology shows the relevance of language in human life. Language is universal and can be acquired and used. Moreover, Linguistic anthropology signifies that Language and grammatical categories can influence culture, thought patterns and vice versa.

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Question:

5(b)Synthetic theory of evolution: 20 Marks

Sample Model Answer:

How to write?

Understanding the question:

Topic: Synthetic theory of evolution **Purpose:** Write in detail

Structure of answer:

Introduction: Definition or brief explanation of Synthetic theory of evolution

Body:

- Touching maximum dimensions on Synthetic theory of evolution
- Structure of the body should be mentally pre planned to maintain flow of the answer.

Conclusion: concluding in context of Synthetic theory of evolution

****

Answer:

Introduction:

As a result of emergence of population genetics, a framework developed for the integration of **genetics into natural selection**. This subsequently led to the demise of mutationism and the modern synthetic theory was conceived.

In contrast to Weismann's and Wallace's Neo-Darwinian concept, the Synthetic Theory incorporated facts from fields such as genetics, systematics and paleontology.

Exponents:

The basic tenets of the Synthetic Theory were Theodosius Dobzhansky, Ernst Mayr, and Simpson.

Body:

Need for this theory:

a. Lamarkism was proved false and was of only historical interest.
b. Darwinism could not explain the origin and inheritance of variation.
c. De Vries theory of mutation is weak as a set a mutations cannot start a new species altogether.

Therefore, combining older concepts new concept of synthetic theory was born.

The proponents of the Modern Synthetic Theory laid emphasis on the population and not on the individual levels. It was observed that natural populations exhibited considerable amount of genetic variation and that selection could act on these variations.

Hence, the population had the necessary variability to explain evolutionary genetic change through time and space.

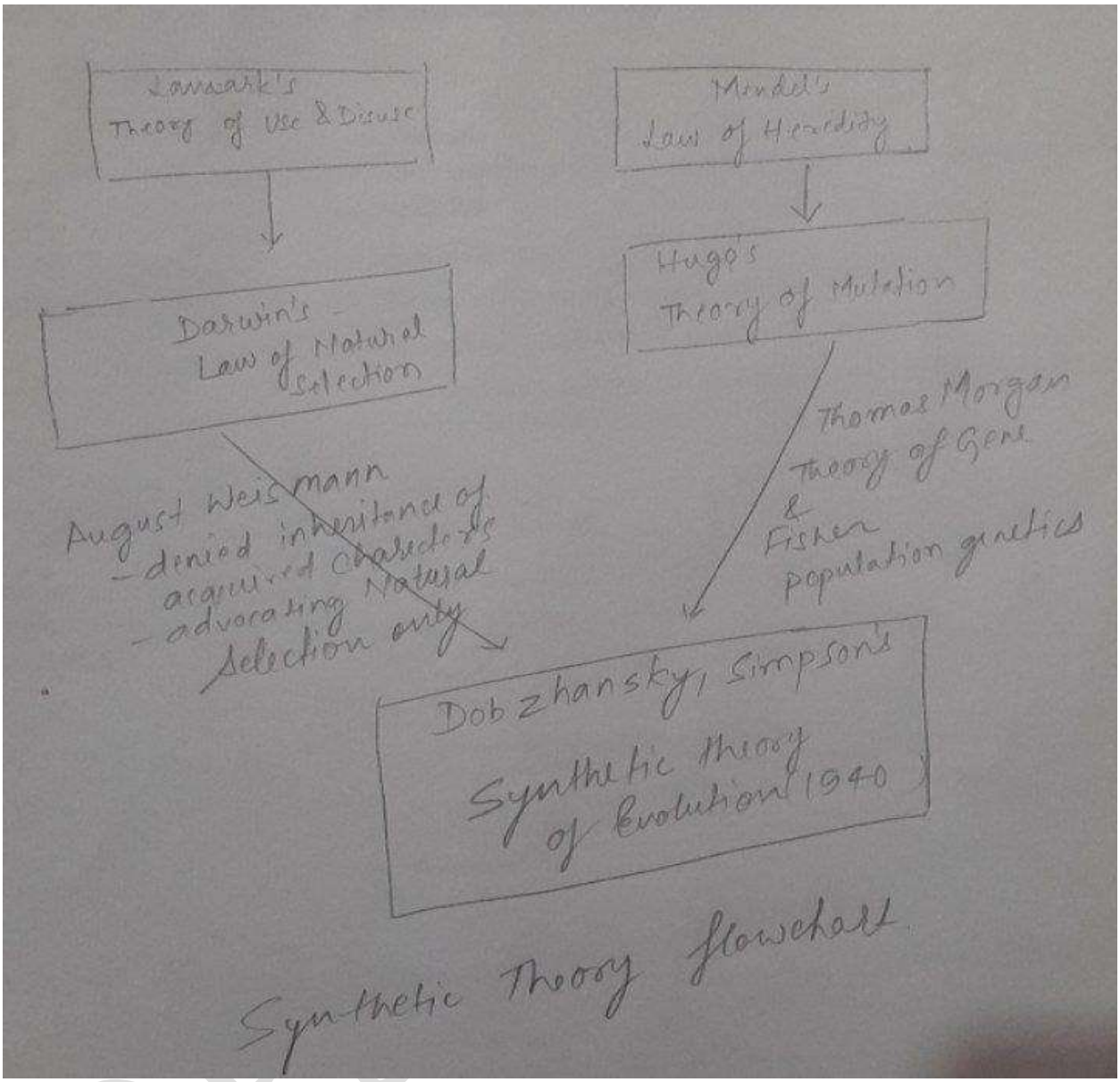


Figure: Flow chart –synthetic theory

Modern Synthetic Theory has considered following aspects:

- **Base: Mutation** forms the base of the Modern Synthetic Theory. These occur in a random fashion and furnish the fuel for evolution by introducing genetic variability.
- **Factors:** Migration, founder effect, random genetic drift and hybridization are other factors.
    - Migration and gene flow: Animals are not static and have tendency to migrate. The mate with other population and bring in new genes upsetting Hardy Weinberg equilibrium.

- Founder Principle: When a new population is started in isolation, its gene pool is not identical due to sampling error
- Genetic Drift: is an evolutionary force operating in small populations. In small populations gene frequency fluctuate purely by chance.
- Hybridisation (out breeding): is mating of unrelated individuals resulting in production of hybrids.

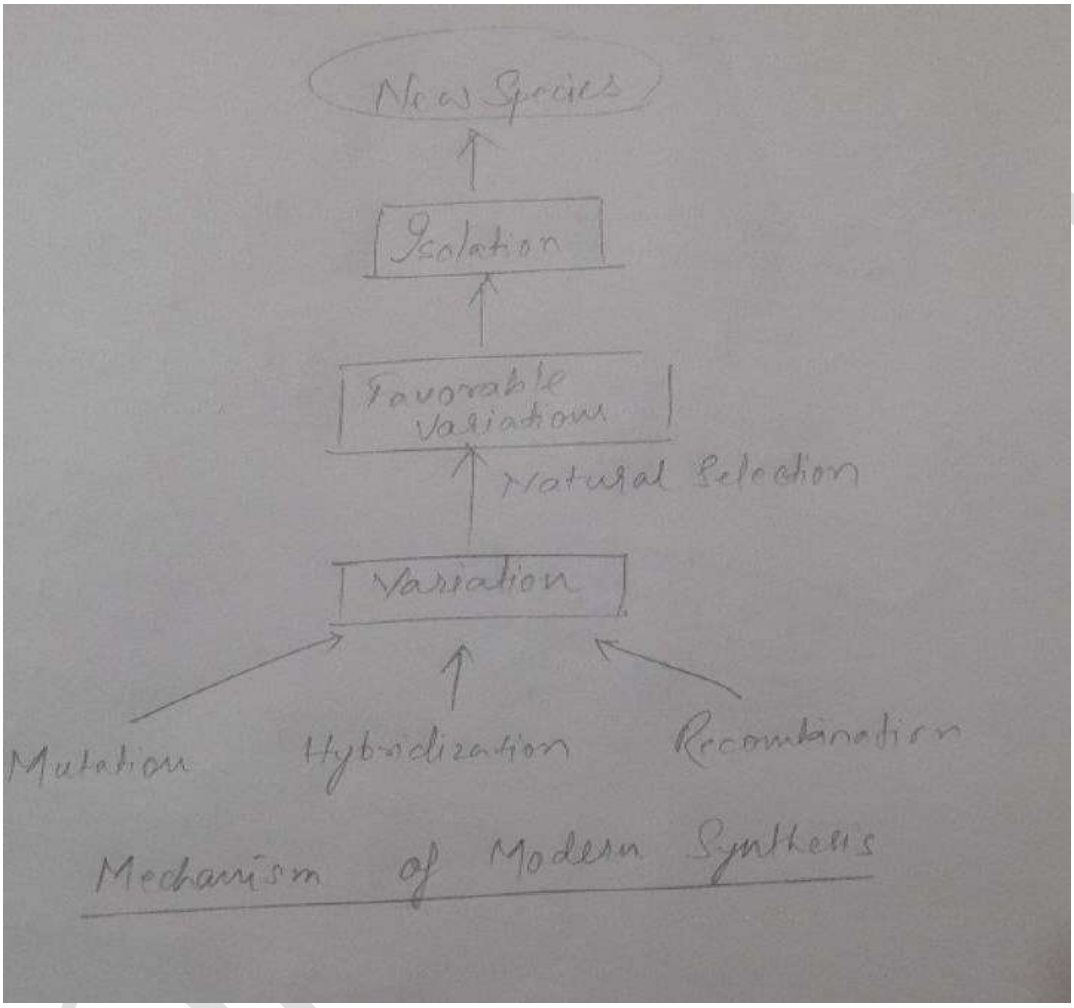


Figure: Mechanism of modern synthesis

- Synthetic theory is the concept of the "biological species" which has been proposed by Mayr in 1942.
- Speciation defined by Dobzhansky as a "step of the evolutionary process (at which) forms ... become incapable of interbreeding".
- Consequently a number of pre and post-mating isolation mechanisms have also been proposed. Gradual evolution can be explained in terms of small genetic changes ("mutations") and recombination and the ordering of this genetic variation by natural selection.

- Role of Isolation: Isolation is separation of population to prevent inter breeding. But Each population in isolation develops genetic divergence independently leading to formation of new species.

➢ The observed evolutionary phenomena, particularly macro-evolutionary processes and speciation, can be explained in a manner that is consistent with the known genetic mechanisms

Significance

This theory amplifies Darwins theory of natural selection in the light of mendelism, population genetics, biological concept of species.

Criticisms

- Explains well the present evolution but fails to explain in future direction
- Change in chromosomal number and genetic recombination is overemphasized and hybridization and genetic drift is undermined.
- Role of migration in evolution is uncertain and so its inclusion is cosmetic.

Conclusion:

This theory is considered one of the best in organic theory of evolution, yet not an ideal theory

****

Question:

5(c) Subject matter of social anthropology. 20 marks

Sample Model Answer:

How to write?

Understanding the question:

Context: Subject matter

Topic: social anthropology

Purpose: Details

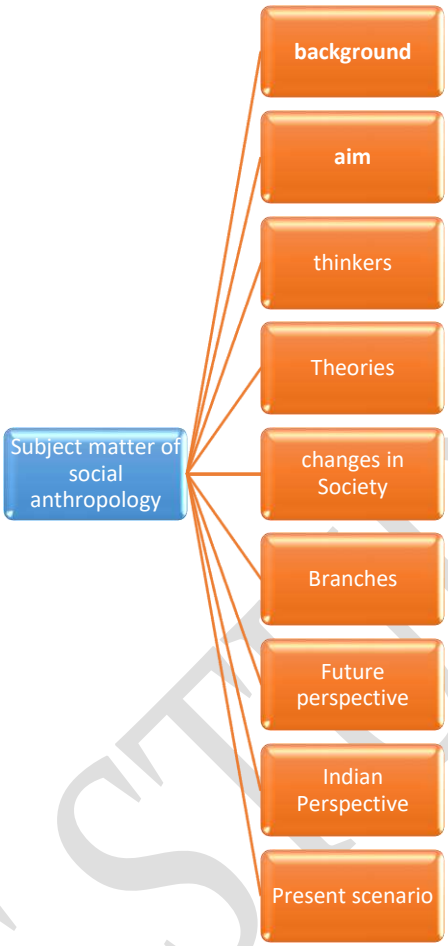
Structure of answer:

Introduction: definition or brief explanation of social anthropology

Body:

- Touching maximum dimensions of Subject matter of social anthropology
- Structure of the body should be mentally pre planned to maintain flow of the answer.

A sample structure is given below.



Conclusion: concluding in relation to Subject matter of social anthropology.

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Answer:

Introduction:

According to Evans–Pritchard (1966), social anthropology includes the study of all human cultures and society.

The scope of socio-cultural society is vast as the humanity itself because it studies society and culture at all levels of development at all places.

Social anthropology considers every human society as an organised whole. Customs, beliefs whole pattern of working, living, marrying, worshipping, political organisation – all these differ from society to society. As the structure and the idea working behind it are different, societies also vary a lot.

Social anthropology first tries to find out these differences and then tries to establish the similarities as well.

Example: study of religion. People in different parts of the world practice different religions. Every religion has different rituals to perform and people perform these rituals according to their own religious roles. The common thing among these different religions is the belief in super-natural. So, both the differences and similarities become the study matter of social anthropology.

Dimension 1: Background

Anthropology. The social anthropology in Britain(Popularised by Radcliffe Brown) and cultural anthropology in America(Popularised by Franz Boas) were two distinct labels for studying culture and society. To avoid the duplication A L Krober (1946) tried to merge these two to form socio cultural anthropology or social anthropology.

Dimension 2: Aim of Sociocultural Anthropology

Although emphasis is on study of primitive societies, the aim of socio-cultural anthropology has always been to describe entire range of human behaviour and develop explanation of similarities and differences among cultures.

- Study primitive culture.
- Study cultural contacts.
- Reconstruct social history.
- Find universal social laws.

Dimension 3: Views of thinkers on subject matter

Evans-Pritchard, by comparing social anthropology with Sociology, states that Social anthropology has primitive society as its subject matter. Eg: study of the primitives, indigenous people, hills and forest people, scheduled tribes and other such groups of people. Fieldwork is another integral part of social anthropology. Data in social anthropology are collected from the field.

Thus, social anthropology can be defined in respect of two broad field of study – *(1) Primitive Society (2) Fieldwork.*

John Beattie (1964) advocated that social anthropologists should study other cultures. This makes Anthropology a comparative discipline of the study of social institutions.

Thomas Hylland Eriksen (1995) supports the study of small places in social anthropology.

