

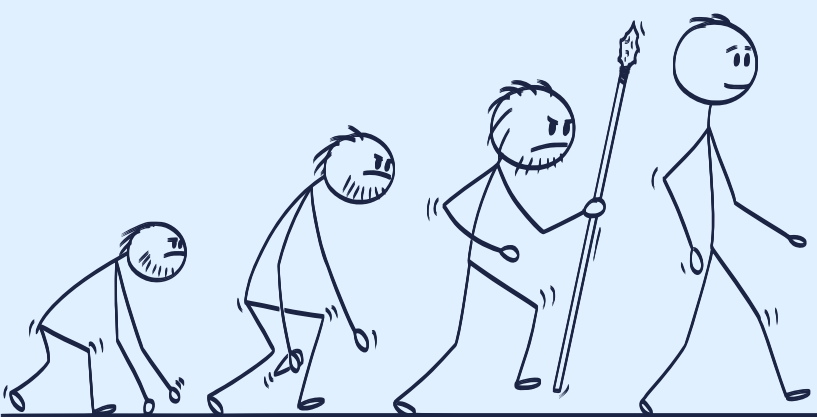
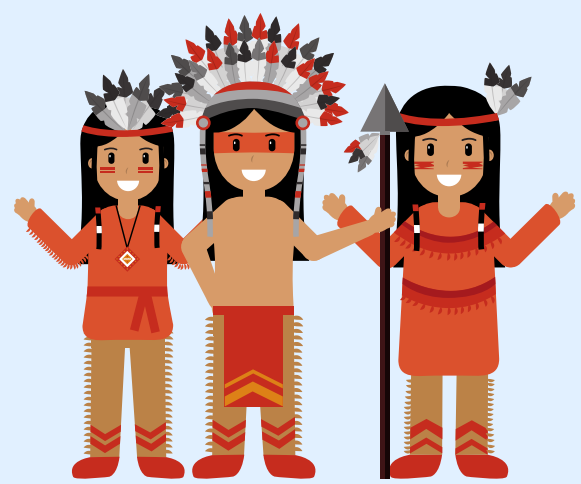


PAPER-1 (2022)



# ANTHROPOLOGY

## BEST MODEL ANSWERS



**VISHNU IAS ACADEMY****2022 UPSC MAINS ANTHROPOLOGY****PAPER 1 MODEL ANSWERS IN DETAIL****SECTION 'A' 09000400939 [www.vishnuias.com](http://www.vishnuias.com)**

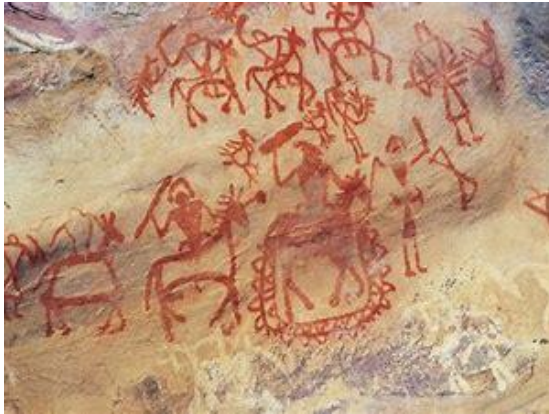
**Q1) Write a short note on the following in 150 words**

**a) Debate between formalist and substantivist approaches**

- The field of economic anthropology has been a place of bitter and polemic debates over the best way to study economic systems in both Western market-based societies and in their non-Capitalist preindustrial counterparts.
- These disputes are principally over which of several alternative sets of analytical concepts are best to interpret real world processes and institutions and what kinds of analytical questions should be put to primitive and peasant economies on the one hand and the capitalist economies on the other hand.
- The formalist model is the one that is most closely linked to neoclassical economics, defining economics as the study of utility maximization under conditions of scarcity.
- Its central assumptions about human behaviour have been questioned. In particular, it has been argued by others that the universality of rational choice and utility maximization cannot be assumed across all cultures.
- With regards to modern Western societies the economic reductionism in explaining human behaviour has been critiqued.
- Formalism will consider any behaviour that does not maximize utility based on available means as irrational
- Substantivism also criticized them for their analysis of both economic institutions and individual economic activities in isolation because they are embedded in the socio-cultural sphere and can therefore not be analysed in isolation.
- The substantivist position was first proposed by Polanyi in his work of "The Great Transformation".
- Polanyi's term "great transformation" refers to the divide between modern, market-dominated societies and non-Western, non-capitalist preindustrial societies.
- Pratts (1982) argues that the strict distinction between primitive and modern economies in substantivism is problematic.
- Also criticized for their focuses on social structures at the expenses of analysing individual agency.
- Plattner (1989) argues that some generalization across different societies is still possible, meaning that Western and non-Western economics are not entirely different.