Eriksen says that social anthropology does not remain restricted to primitive people; it studies any social system and the qualification of such a social system is that it is of a small scale, non-industrial kind of society.

According to Eriksen, social anthropology studies:

1) Small scale society

2) Non-industrial society

3) Small and larger issues of the society.

Dimension 4: subject matter under Theoretical Frameworks.

Different theoretical frameworks came out as social anthropology started exploring its matter of study– the primitive society

- Morgan postulated Evolutionary theory and propounded the study of evolution in human society. According to him human society has come across three basic stages – savagery, barbarism and civilisation. With such evolutionary approach social anthropologists started examining human society in the light of evolution.
- The theoretical framework of structural – functionalism became a popular approach in Britain. The British anthropologists using the term Social anthropology have emphasised on the concept of society, which is aggregate of individuals who live in face to face association and share same common sentiments.
- Functionalism propounded the functional study of social institutions. On the other hand, American anthropologists preferring the term Cultural anthropology have concentrated on the concept of culture which is the sum total of human behaviour, verbal or non-verbal, and their products- material or non-material.
- The term civilisation was known to Anthropologists since the postulation of evolutionary theory, but it was the pioneering work of Robert Redfield, who brought a movement in the history of development of social anthropology by introducing the study of civilisation

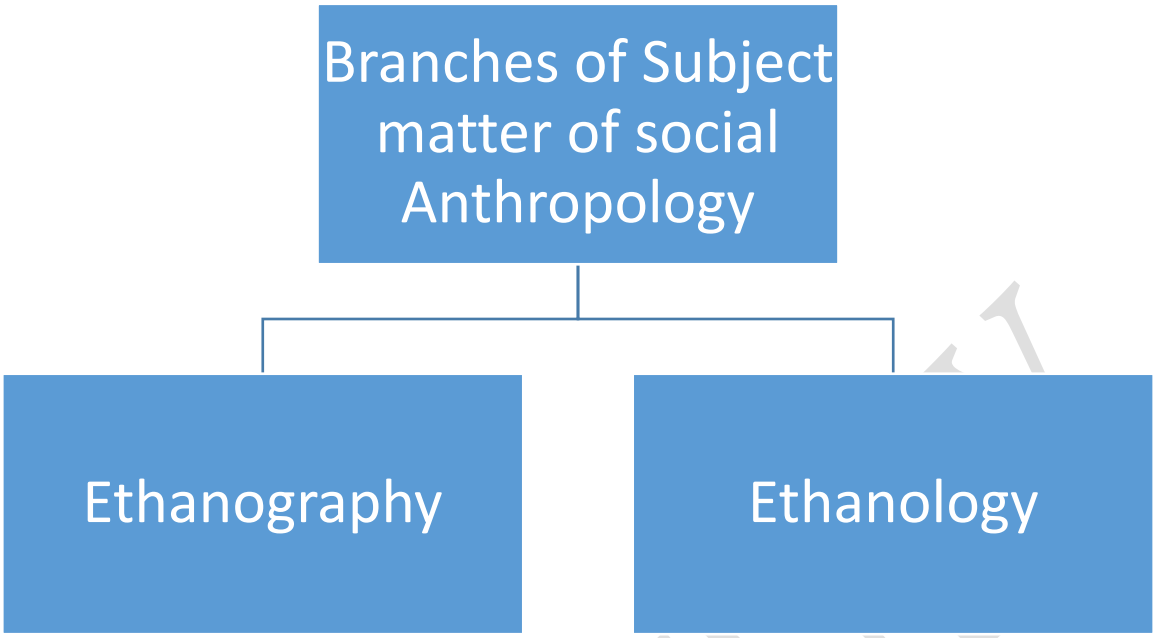
Thus, it studies tribal society as well as urban society.

- Major theories to study Sociocultural Anthropology are Classical evolutionism, Historical particularism, Diffusionism, Functionalism, Neo-evolutionism etc.

Dimension 5: subject matter covering change in society.

Social anthropology studies why or why not society/ culture changes. But change is must, whether it is a remote and isolated village or industrialised city, everywhere people experience a variety of changes in their pattern of living, which is manifested with the passage of time.

Dimension 6: Branches in subject matter of social anthropology.



The scope of socio-cultural society is vast as the humanity itself because it studies society and culture at all levels of development at all places. In this regard the subject matter is divided into two main branches.

1.Ethnography

2.Ethnology.

Ethnography is descriptive, ideographic and synchronic. **It describes one culture at a particular time.**

On the other hand, ethnology utilizes ethnographics, **compares them and derives certain regularities in human behaviour**. As such ethnology is analytical, comparative, nomothetic and generalizing branch

Ethnology Includes Two Broad Specializations

1. the topical specializations and

2. the area specializations.

Topical Specialization

It cultivates every aspect of culture and society as a specialization. Thus, there are ethno-technology, ethno-zoology, ethno-botony, ethno-musicology, structural anthropology, economic anthropology, political anthropology, anthropology of religion and psychological anthropology and so on.

Area Specializations

It highlights the socio-cultural similarities and regularities in specific areas Like North-America, South-America, Africa, Middle-East, South-East, Far-East,Melanesia,Polynesia,Micronesia etc.

Thus, both topical and area specializations provide holistic understanding of social-cultural phenomenon in all places.

Dimension 7: Subject matter with Future Perspective.

Anthropology has been playing a very important role in each and every sphere of human society. During colonial times, it was used as an administrative tool. Anthropology covers not only contemporary patterns of human life but also carefully records the changes in human society and life. It covers historic and prehistoric account of human life as well. So, it becomes very relevant for each and every stage of human civilisation. Claude Levi-Strauss envisages the future of social anthropology as a study complete by itself in terms of communications between persons and groups.

The study of communication, of words and symbols conveying meanings between persons in a society would constitute the study of linguistics,

Thus, studies of human society may be studied not in terms of culture but in terms of structures which embody culture. Many such innovative ideas are coming up in the field of social anthropology and its scope is increasing in terms of both theory and practice.

Dimension 8: Subject matter for social Anthropology in India

Andre Beteille (1996) used the term 'Indian Anthropology' to mean the study of society and culture in India by anthropologists, irrespective of their nationality.

It was only during the British colonial rule that Anthropological data was gathered.

But, the motive behind this was not to study the Indian societies and cultures but to help the British administration for smooth governance. Missionaries had a religious motive.

Trained British officials namely *Risley, Dalton, Thurston, O'Malley, Russell, Crook, Mills etc.* and many others who were posted in India, wrote compendia on tribes and castes of India in India proceeded successfully.

Different scholars like S.C. Roy, D.N. Majumdar, G.S. Ghurye, S.C. Dube, N.K. Bose, L.P. Vidyarthi and S. Sinha had tried to find out the genesis and development of Social Anthropology in India. S.C. Roy's paper Anthropological Researches in India (1921) reflects upon the works on tribes and castes published before 1921.

After this, D.N. Majumdar tried to trace the development of Anthropology in India. This attempt was made after twenty-five years of S.C. Roy's work. D.N. Majumdar tried to relate the developing discipline of Anthropology in India with the theory of culture that originated in Britain and America.

N.K. Bose in 1963 discussed the progress of Anthropology in India under headings - Prehistoric Anthropology, Physical Anthropology and Cultural Anthropology. Recent trends like village studies, caste studies, study of leaderships and power structure, kinship and social organisation of tribal village and Applied Anthropology came to the Indian scenario in 1970s and L.P. Vidyarthi discussed these issues, tracing the growth of Anthropology in India.

The variety of customs and diversity of Indian culture created a unique area of research among the social anthropologists of India. Different ideas like dominant caste, sacred complex, tribe-caste continuum, little and great tradition, sankritisation etc. came up, giving a new direction to Indian Anthropology. Thus, a body of strong Indian anthropological thought was created. Development of Indian anthropology is continuing with additions of new ideas. Emerging areas like ecology, developmental study etc., are also coming up. Anthropologists in India take keen interest in tribal studies. The new challenges in the era of globalisation are also coming up and Indian social anthropologists are focusing on that.

Dimension 9: Changing subject matter in present scenario in India

Government policies were influenced with these social anthropological works as these works dealt with the sensitive issues like tribal development.

Today, in the era of globalisation, social anthropologists in India deal with the new challenges in front of the tribal communities. Identity and gender issues are popular among them, along with development studies. Study of folk culture occupies a major area. With development studies, issues like tribal displacement and rehabilitation have also been a prime focus for social anthropologists. Tribal art, study of indigenous knowledge system etc. are gaining popularity with the new global issues like – global warming

Conclusion:

The life of man has several dimensions and the attempts to study each one in detail has resulted in the origin and growth of several sub-branches from the elementary branch of Social anthropology such as Economic anthropology, Political anthropology, Psychological anthropology, Anthropology of Religion and so on and so forth. Many new sub-branches are also coming up like – Communication and Visual anthropology, with the new demands of society. Social anthropology has to accommodate all the new changes in human society to maintain the relevance of its study. Thus, new areas would expand its field.

Question:

5(d) Parallelism and convergence. 20 marks

Sample Model Answer:

How to write?

Understanding the question:

Context: Concept

Topic: Parallelism and convergence **Purpose:** Similarities and differences

Structure of answer:

Introduction: definition or brief explanation of Parallelism and convergence

Body:

- Touching maximum dimensions on Parallelism and convergence
- Structure of the body should be mentally pre planned to maintain flow of the answer.

Conclusion: concluding in relation to Parallelism and convergence.

****

Answer:

Introduction:

When two organisms show close relationship with respect to certain traits and morphological features, it can be due to parallelism or convergence.

Body

Parallelism and Convergence: Concept

Parallelism and convergence imply that a close phylogenetic relationship does not exist.

Parallelism is typically limited to the development of similar adaptive features in animals that are related. E.g.: when a species colonizes several new areas which are isolated from, but environmentally similar to each other. Similar selective pressures in these environments result in parallel evolution among the traits.

Convergence on the other hand is the development of similarities in adaptive relationships or structures in two animal species or major groups that are not closely related. Repeated evolution of flying is a typical example of convergent evolution, be it flying insects, birds and bats, all evolved the capacity of flight independently.

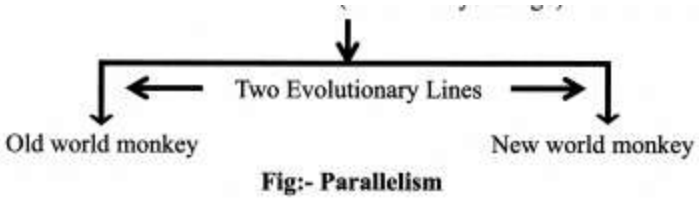


Fig:- Parallelism

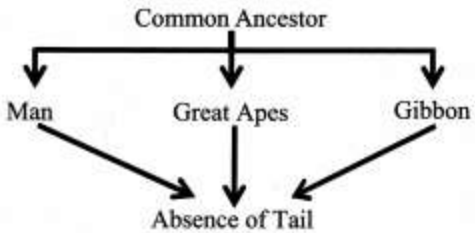


Fig.: Parallelism

Thinkers

According to J.H.R. Ford (1997): "Independent evolution of similar evolutionary adaptations in closely related species" is called parallel evolution.

The evolution of two related species in the same direction so that they resemble each other more than their common ancestor is called parallelism.

That means in parallelism two related species independently take comparable ways of life. So, they evolve in the same direction and resemble one another in many ways. In fact, they resemble one another more than their common ancestor. Their initial similarity is due to shared ancestral traits but their continued similarity is due to adaptation to similar conditions

1. "Evolution of similar adaptive traits in unrelated forms" is called convergent evolution (Harry Nelson and Robert Jurmain 1998)

Explanation

Convergence or convergent evolution refers to the evolution of superficially similar traits by unrelated species as a result of adaptation to similar ways of life.

It is the process in which two unrelated groups of organisms, living in similar but separate environmental conditions, develop a similar appearance and life style. That seas similar environmental demands make for similar phenotypic responses (Ernst Mayr).

This is not surprising because the requirements of adapting to a modification of body traits. Therefore, two similar environments would result in characters. These similarities are superficial but in their details they differ in many respects.

E.g. of convergence

a. Wings of bee birds and bats, although they have different ancestor
b. Whales and extinct reptiles attained fish like body with their limbs modified into fins or flippers.

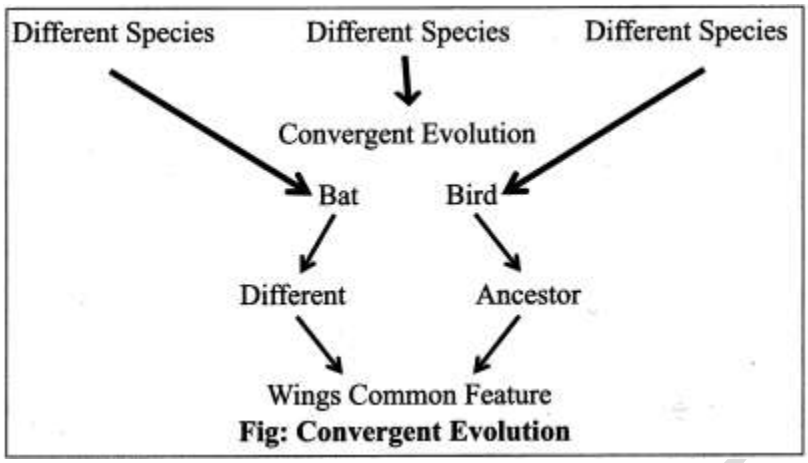


Fig: Convergent Evolution

Similarities and differences:

- According to George G Simpson both parallelism and convergence expresses some sort of evolutionary phenomenon.
- For explain similarity between two species, too much emphasis cannot be put on convergent and parallel evolution. The resulting species may be result of environmental pressure, genetic relation or both. It can also be classified as homologous and analogous evolution for parallelism and convergence respectively.
    - Analogous structures are similarity in form of same purpose even though not descended from same ancestor. E.g.: humming bird and humming moth show convergence in flying habits for following common way for searching nectar.
    - Homologous structures are those related by evolutionary descent and diverge. Eg: forelimbs of bat and monkey are homologous as they descended from same ancestral structure.
- Homology is the similarity between organs of different organism based on common ancestry. Therefore, these organs have common pattern but perform different functions. Flipper of seal and wing of bat.
- Analogy is similarity between organism based on function and not by evolutionary relationship. E.g.: Analogy in forelimbs of butterfly bird and bat.

Conclusion:

Thus, Parallelism and convergence helps us to understand evolution better, of related or unrelated species.

****

Question: 6

Discuss important fossil evidences in understanding human evolution. 60 marks *

Sample Model Answer:

How to write?

Understanding the question:

Context: Using fossil evidence like Neanderthal etc

Topic: Hominid evolution to humans **Purpose:** Discuss

Structure of answer:

Introduction: Give a brief background on hominids evolution to Homo sapiens

Body:

- Discuss the evolution, while including different hominids and their details.

Conclusion: concluding in the context of the question.

****

Answer:

Introduction:

The emergence of hominids in the late Miocene contributes a lot to understand in the history of human evolution. These hominids presented a range of distinctive features in their dentition, jaw structure and brain capacities that represent adaptations to varying environment.

However, they all had structural anatomy required for bipedalism. This feature separates them from other primates and identifies them as a distinct family. Even though they represent a variety of branches and sub-branches, they form as a group to be the closest relations of humans.

These include Australopithecus afransis, Australopithecus robustus, homo habilis, homo erectus, homo neanderthalensis, homo sapiens.

Body:

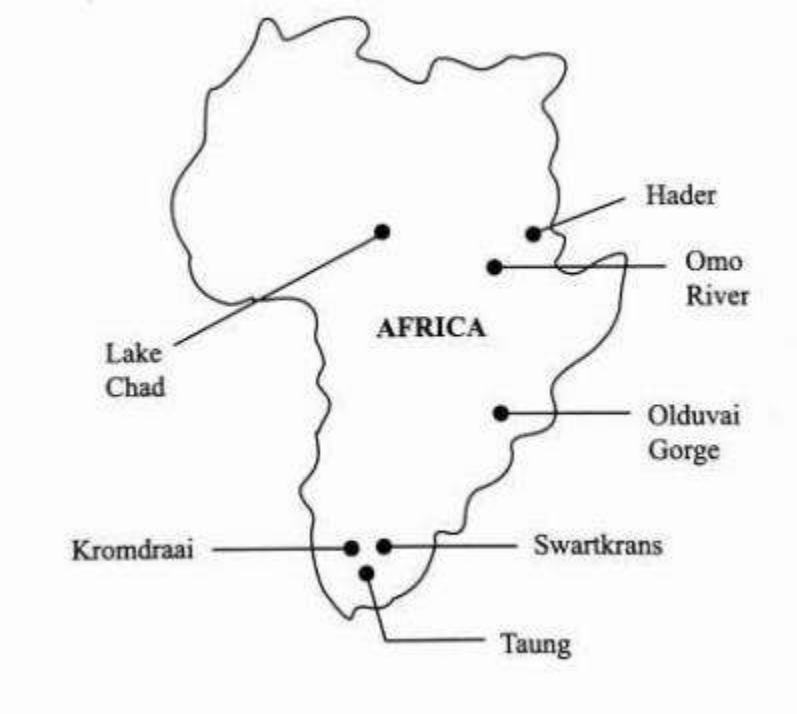
The hominid lineage branched off from other primates, In the process of evolution almost six million years ago. Human species evolved from a small-brained bipedal ape.

The first organism this line was **Australopithecus.** Australopithecines emerged 4 million to 1 million years ago in Africa. Few Australopithecines gave rise to genus Homo. Homo coexisted with Australopithecines between 2 million and 1 million years ago.

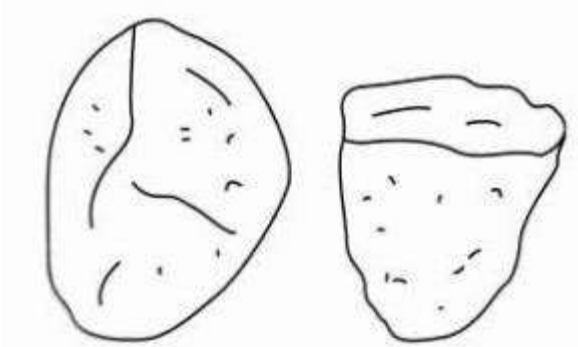
With the emergence of the genus Homo in the bio-evolutionary path, the emergence of cultural evolution also took place. It was with the use and manufacture of stone tools that man started to adapt himself. In due course. Homo habilis or the 'handy Man manufactured the Oldowan tools. These are pebble tools made by simple and direct percussion on stones. The name 'Oldowan' is derived from the site of its discovery viz. Olduvai Gorgo in Eastern Africa.

Dimension 1: Australopithecus afarensis

Fossil evidence: south and east Africa.



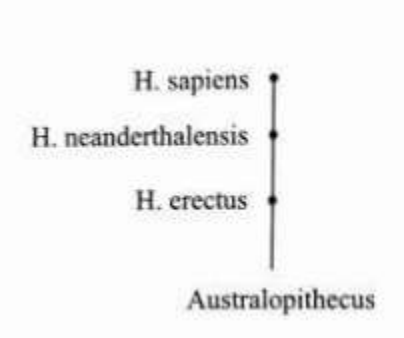
Culture: Primarily hunting using chopping tools. Chopping tools found at Olduvai George. Used bigger animal bone tools to hunt smaller animals.



Chopper – Chopping Tools

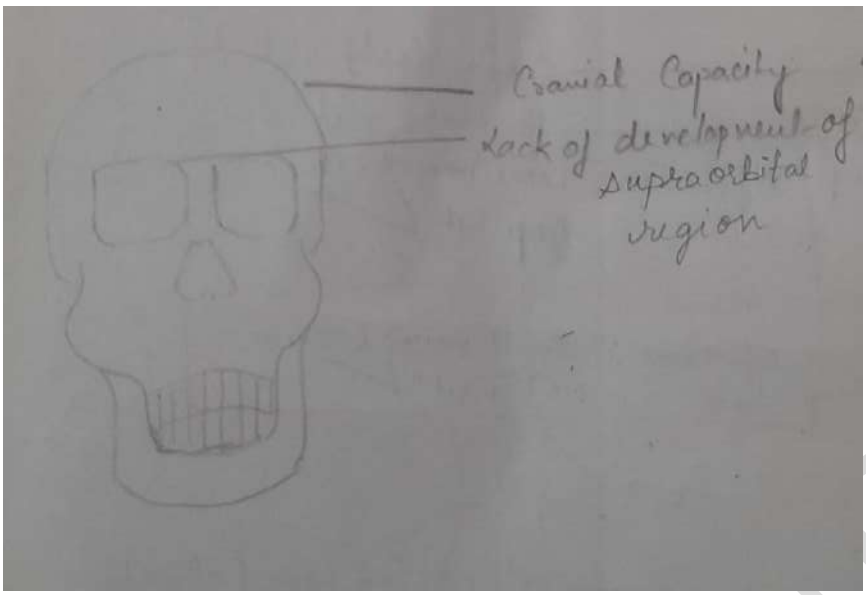
- Followed osteodontokeratic culture
- Marriage in premitive form was present as found by Hadar(Euthopia)

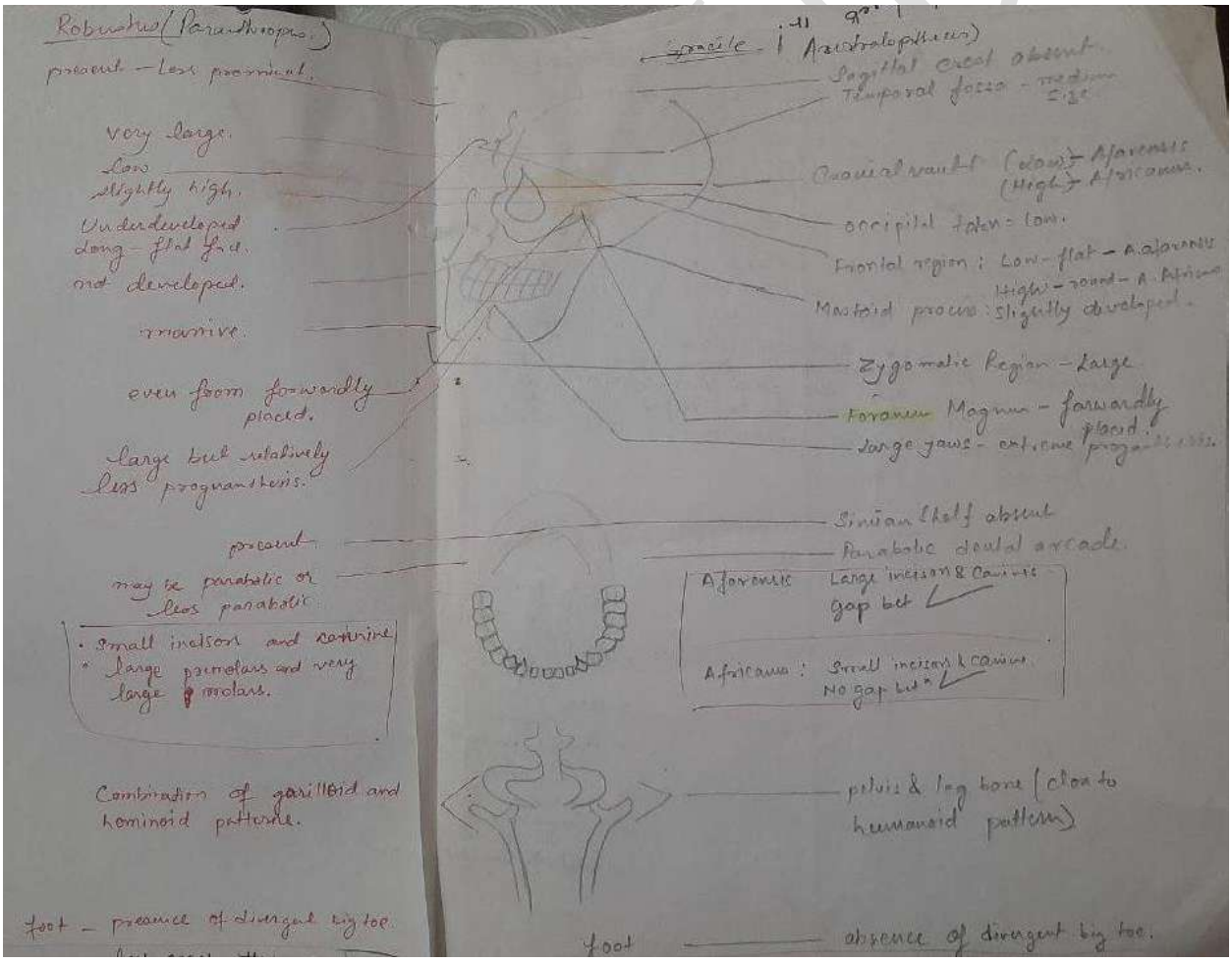
Phylogenetic status:



Anatomy:

cranial capacity 400 to 600; less prominent supra orbital region; lightly built; ape like features; less marked sexual dimorphism; relatively long arms, height 3.5 to 4ft, weight 30-70 kg; sufficiently bipedal and erect posture.





Significance: Post cranial skeleton bear similarities to Homo and believed to be bipedal brings it closest to homo and so are extensively studied.

Dimension 2: Australopithecus Robustus

Fossil evidence: south and east Africa.

Anatomy:

cranial capacity 500 to 600; large supra orbital region; Heavily built; Human like features; marked sexual dimorphism; relatively long arms, height 3.11 to 4.4ft, weight 40-80 kg; sufficiently bipedal and less erect posture.

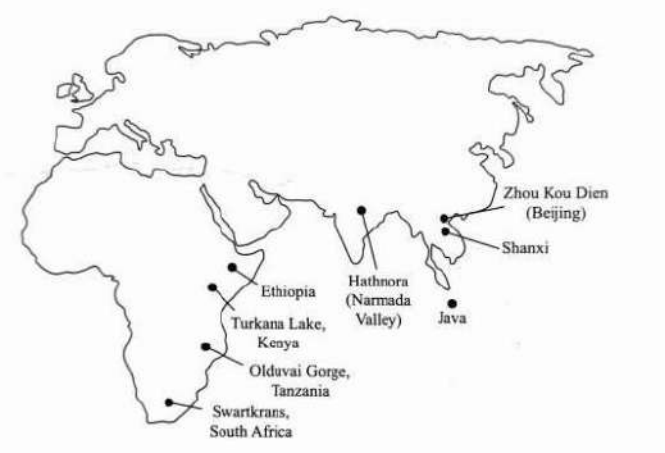
Significance: Had large lower jaw suitable for herbivorous diet of nuts and roots. Cranial capacity was 500-600 indicating, there was hardly any brain growth when bipedalism appeared in evolutionary process.

The next biologically advanced species of man was **Homo erectus**. It was during this time that hand-axes utilizing the Abbevillean and the Acheullean techniques were manufactured. The technical term 'Abbevillean' is derived from the name of the site Abbeville in France at which such hand-axes were first discovered. This is the earliest form of hand-axe and is crudely made.

The term 'Acheullean' is derived from the name of the site, Saint Acheul in France. The Acheullean hand-axes were much finer than the Abbevillean ones, and presented a very advanced stage in the development of 'hand- axe' Culture. These hand-axes had a continuous working end as opposed to the Abbevillean hand- axes. The Lower Palaeolithic or Lower 'Old Stone Age' ended here.

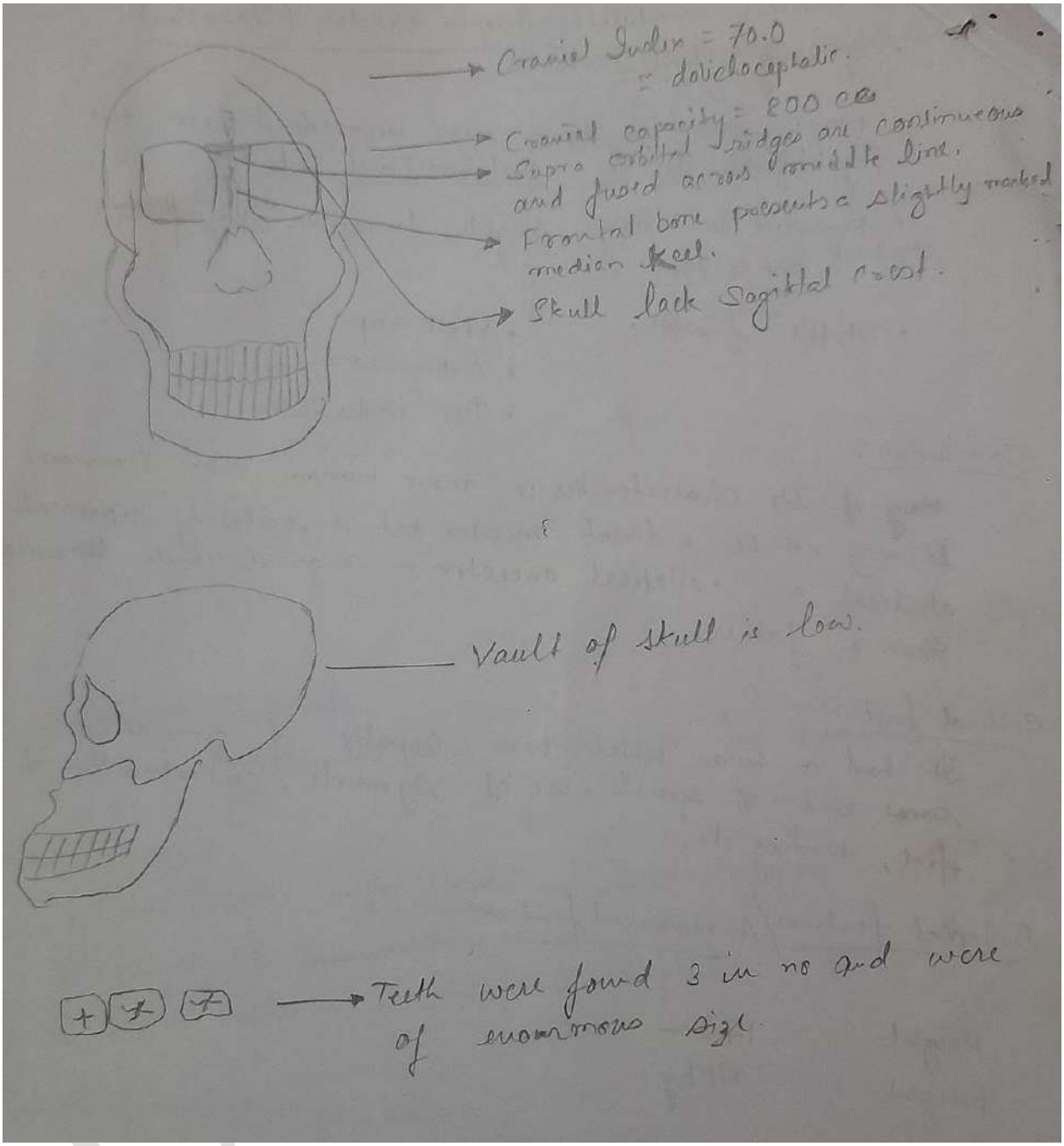
Dimension 3: Homo erectus: Java man

Fossil evidence: Diet and trinil bed deposits- Java Islands Indonesia



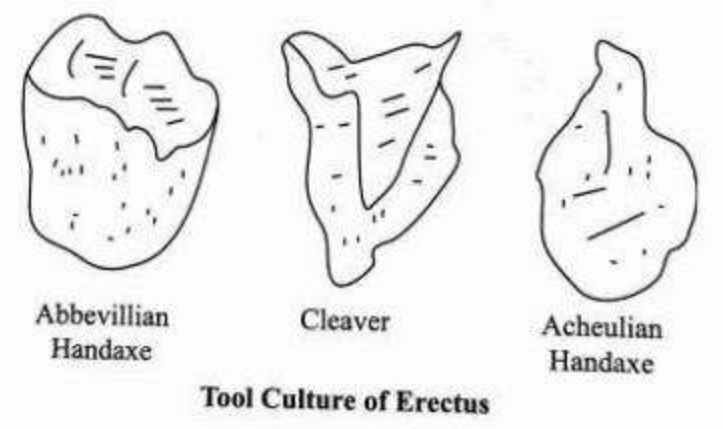
Anatomy:

Cranial Capacity 775 to 1421; Parietal lobe was developed signifying development of language; Dental morphology: same as modern man; acheulean tools, use of fire; sexual behaviour, inter male competition, well developed linea aspera indicating erect posture.



Culture:

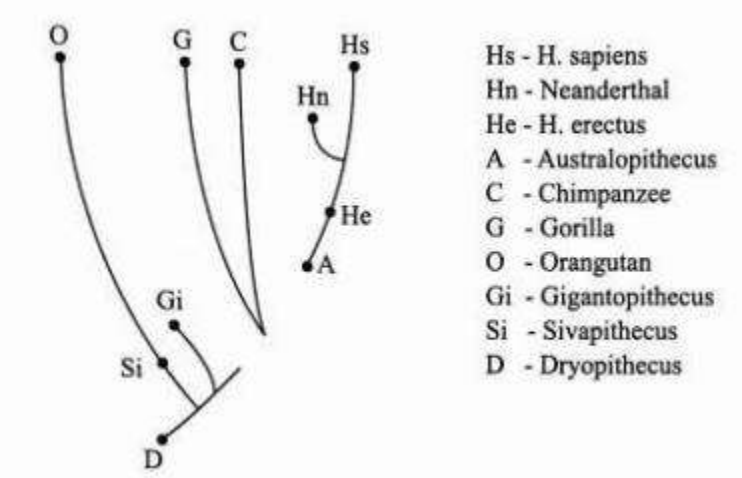
- Habitual tool makers, followed abbivillian and acheulian culture



Tool Culture of Erectus

- *Hunting was performed*
- *Use of fire*

Phylogenetic Status:



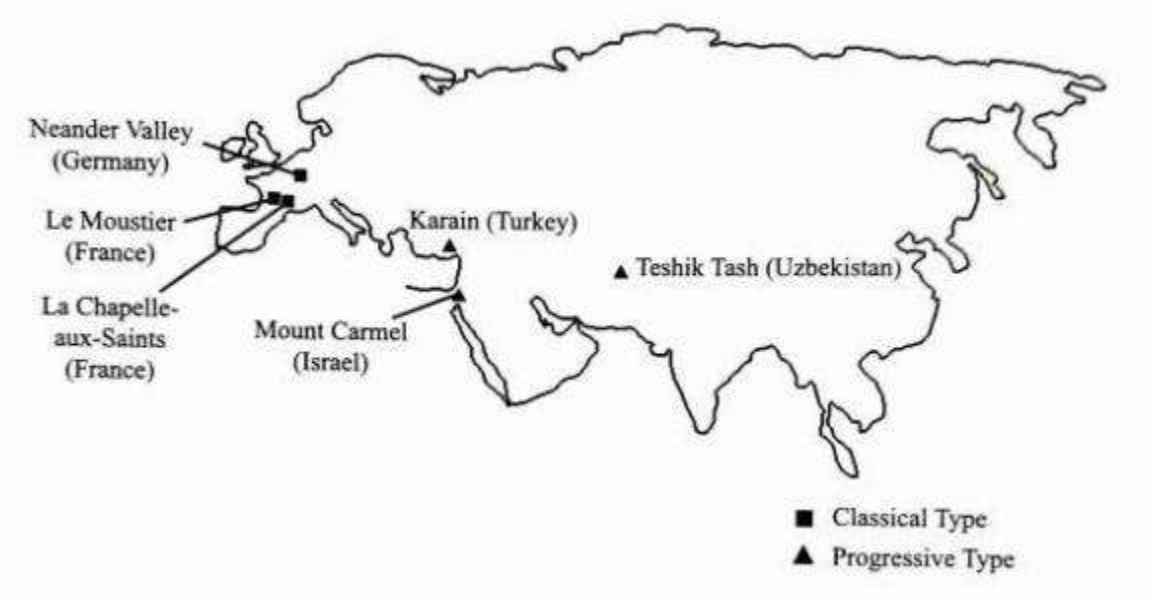
Significance: After first glaciation they were confined to certain pockets of forests. With enhanced intelligence they became carnivores to satisfy needs.

Its characteristics is more like human than simian.

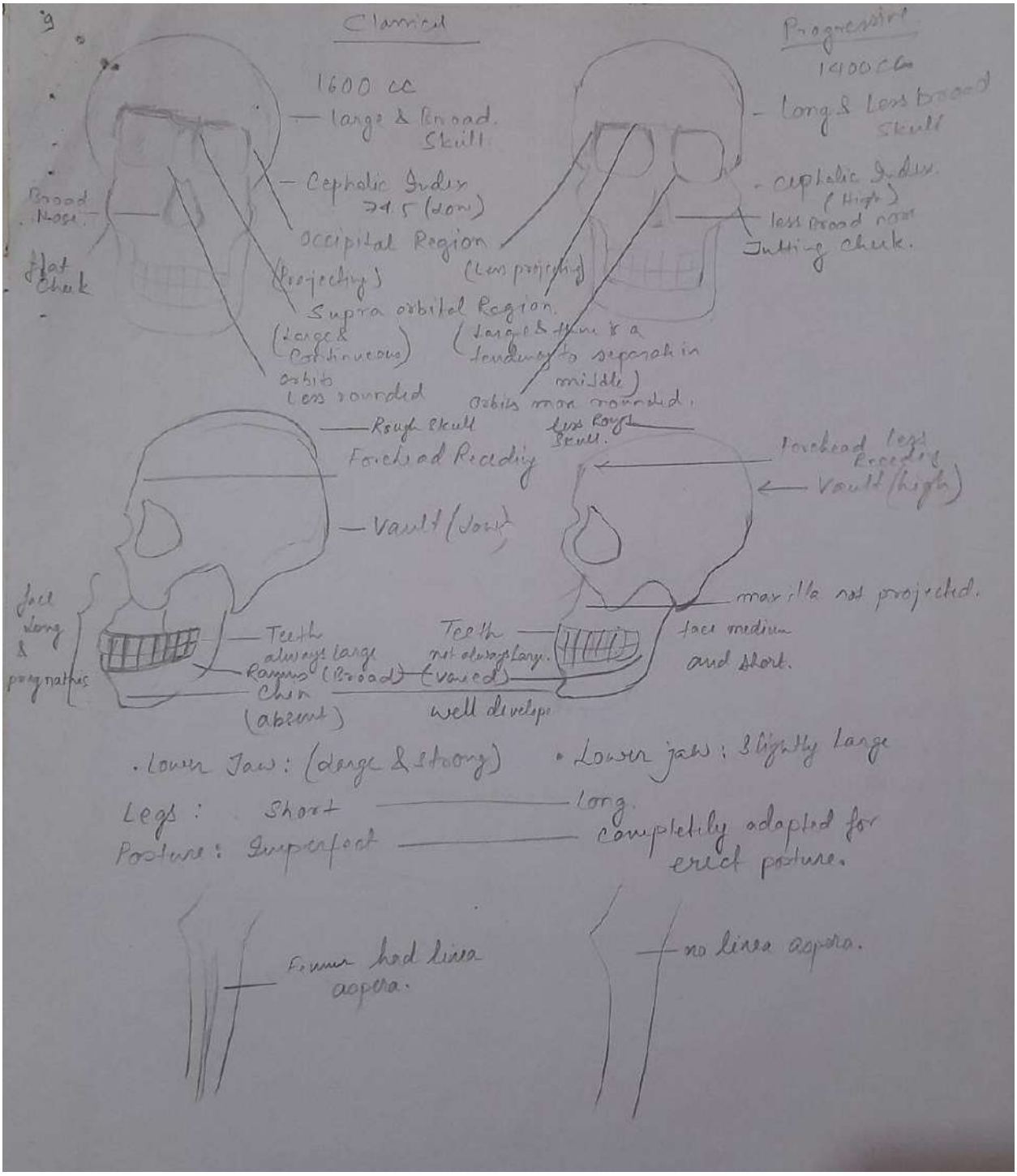
A further developed species of man named **"Neanderthal' Homo sapiens** evolved next and developed the 'Flake Culture'. This type of tool culture involved a new technique by the name / Mousterian' after the site Le Moustier in France. It consisted of repeated removal of flakes all around a piece of stone and the making of the desired tool out of the flakes so removed. The tool types that were prevalent were arrowheads, borers and scrapers.

Dimension 4: Neanderthal (classical and progressive)

Fossil evidence: Neanderthal valley-Germany, La Moustier -France and Tubun –Israel

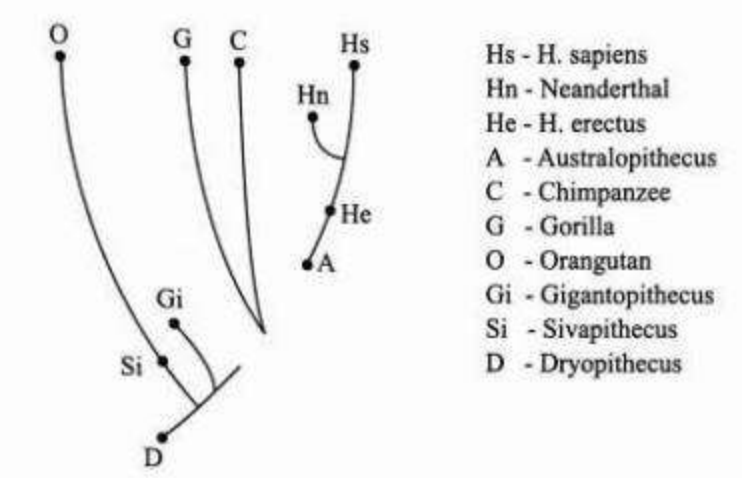


Anatomy: Strong Ribs, large and robust fingers, strong femur, shorter limbs



Phylogenetic Status:

With respect to Neanderthal genome project 2010 , ancestors of human mated with two Denisovans and Neanderthals. This debate still continues.



Cultural Significance:

Mousterian tool making, flake style; cave dwelling, fire inside caves, winter clothing, bone needles; Bear cult; human burials.

Nomadic society-hunting, awareness of dignity of individual.

Neanderthal represented mixture of primitive and modern behaviours.

The Upper Palaeolithic period saw the emergence of a more well-developed species of man in the **Homo sapiens proper**. He manufactured blade tools out of thin Makes by the percussion and pressure techniques. The 'Blade tool Complex consisted of burins and blades such as lunatos, knife points and blunted-back arrowheads.

Dimension 5: Homo Sapiens

Fossil evidence:

Anatomy: Grimaldi man was more like negroid type of present-day man

Cromagnon may have had interrelationship with African ancestors.

Chancelede man were more like ancestors of Eskimos.

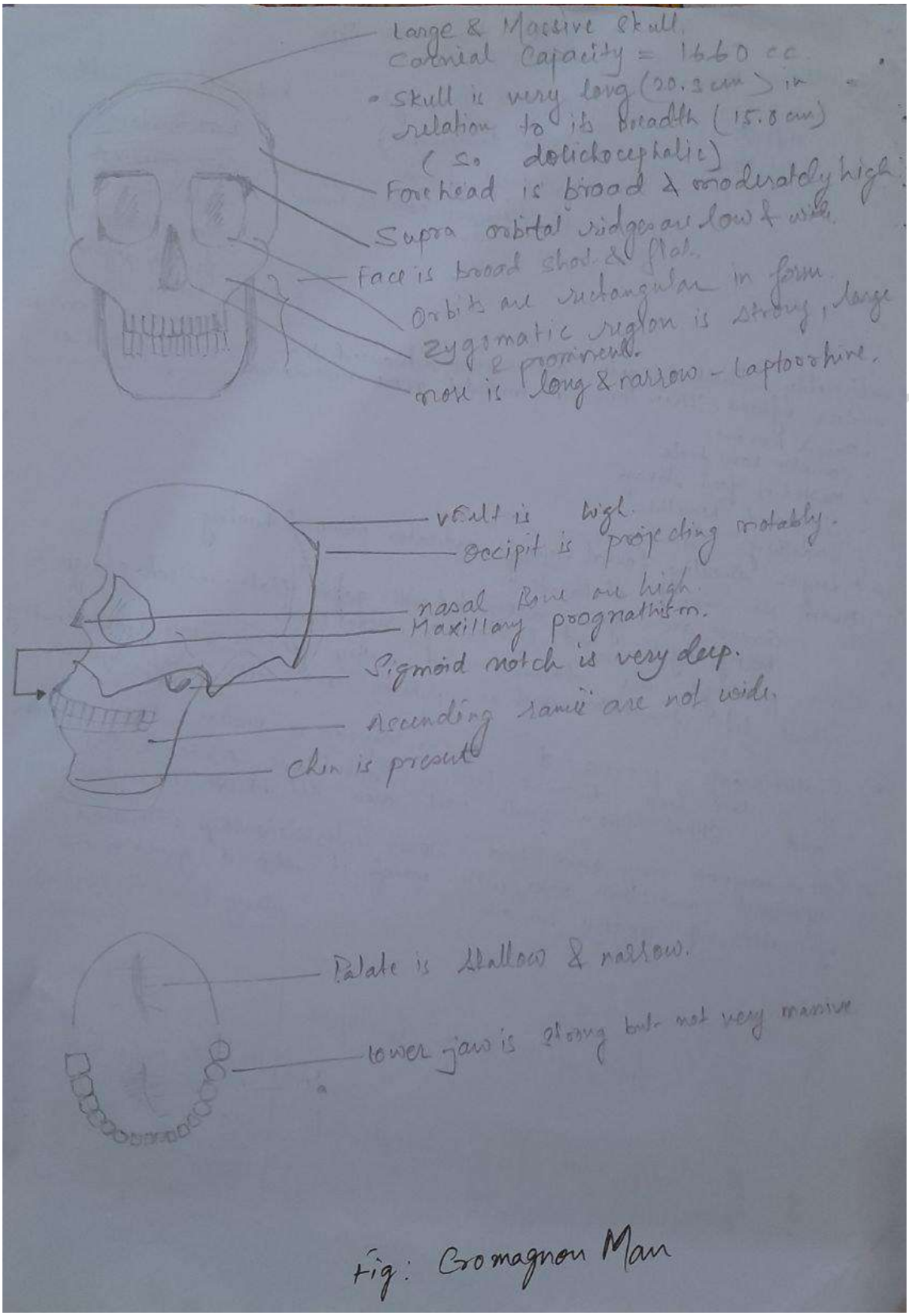


fig: Cromagnon Man

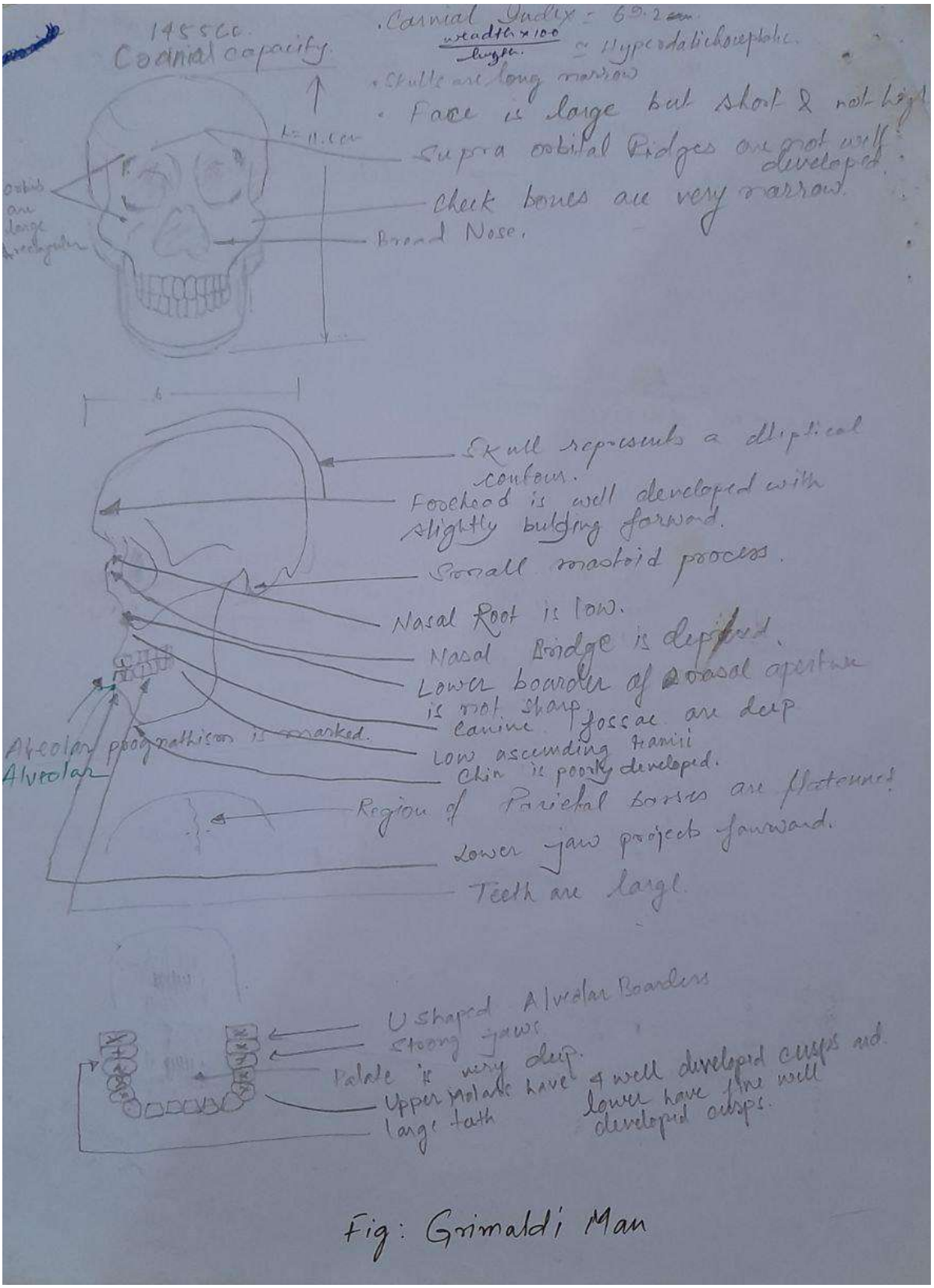
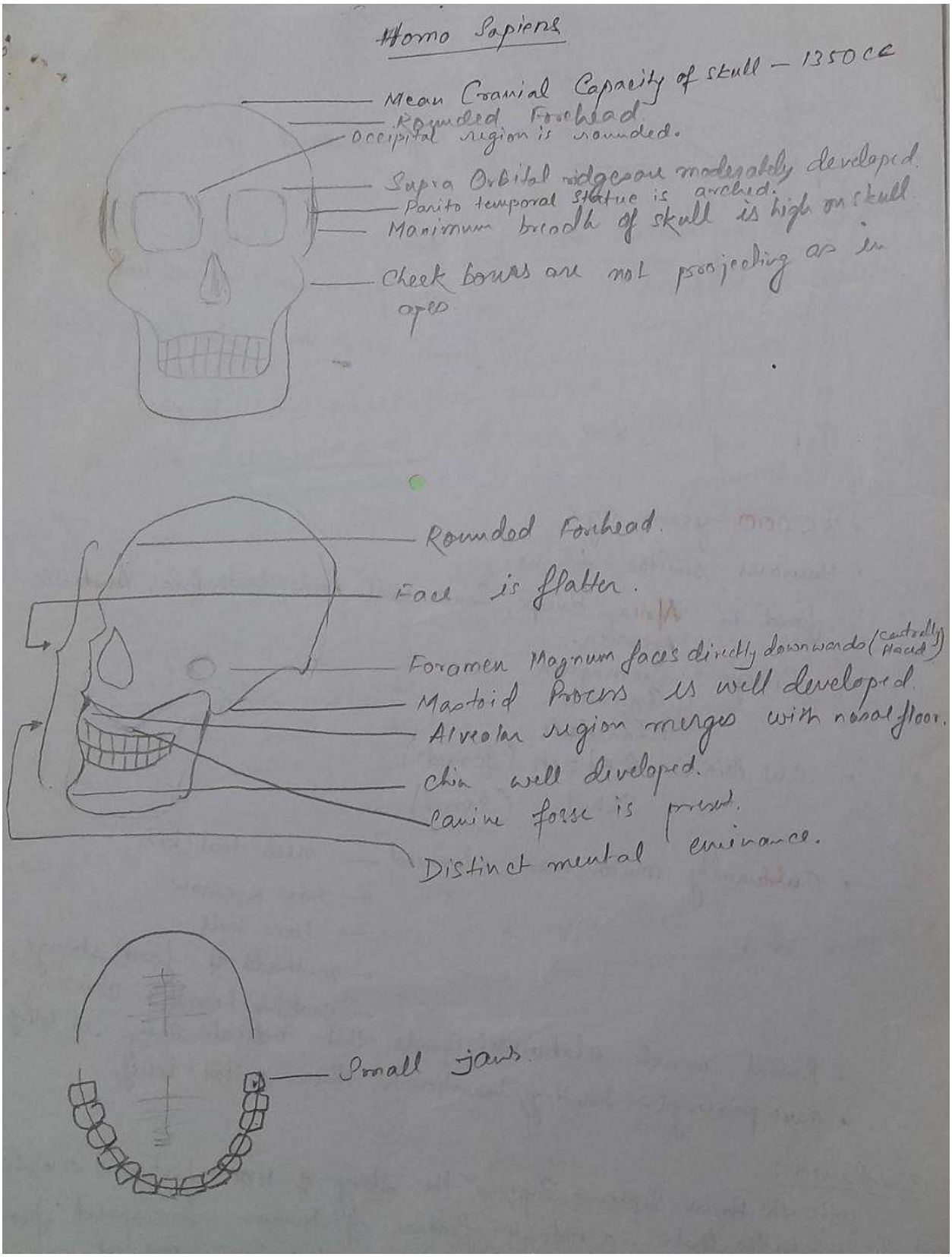
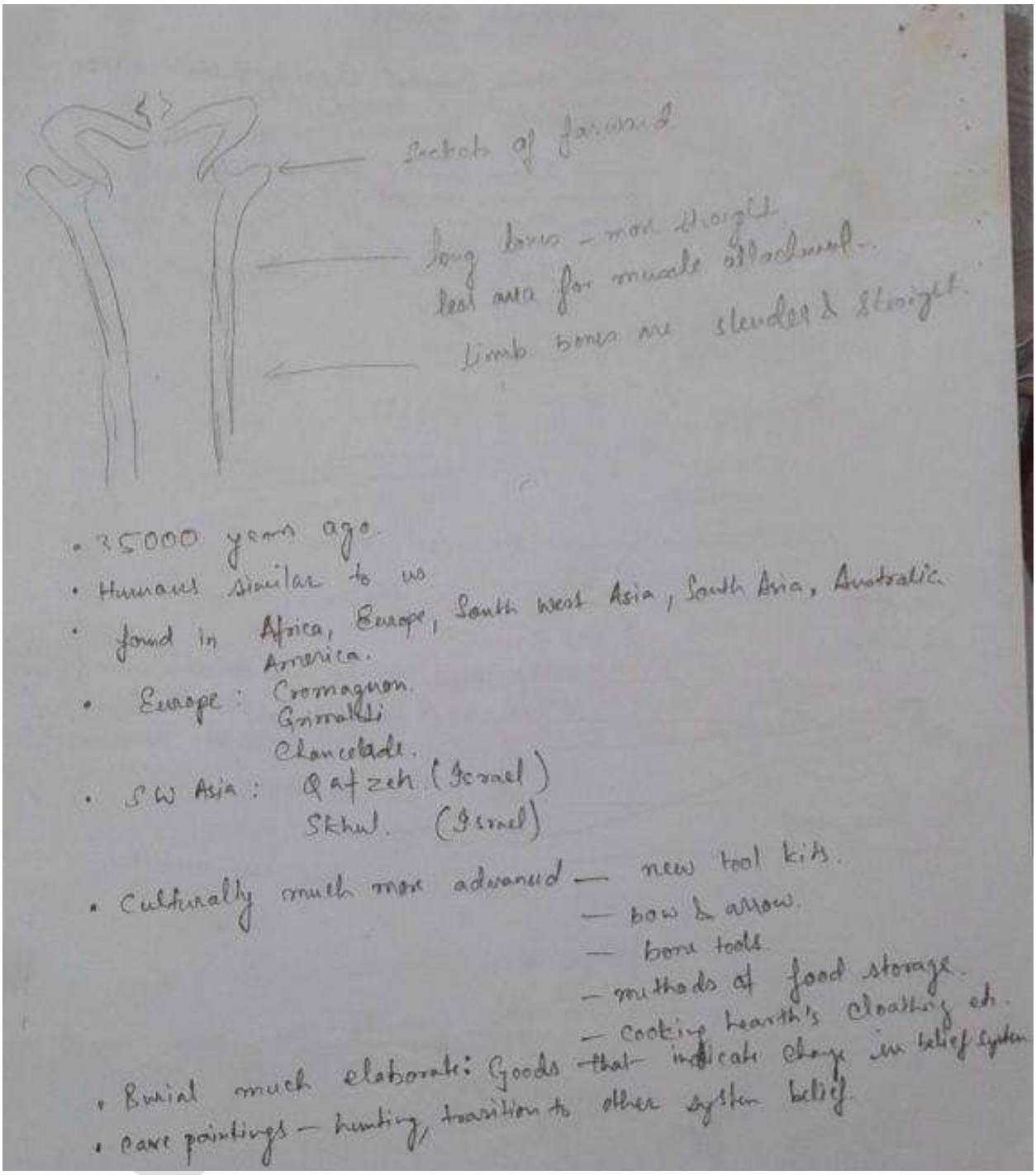


Fig: Grimaldi Man


Homo Sapiens
Mean Cranial Capacity of skull – 1350 cc
Rounded Forehead.
Occipital region is rounded.
Supra Orbital ridge are moderately developed.
Parito temporal statue is arched.
Maximum breadth of skull is high on skull
Cheek bones are not projecting as in apes
Rounded Forhead.
Face is flatten.
Foramen Magnum faces directly downwards (vertically Placed)
Mastoid Process is well developed.
Alveolar region merges with nasal floor.
Chin well developed.
Canine fosse is present.
Distinct mental eminance.
Small jaws

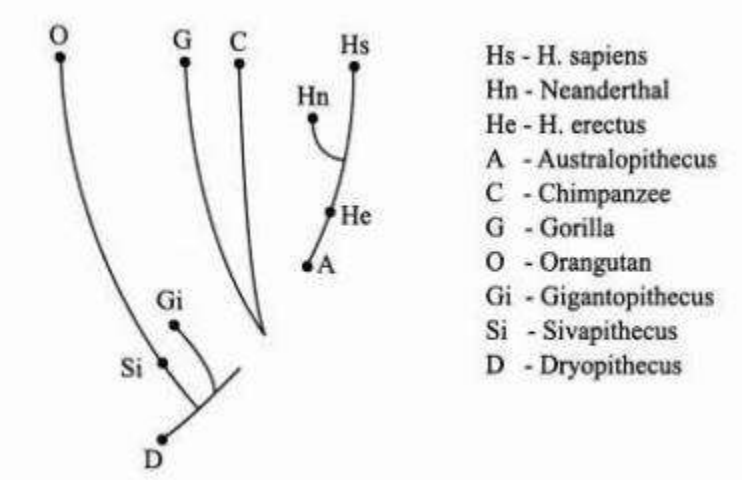


Culture:

- Cromagnan and Grimaldi were associated with Aurignacian culture of upper palaeolithic age. Chancelede was associated with Magdalenian culture.
- Planned hunting
- Cave painting
- Food storage
- Clothing

- Larger dwelling

Phylogenetic Status:



Significance: With Home sapiens story of human evolution concludes but the notable feature from cro-magnon to man of today is the cultural development

Conclusion:

Based on fossil evidence and molecular data two schools of thought (complete replacement and regional continuity) were proposed to explain origin and peopling of modern human across the world. Complete replacement model argues that modern human fully evolved in Africa and then migrated to other regions of the world and replaced population residing there such as Neanderthals in Europe. Regional continuity model says that indigenous ancestors of different regions of the world evolved into modern human such as Neanderthals which gave rise to European population. An intermediary model was also proposed by certain scholars. Proponents of partial replacement model suggest that African emigrants though replaced indigenous populations in various regions of the world however some amount of interbreeding also took place · Evolution of modern human is also associated with evolution of tool and artistic traditions.

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Question: 7

Give a detailed account of various theories of evolution. Enlist significance and application of each theory. 60 marks *(40+20)

Sample Model Answer:

How to write?

Understanding the question:

Context: Significance and application

Topic: Theories of evolution **Purpose:** Write in detail

Structure of answer:

Introduction: definition or brief explanation of theories of evolution

Body:

- Touching maximum dimensions on theories of evolution
- Structure of the body should be mentally pre planned to maintain flow of the answer.

Conclusion: concluding in context of theories of evolution

****

Answer:

Introduction:

Evolution simply means 'change'. *Herbert Spencer (1857)* first used the term evolution to refer to the development of more complex forms of life (plants and animals) from simpler and earlier forms.

Organic evolution implies that 'the present complex and highly organized living beings have evolved from simpler and less organized living beings of the past by gradual modification accumulated through successive generations over millions of years.

Many theories tried to explain the process of evolution, but the important theories that explain the scientific basis of organic evolution are Lamarckism, Neo – Lamarckism Darwinism, The Mutation Theory, The Modern Synthetic Theory

Body

Lamarckism

Lamarck (1744-1829) was a French naturalist, well known for his Theory of Evolution.

The theory is known as Lamarckism or Theory of Organic Evolution. It is popularly known as 'Inheritance of Acquired Characters'. It explains the origin of new species

Propositions

Internal urge: Living organisms and their parts tend to increase in size continuously due to internal forces of life. Lamarck thought that change of habits may initiate the formation of a new organ or may bring the modification of the existing organ or structure.

Inheritance of acquired characters: Environmental response leads to development of new adaptive characters in an organism through internal urge or through use and disuse of organs. Acquired characters are thus inherited leading to morphological and anatomical changes in a species

New needs as a reaction to the environment: New organs (characters) are the result of a new need. Lamarck demonstrated several cases where individuals of the same species, grown under different environmental conditions, exhibited marked differences.

Use and disuse: The constant use of an organ increases its efficiency and size and leads to its better development. On the contrary if any organ is not used for a long time it leads to the reduction in efficiency and size of the organ and ultimately to its degeneration.

Examples

Long neck of giraffe: This process of stretching the neck was continued for generations to reach the foliage of taller trees and as a result, the neck became longer along with their forelimbs.

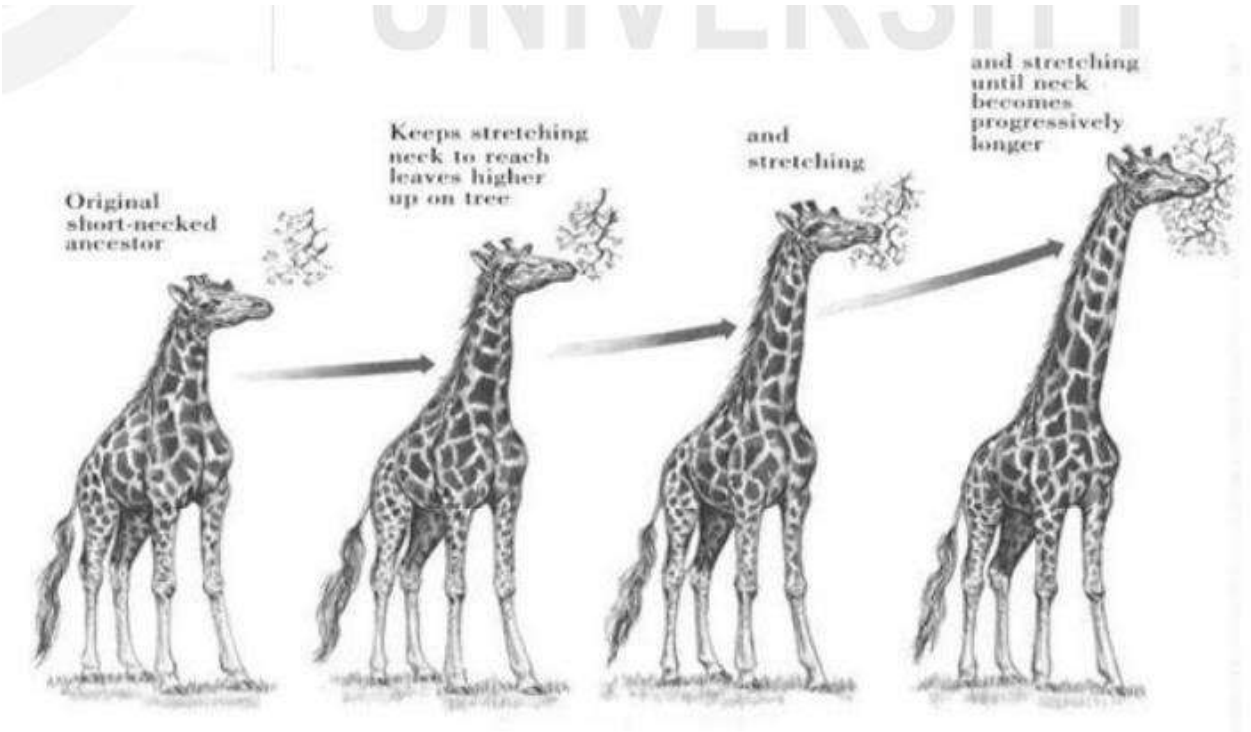


Fig. 3: Long neck of giraffe

Limbless in snakes: The ancestors of snakes were the four limbed animals. In course time, the snakes adapted to burrowing habit. During this adaptation they gradually lost their limbs. Hence the present-day snakes are without limbs.

- Development of webbed feet in aquatic birds, like duck is due to developing swimming habit. They are considered to have arisen from the terrestrial ancestors.
- Evolution of flightless birds from their flying ancestors. Flight lessness in kiwi is due to reduction of feathers and wings.
- Biceps in hands in blacksmiths which put their hands constant to heavy hammering.
- Presence of appendix post anal tail and trace of nictitating membrane in man

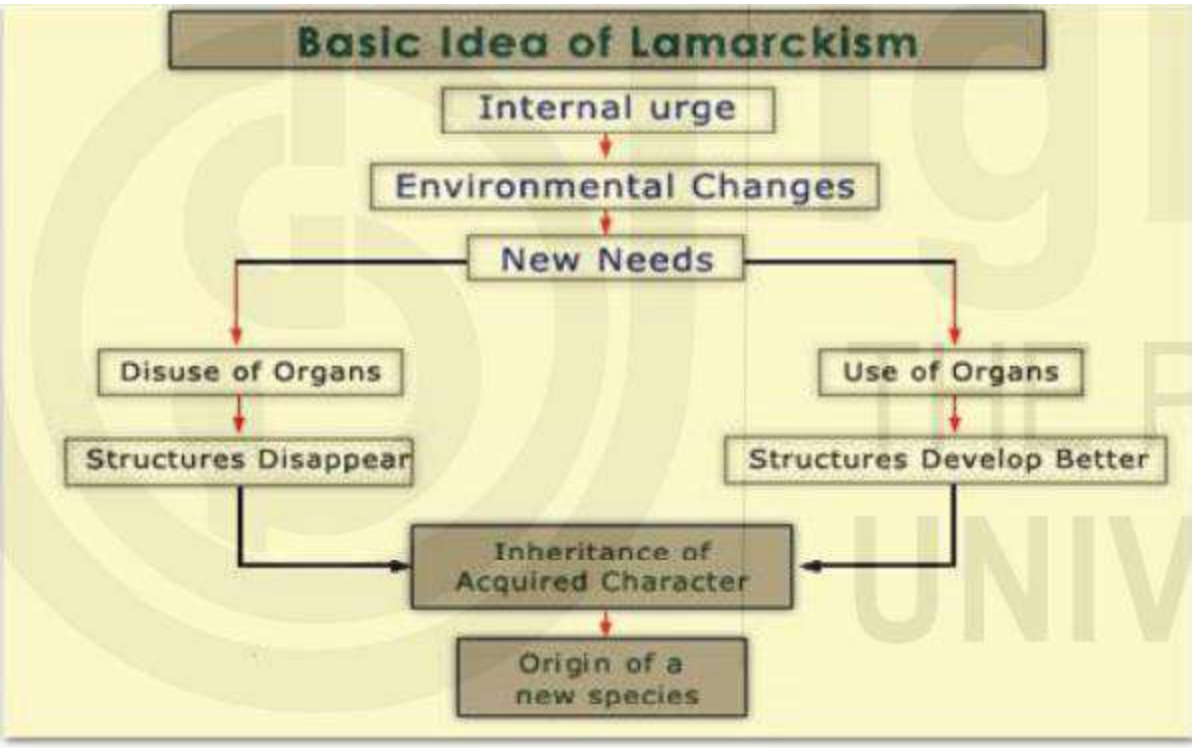


Fig. 2: Basic idea of Lamarckism

Significance and application:

- Lamarckian theory was simple and it had some appeal, as it provided the way in which changes in organisms could come about.
- It was the first completely comprehensive mechanistic theory that was offered.
- Furthermore, it was the theory that lent itself to predictions and, therefore, to testing.
- Lamarckian theory enjoyed popular acceptance for nearly about 70 years because it was exemplified by many common examples.

Neo-Lamarckism

- The followers of Lamarck like Cope, Spencer, Packard, Kammerer etc., tried to modify the Lamarckism and made it acceptable.
- These neo-Lamarckians considered that **adaptations are universal**. Organisms acquire the new structures due to their adaptations to changed environmental conditions that affect the **somatic cells**.
- The variations caused in somatic cells can be inherited in the next generation. The Neo-Lamarckians provided examples in favour of inheritance of acquired characters.

- It established that **only those modifications** are transferred to the next generation which influence germ cells or where somatic cells give rise to germ cells.

- Neo-Lamarckism does not give any importance to factors like internal vital force, appetency and use and disuse of organs. The theory stresses on the direct effect of changed environment on the organisms

Examples

- Proteus anguineus, an amphibian lives in caves where there is no light. Hence it is colourless and the eyes are rudimentary. Kammerer, one of the followers of Lamarck brought this animal to day light and observed that the animal gradually developed black skin and normal eyes. These somatic characters were inherited by the next generation.
- Yet another experiment conducted by Griffth and Detleofsm on rats by placing them on rotating table for several months, noticed that even after the rotation stopped, the rats showed signs of dizziness and the offspring also exhibited dizziness.

Significance and application: The growth of Darwinism and Mendelism provided a scientific base for explaining evolution. Lamarkism receded backward because of no scientific base. On the other hand mutation, recombination, hybridization were scientifically testable. Also gene flow,genetic drift, isolation were all corroborated by evidence and experiments. Lamarckism is crushed under these no evolutionist of today is adherent to neo lamarkism.

Darwinism

Charles Darwin (1809-1882) was an evolutionary biologist. The evolutionary theory proposed by him is called 'Darwinism'. Darwin's theory of natural selection is based on the following principles:

1) **Over Production:** This principle is also called prodigality of over production. Every organism tends to increase their population in a geometric ratio. The organisms produce more number of offspring than will be able to survive and reproduce.

2) **Variations:** Variation is the characteristic feature of all organisms. Variations may be harmful or useful. The useful variations are favourable and inherited to the next generation. Harmful variations make the organism unfit in the struggle for existence. Beneficial variations are favoured by the nature.

3) **Struggle for existence:** All organisms reproduce in geometric ratio, but the food and space are not increased correspondingly. The organism should face competition for survival. Darwin called it struggle for existence.

The struggle is of three types:

Intraspecific struggle: struggle among the organisms of the same species. E.g., for food and mating. It is

the most severe check on the rate of reproduction.

Interspecific struggle: struggle between individuals of different species. E.g. Interspecific struggle is for food.

Struggle with the environment: struggle that the organisms have with the environment for survival. E.g. struggle with the environmental factors like food, cold waves, heat waves, earth quake etc.

4) Natural selection or survival of the fittest: The organisms with beneficial variations will survive and those with less fit and unfavourable variations will be eliminated. The organisms which are selected by nature are said to be the fittest. This idea of survival of the fittest was proposed by Herbert Spencer.

Less favourable variations would be at disadvantage and organisms possessing them are reproductively less successful. Differential reproductive success exists among organisms.

Over a period of time, the criterion for the success is the reproductive success. The organism that fails to reproduce cannot be represented in future generations however it may be fit in the struggle for existence.

5) Origin of new species: The over production of animals lead to struggle for existence. The animals survived with favourable variations are better adapted to the environment. All the modifications caused by variations and selected by nature are accumulated from generation to generation till a generation is produced that is more adapted and has more chances of survival.

Thus, a new species originates by gradual accumulation of favourable variations in a number of generations. Darwin considered that a permanent racial change is the product of fluctuating variations. He also believed that evolution is a gradual, rather than a sudden, biological event. Thus, as per natural selection, new species are evolved due to cumulative effect of fluctuating variations.

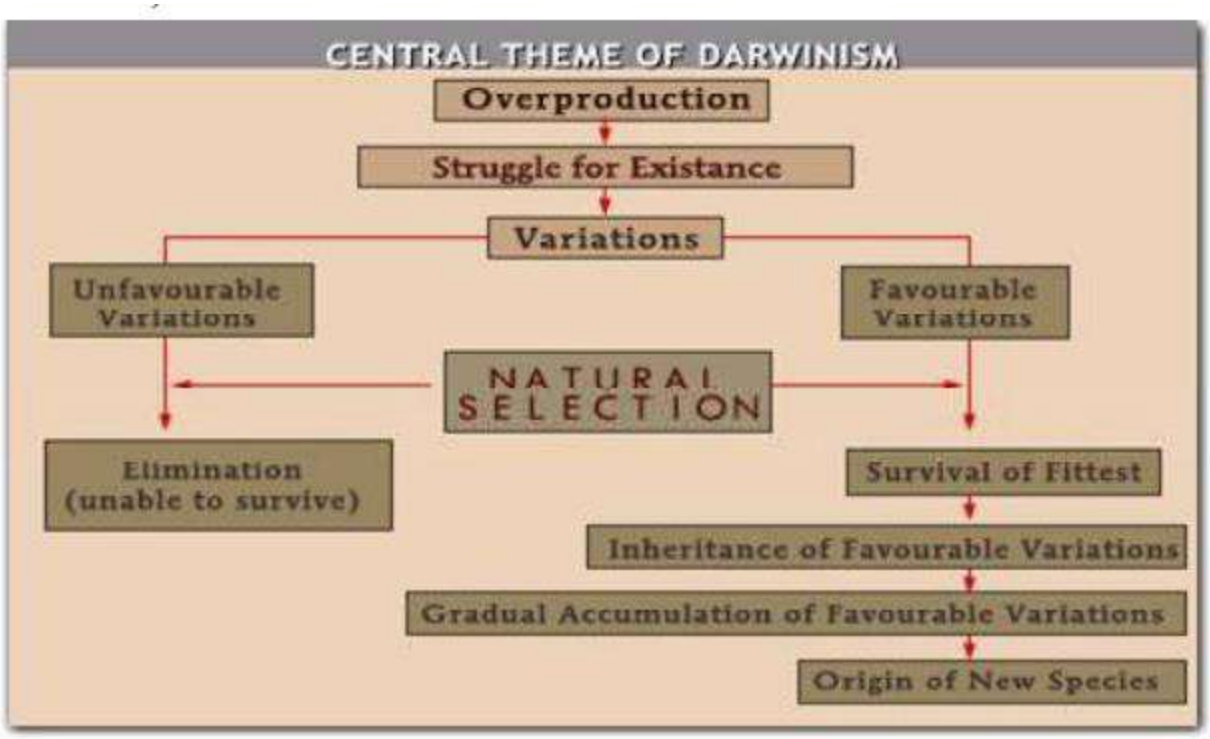


Fig. 5: Central Theme of Darwinism

Experimental Verification of Natural Selection – Industrial Melanism "A classical example of natural selection in the wild is the case of peppered grey moth Biston Betularia which was abundant before industrial revolution all over England.

Prior to industrial revolution the grey moths succeeded to camouflage the light trunks of the trees. With the industrial revolution more soot was released due to the burning of coal. Tree barks became black. Grey moths were easily identified and were more predated by the birds. Grey moths decreased in number and dark moths increased in the population. Therefore natural selection favoured the melanic moths to reproduce more successfully. Natural selection of darker forms in response to industrial pollution is known as industrial melanism"

The Mutation Theory

Hugo de Vries in the year 1900 proposed a new theory of evolution which is known as the Mutation Theory.

This new theory did not consider natural selection as the principle force of evolution; rather it considered mutation as the main proponent of evolution. Mutations are called the spontaneous alteration of genes leading to changes in the organism and this in turn gives rise to new species. The new species originates suddenly and without any visible preparation.

The mutationists were of the opinion that most of the hereditary variables were discontinuous in nature and could be explained by the laws of Mendel.

Contrary to the mutationists, the biometricians led by Karl Pearson, supported the view of Darwin and argued that the major cause of evolution was natural selection. They opined that selection acting on small differences was the primary mechanism for evolutionary change.

Significance:

After the acceptance of the Hardy-Weinberg equilibrium (1908), mathematical models began to be developed and a new field called "population genetics" emerged. This field was developed largely due to the efforts of scientists such as Dobzhansky, and R. A. Fisher

The Modern Synthetic Theory

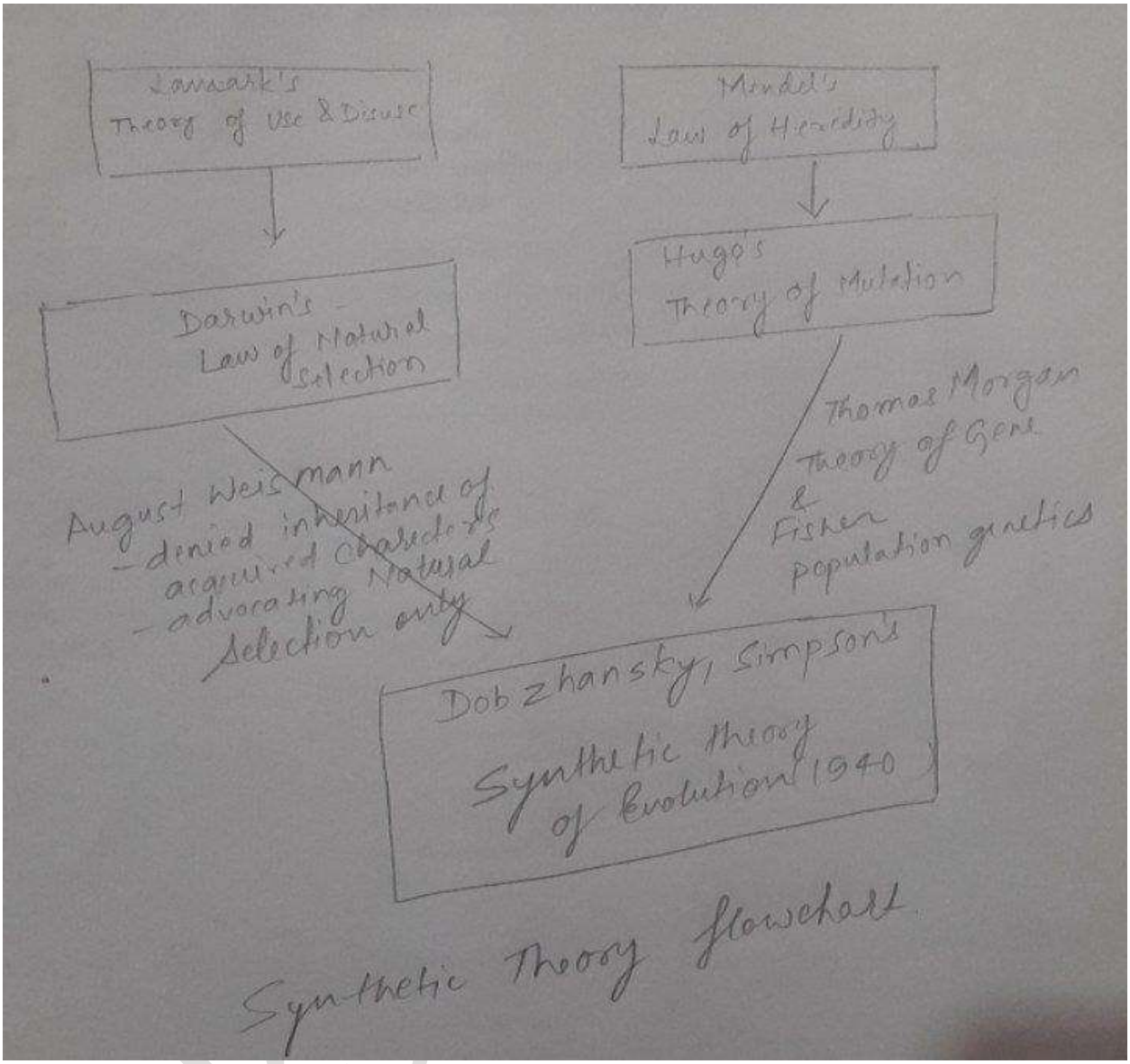
As a result of emergence of population genetics, a framework developed for the integration of **genetics into natural selection**. This subsequently led to the demise of mutationism and the modern synthetic theory was conceived.

In contrast to Weismann's and Wallace's Neo-Darwinian concept, the Synthetic Theory incorporated facts from fields such as genetics, systematics and paleontology.

The basic tenets of the Synthetic Theory were Theodosius Dobzhansky ,Ernst Mayr ,and Simpson.

The proponents of the Modern Synthetic Theory laid emphasis on the population and not on the individual levels. It was observed that natural populations exhibited considerable amount of genetic variation and that selection could act on these variations.

Hence, the population had the necessary variability to explain evolutionary genetic change through time and space.



Modern Synthetic Theory has considered following aspects:

- **Mutation** forms the base of the Modern Synthetic Theory. These occur in a random fashion and furnish the fuel for evolution by introducing genetic variability.
- Migration, founder effect, random genetic drift and hybridization are other factors.
- Synthetic theory is the concept of the "biological species" which has been proposed by Mayr in 1942.
- Speciation defined by Dobzhansky as a "step of the evolutionary process (at which) forms ... become incapable of interbreeding".
- Consequently, a number of pre and post-mating isolation mechanisms have also been proposed. Gradual evolution can be explained in terms of small genetic changes ("mutations") and recombination and the ordering of this genetic variation by natural selection.

- The observed evolutionary phenomena, particularly macro-evolutionary processes and speciation, can be explained in a manner that is consistent with the known genetic mechanisms

Significance

This theory amplifies Darwins theory of natural selection in the light of mendelism, population genetics, biological concept of species,

Conclusion:

Thus, to understand organic evolution various theories were put forth. The Lamarckian theory mainly explained the Inheritance of Acquired Characters and Use and Disuse of Organs. The Darwinian Theory Theories of Organic Evolution consists of the principles such as, over production, struggle for existence and survival of the fittest. The Mutation Theory did not consider natural selection as the principle force of evolution; rather it considered mutation as the main proponent of evolution. The Synthetic Theory of Evolution is the combination of Darwinian natural selection and Mendelian genetics. Because of the developments in modern genetics, evolution can be studied as changes in gene frequencies between parents and offspring. Hence the Synthetic Theory can be studied with the help of mutation, natural selection and isolation.

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Question:

8 What is the meaning of anthropology? Discuss its branches and significance in contemporary times. 60 marks *(30+30)

Sample Model Answer:

How to write?

Understanding the question:

Context: Meaning, branches, significance in contemporary times

Topic: Anthropology

Purpose: Details

Structure of answer:

Introduction: definition or brief explanation of anthropology

Body:

- *Touching maximum dimensions on branches, significance in contemporary times*
- *Structure of the body should be mentally pre planned to maintain flow of the answer.*

Conclusion: concluding in relation to significance of anthropology.

****

Answer:

Introduction:

The word anthropology literally means science of human as Anthropos means human and logos means science.

The most common definition of Anthropology is study of human beings in space and time.

However different anthropologist had defined it in different ways.

- Eric Wolf (1964) states "anthropology is less a subject matter than a bond between subject matters. It is in part history, part literature; in part natural science, part social science; it strives to study men both from within and without; it represents both a manner of looking at man and a vision of man-the most scientific of the humanities, the most humanist of sciences."

Anthropologists are interested in understanding the origin and development of human species. They are also interested in knowing how environment affects culture and how culture has an impact over the growth and development of human personality.

They inquire about the existence of human variation and try to find reasons behind such variations. They are equally interested in the reconstruction of human past and its culture

Let us understand meaning of anthropology with different perspectives

Dimension 1: Holistic/Integrated Discipline

It is a holistic study, integrating biological, archaeological and cultural dimensions to understand human past and present can generate interesting results. E.g.: For studying Indus valley Civilization seals artefacts skeletal remains were analysed. Some male and female skeletal remains have been found from Harappa. On genetic analysis, it was found that male skeletal remains were genetically not related, and females were genetically related. Therefore, the residence pattern after marriage could be **'matrilocal'** in nature. This analysis was possible because of holistic approach.

- Anthropology starts from placing the Homosapiens in the **evolutionary scheme** to analysing the variations within the human species. It then tries to understand the emergence and diversification of culture and emergence of civilization.

Dimension 2: Comparative Science

Anthropology since its inception had been a comparative science. Different cultures and human populations are compared in order to understand similarities and differences between them.

The comparative method also generated an important debate between ethnocentrism and cultural relativism.

However, over a period of time it was realized that every culture should be understood in its own specific context and there is nothing like the concept of superior or inferior culture, this came to be known as the idea of cultural relativism (Harris, 1968/2001).

Dimension 3: Fieldwork Method

The hallmark of anthropology is its fieldwork method.

B. Malinowski popularized intensive fieldwork method. Traditionally a field is defined as a place inhabited by a cultural group. An anthropologist is expected to spend a considerable amount of time in the field (around one year).

Dimension 4: Significance

Anthropological methods of in-depth fieldwork and participant observations bring out significant results in the form of giving voice to people's experiences.

- An anthropological concern with the tribal societies helps in understanding them better and in turn lead to better policy formulations for their development.

For example, if a new drug or a treatment regimen for a disease needs to be introduced in a tribal area. The anthropological solution would be against the forceful introduction and it would comply with a more nuanced approach of making people realize the importance of such regimen through their cultural metaphors.

- Anthropology makes us more conversant with different cultures and enables us to appreciate diversities.

Disciplines like physics, chemistry and mathematics predate anthropology as human beings started studying themselves and their own behaviour quite late in 19th century. This calls for further research on various dimensions in which an anthropologist is interested and thus acquires significance as a separate discipline (Ember 2002).

Part II -----Branches and current study/significance in contemporary times

The four branches of anthropology are:

- *Biological/physical anthropology*
- *Socio-cultural anthropology*
- *Archaeological anthropology*
- *Linguistic anthropology.*

Anthropology retains its holistic orientation by ensuring the interconnectedness and interrelationship among its four branches as well as with humanities, social sciences, biological sciences and physical sciences.

Let us understand each one in detail.

Biological/Physical Anthropology

- Physical anthropology studies the human body, genetics and the status of man among living beings.

  It studies the physical characteristics of man. It uses the general principles of biology and utilizes the findings of anatomy, physiology, embryology, zoology, paleontology and so on.

- According to Herskovits "Physical anthropology is, in essence, human biology." Piddington says "the chief subject matter of the study of Physical Anthropology is the classification and characteristics of human races."
- Another important field of study in physical anthropology is the process of human evolution which shows how human body has evolved through different stages (cited in Das: 1996:3

Physical anthropology was initially devoted to the study of measurements and observations on the human body and human skeleton. Today physical or biological anthropology encompasses the following: the study of evolutionary biology and human genetics hominid evolution to understand the origin of modern humans biological differences in human populations a bio-cultural overview on human growth and development.

Dimension 1: Development-physical anthropology

Although physical aspects of man have been studied since the time of Herodotus, it was only during the latter half of the 19th century that physical anthropology developed as a systematic science.

- The modern trend in physical anthropology started from the beginning of the 19th century whereby Franz Boas (1858–1942) laid emphasis on the study of human races in terms of culture.
- Also in 1939, forensic anthropology developed as a specific branch of physical anthropology due to the pioneering contribution made by W.M. Krogman.

Dimension 2: Current Fields of Study-Physical Anthropology

- The study of physical or biological anthropology has achieved new heights as much emphasis has been laid on the systematic orientation of various approaches for its development.
- Different approaches or sub-branches in current areas of study, used are Palaeo-anthropology, Palaeo-primatology, Osteology, Human Genetics, Population Genetics, Molecular Anthropology, Human Variation, Human Growth and Development, Human Ecology, Forensic Anthropology, Demography

Palaeo-anthropology, or human evolutionary studies, focus in documenting the biological history of mankind, using fossil remains. They are specialists in comparative anatomy of man and ape.

Palaeo-primatology deals with the study of living and fossil primates. Primates are the most diversified of all animals and these include man

Osteology refers to the study of bones.

Human Genetics: Human genetics, the study of human heredity, understand the human physical characteristics transmitted through the process of heredity from one generation to another generation (Das).

Population Genetics A population in a genetical perspective is defined as "a reproductive community of sexual cross fertilizing individuals which share in a common gene pool." (Sarkar).

- Population studies provides an understanding of the processes of evolution i.e., natural selection, genetic drift, gene flow and mutation.
- The process of development of new species and their adaptation through the study of the frequency, distribution and change in allele in populations are also taken into consideration in such studies.

Molecular anthropology is concerned with the comparative study of all existing populations, through the use of molecular analysis and DNA sequence.

Human Variation

Human biology essentially means the study of human variation. Variation is produced by the inheritance of particular characteristics from ancestors and by the action of environment. Thus, the effects of genes and environment are taken into account in the study of human variation.

Human Growth and Development

This field enables an understanding of the different perspectives of human growth and development. Growth and development are dependent on varied factors like heredity, nutrition, and environment. All these factors are taken into consideration in the study of human growth and development.

Human Ecology

Human ecology refers to the study of the relationship patterns between populations and their environment, and energy exchanges with other living organisms. The pattern of human adaptation and adjustment to the natural environment is an important aspect

Forensic Anthropology : Forensic anthropology deals with the identification of human skeletal remains for legal purposes. Forensic anthropologists are able to identify murder victims, missing persons or people who have died in accidents and disasters through a detailed study and analysis of the human remnants. In many instances forensic anthropologists have **identified victims who died as a result of human abuses in different parts of the world.**

Demography

The study of demography is directly related to fertility and mortality and these two factors are specifically influenced by heredity and environment. Demographic study involves the use of various statistical data and their subsequent analysis. Demographic study is centred round the nature, growth, age-sex structure, spatial distribution, migration in addition to fertility and mortality of populations.

Socio-cultural Anthropology

Socio-cultural anthropology, the second major branch of anthropology, focuses on the comparative study of human culture and society.

- The intensive study of social behaviour, customary patterns in human behaviour, thought and feelings and organisation of social groups are all included in the purview of socio-cultural anthropology.
- Socio-cultural anthropology is referred to as social anthropology in Great Britain and cultural anthropology in America.

Dimension 1: History and Development- Social anthropology

The study of socio-cultural anthropology gained new heights in the second half of the nineteenth century as the evolutionary theory (inspired by Charles Darwin's book Origin of Species) developed simultaneously in Britain, America and Germany.

Let us understand this using contributions by various thinkers.

Sir Edward B. Tylor 1917, one of the pioneers of the classical evolutionary school of thought, advocated **unilinear cultural evolution** (cultures of the world pass through different successive stages in continuity).

He also emphasised that similarities in cultures around the world, without known historical connections, were due to mental unity or **psychic unity of mankind**(Refers to similar mentality of human beings to react and think similarly with like environmental situation at a particular period of time)

The evolutionary school of thought faced severe criticisms from contemporary scholars who claimed to be anti-evolutionists or diffusionists. They advocated that culture not only developed but also degenerated through **cultural diffusion**.

Franz Boas was one of the most influential figures in the history of sociocultural anthropology. As a critic of the evolutionary school of thought he completely rejected the unilinear evolutionary theory and stressed upon the necessity of conducting extensive field work.

He also opined that all cultures were distinctly different and therefore they must be studied on the basis of their worth and not in comparison to other cultures. This concept came to be known as **historical particularism.**

Dimension 2: Current Fields of Study - Social anthropology

Fieldwork: Malinowski was the main advocate of this. He was the first anthropologist to conduct study in native language. He insisted that a researcher should collect data through the medium of native language and undertake intensive fieldwork.

Malinowski believed that every aspect of culture has a function and they are interdependent and interrelated. According to his theory of **functionalism**, institutions of a culture operate to satisfy the needs of the individual and the society as a whole.

Introduction of linguistic, symbolic and cognitive anthropology

The introduction of linguistic, symbolic and cognitive anthropology in the 1950s widened the horizons of the study of socio-cultural anthropology. Eminent French anthropologist Claude Lévi-Strauss is closely connected to his method of structuralism for undertaking the **study of social behaviour** (relations and experiences)

Newer perspectives: employment, migration, urbanization

The middle of the twentieth century witnessed newer perspectives and dimensions related to studies on women, class and power structure, caste, employment, migration, urbanization, etc. The works of social scientists like Jacques Derrida , Michel Foucault , were influenced by theories like marxism, feminism, post-modernism, post-colonialism, post-structuralism.

Contemporary socio-cultural anthropology

Contemporary socio-cultural anthropology encompasses **research-oriented studies** in all parts of the world.

- Socio-cultural anthropology ensures the study of cultural traits and social activities of humans round the globe by using the anthropological **field methods and comparative analysis**.
- But such studies are conducted while maintaining the holistic orientation of the discipline. Globalization, transnationalism, multiculturalism, and diaspora studies are becoming a major trend in the study of socio-cultural anthropology.
- Nowadays, socio-cultural anthropology also includes the following studies: gender and other sub-areas like sexuality involving lesbian, gay and transgender, human rights, corporate and public sector, health sector.

Hence the study of socio-cultural anthropology will help us to understand human society and culture.

Archaeological Anthropology

Archaeology studies human cultures through the recovery and analysis of material remains and environmental data. Material products scrutinised by archaeologists include tools, pottery, hearths, and enclosures that remain as traces of cultural practices in the past, as well as human, plant and animal remains, some of which date back 2.5 million years. (Havilland 2008).

In recent times studies like new-archaeology, processual archaeology and post-processual archaeology have helped the researcher to understand the history of cultures and its processes. The study of palaeo-anthropology, ethnoarchaeology and settlement archaeology is all included within the framework of the archaeological study.

- Initially the study of archaeological anthropology involved the application of absolute and relative dating methods to ascertain the physical and material cultures.
- With the passage of time demographic conditions and environmental order, subsistence patterns, economy etc. were all included in archaeological study.

Dimension 1: History and Development- Archaeological anthropology

Prehistoric stages are studied by archaeologists with the help of substances like stone, wood, bone, metals, earthenware, tools, ornaments and outfits.

The Prehistoric Period being too vast divided into three parts:

- The Stone Age
- The Bronze Age
- The Iron Age.

In India, the Indus valley civilization (2500 B.C.), with its two cities Mohenjodaro and Harappa, is considered to be one of the oldest civilizations of the world. Other important civilizations known at that time are Egypt, China and Mesopotamia.

- The fact that Indus Valley civilization disappeared from history while the others continued is one of the major concerns for an archaeologist.

Archaeological anthropology tries to find and explain the origin, growth and development of cultures in the past. Though the main method employed by the archaeologist is **excavation, surveyance and data analysis** also form important methods. The main aims of archaeology are to recover, record, analyse and classify material collected.

Dimension 2: Current Fields of Study - Archaeological anthropology

Currently Archaeological anthropology has the following different areas: Palaeo-anthropology Environmental archaeology Ethno-archaeology New archaeology or processual archaeology Settlement archaeology Post-processual archaeology

Palaeo-anthropology is the study of people of palaeolithic times. In this study, human lineages and evolution is reconstructed on the basis of the study of fossils

Comparative studies are undertaken through the study of primatology. Ethnographic details are also used to draw definite conclusions.

Environmental archaeology is the study of environmental evidences in an attempt to understand the impacts of environment on culture and vice versa.

It uses geological and biological methods

Ethno-archaeology is the use of ethnography in the study of archaeology. This study helps in deciphering the life ways, religious beliefs and social structure of the past. It is a recent form of study.

New archaeology or processual archaeology involves studying the processes by which humans lived, i.e. how humans in the past did things like create artifacts and how they finally got decayed. , i.e. how humans in the past did things like create artifacts and how they finally got decayed.

Processual archaeologists made use of the cultural historical method in the study of past human societies. This trend set in from the 1960s in the U.S. especially after Sally R. Binford's and Lewis Binford's book on New Perspectives in Archaeology (1968) came out, where they suggested the use of computer technology for the analysis of information gathered.

Settlement archaeology deals with the study of settlements in landscape and the impact of environment on the work done by humans, how they build themselves according to some principles

This form of archaeological study was first carried out extensively by Gordon R. Wiley in the Vriu Valley of Peru.

Post-processual archaeology, also known as interpretative archaeology . Post-processual thinkers are influenced by theories of society, more specifically by neomarxism, post-modernism, feminist archaeology, critical theory, structuralism, etc.

- Post-processual archaeology displays any archaeological knowledge as open to interpretations which emphasizes on reflexivity (being aware of one's own position relative to the material) and multivocality (accepting multiple interpretations and approaches as being complementary in understanding archaeological material).

Thus the study of archaeological anthropology is conducted through Branches of Anthropology reconstruction of history with the help of material remains along with skeletal remains, pollen, etc. The different areas of archaeological anthropology like new-archaeology or processual archaeology, settlement archaeology, ethnoarchaeology, paleo-anthropology, environmental archaeology, and postprocessual archaeology came into existence as a result of using varied methods of reconstruction.

LINGUISTIC ANTHROPOLOGY

Linguistic anthropology deals with the study of human languages. A linguist anthropologist is concerned with the relationship between language and culture behaviour.

- Linguistic anthropology studies the emergence and divergence of languages over time.
- Initially this branch was concerned with the study of origin, evolution and development and salvaging of languages which were on the verge of disappearing.
- With time the various facets of language and its effect on social life were also taken into consideration.
- Today linguistic anthropology as an interdisciplinary science works in collaboration with anthropological linguistics, ethno-linguistics and socio-linguistics.

Dimension 1: History and Development

During the later part of the nineteenth century and early decades of the twentieth century Franz Boas (1858–1942) made anthropology field-based and stressed upon the need of studying the linguistic aspects in anthropological study of culture. He was particularly interested in the study of Native American Indian languages

Eventually linguistic anthropology came to be recognised as an integral part of anthropological study. Boas started documenting the language of almost extinct tribes in an attempt to preserve and retain it for further research. This model of Boas was then called '**salvaging anthropology'** and now more commonly known as 'anthropological linguistics'

Malinowski was the first anthropologist to conduct study in native language

Malinowski emphasised the necessity of learning the language of the people under study in order to interpret their way of life in totality. Malinowski insisted on documenting the native mentality through the native language.

In the 1950s, the study of ethno-linguistics gained ground where linguistics was studied in relation to anthropological issues.

At this stage more emphasis was laid on the aesthetics of language and its Branches of Anthropology effect on culture.

At present Linguistic anthropology which is concerned with the relationship between language and cultural behaviour can be divided two parts.

- Historical linguistics deals with the emergence and divergence of languages.
- Structural linguistics or socio-linguistics deals with the role of language in the context of social behaviour. Structural linguistics also discovers the rules that reveal how sounds and words are incorporated in actual speech

The pattern of speech varies from society to society on the basis of action, behaviour and communication. **Cognitive anthropology** is the outcome of linguistic anthropology, which employs the principles on which speakers of a particular language classify and conceptualize the phenomena. Anthropology in one way has learnt from the linguistics: on the other way has contributed to it.

Dimension 2: Current Fields of Study

Fieldwork still remains an integral aspect in the study of language. The use of anthropological methods and techniques in linguistic enquiry enables a researcher to comprehend the relationship between language and cultural behaviour. Since the 1980s language socialisation has become an important aspect in the study of linguistic anthropology

Elinor Ochs and Bambi Schieffelin, who are both linguistic anthropologists, are the pioneers of this concept. They defined language socialisation as the process of getting socialised through and to language

Language ideology implies ideas that are related to language and its connection with social, economic and political ethics of society. This occurs because language as a sign system allows its use to convert itself into a social reality

- In theory of politeness formulated in 1978, Penelope Brown (1944-born) and Stephen Levinson (1952–born), both socio-linguists, stressed that polite speech can be used to ease 'face threatening acts'

Linguistic anthropology has come a long way since the days of its inception. We have come to realize the importance of the study of linguistic anthropology in understanding the principles on the basis of which speakers of a particular language will behave in human societies and the emergence and divergence of languages.

Conclusion

Thus, the theoretical and conceptual framework of each branch of Branches of Anthropology, while maintaining a distinct identity, aims at studying about man in totality over time and space – thus keeping intact the uniqueness of the study of anthropology.