**b) Mesolithic rock art in the Indian subcontinent**

- This art not only **reflects the cultural life of the times but also a fine aesthetic sense** comparable to modern paintings. Important Mesolithic Sites
- The rock art in Mesolithic period bears the evidences of the prosperity of the start of Indian culture and some of them stand as the examples of great artistic excellence.
- The occurrence of human and animal figures and different kinds of scenes painted or bruised on rock-surface in the Indian subcontinent has been known for a long time.
- On the uneven sides or walls and roofs of many of the caves or rock shelters there were rock paintings apparently of various ages, though all evidently of great age, done in red colour called geru.
- Some of these rude paintings appeared to illustrate in a very stiff and archaic manner scenes in the life of the ancient stone chippers; others represent animals or hunts of animals by men with bows and arrows, spears and hatchets
- Some of these paintings serve as an artistic manifestation of the Mesolithic in India and as a source of reconstructing the Mesolithic way of life. In this purpose, the paintings documented from the region around Bhopal in **Madhya Pradesh**, with some specific reference to the archaeological situation suggests Mesolithic antiquity for some of these paintings.
- The most famous painted rock-shelter complex in this region is at **Bhimbetka** and in seven locations extending over 10 km (Vinayaka, Bhonrawali, Bhimbetka, Lakha Juar East, Lakha Juar West, Jondra and Muni Babaki Pahari); there are 642 rock-shelters, with about 55 per cent of them containing paintings.
- The characteristics of the rock art of Mesolithic period were that the cave paintings were based on animal structures and the rock paintings were basically related to human groupings. The paintings of the human structures were at a large the depictions of hunting or rituals.
- The figures formed in the rock art were stylized and glorified figures which resemble pictographs than pictures, and as per a few scholars, they are the representation of primitive sources of writing namely the hieroglyphs.
- Sometimes the groupings of figures are fabricated in repetitive patterns that define an artistic rhythm.
- The Mesolithic hunters and foragers who roamed the Indian landscape have left long enough shadows which still touch us in different ways.
- **Themes of the paintings:** Every-day life of prehistoric men often in **stick-like human figures**.
  - a. Various animals like elephant, bison, deer, peacock and snake are depicted.
  - b. Hunting scenes and war scenes with armed men.
  - c. Simple geometric designs and symbols.



**c) Radcliffe-Brown's ideas on status, role, and institution**

- Radcliffe-Brown's structural-functional approach comprises the following assumptions:
  - a. A necessary condition for survival of a society is a minimal integration of its parts.
  - b. The concept of function refers to those processes that maintain the necessary integration or solidarity.
  - c. And, in each society, structural features can be shown to contribute to the maintenance of necessary solidarity.
- Structural functionalism was propounded by Radcliffe Brown in his book " Structure and functions in primitive societies-1952". This theory is closely related to Malinowski's theory of functionalism but only differ in the aspect that functionalism helps in satisfying the need of humans while structural functionalism helps in continuity of structure in the society.

**Basic Postulates:**

- The culture in each society has certain functions and these functions help in maintaining the social structure and continuity.
- Every society consists of social structure, social organization, social functions
  - Social structure: Individuals are ultimate components of social structure. Social structure is classified into two types- actual social structure, general social structure
- Social organization: Individuals when arranged in an orderly fashion result in formation of social unit or organization or institution.
- Social function: Each of these social units perform their respective social functions and are interrelated and interdependent

**Status and role**

- Role is obviously the duties and responsibilities attached with the position while status is the prestige or the lack of it attached with that position. Let us begin with the family. A father is a role that carries the status of a provider and protector in the family.
- In a social system, status is the rank a person holds in a social hierarchy. It is this status that defines the behaviour of others towards the person.
- There are two types of status' namely ascribed and achieved status. Ascribed status is one that a person gets by virtue of taking birth in a family (or caste as in India). For example, if a child is born in the family of a king, he gets the status of a prince and gets others to behave in deference to him. On the other hand, achieved status is what a person earns with a lot of effort and endeavour.

# ANTHROPOLOGY

FULL COURSE

2022/2023/2024

# NEW BATCH



STARTS FROM

OCT 20TH  
2022

VISHNU VARDHAN  
SIR



## d) Pedigree analysis in genetic counseling

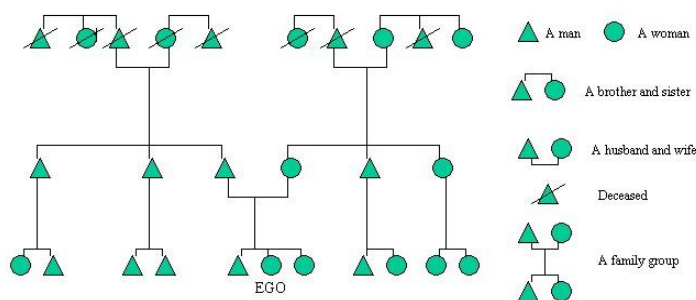
- Pedigree Analysis **helps to study family histories and inheritance of genes in humans.**
- It is helpful to analyse an existing population when progeny data from multiple generations are limited.
- It helps to study species for a long generation. Scientists are able to find dominant/recessive patterns of inheritance through pedigree charts
- Genetic counselling is a medical speciality that helps individuals and family members navigate their concerns about genetic conditions and associated health risks.
- Pedigree analysis is the process of analysis of a number of generations of a family is called the pedigree analysis. Pedigree analysis is a strong tool in human genetics which helps to predict the pattern of inheritance, even when data is limited. A family tree can be represented by a pedigree chart with all the members of a family.
- Pedigree charts are outlines that show the genotypes/phenotypes for a specific creature and its predecessors. While regularly utilized in human families to follow hereditary illnesses, they can be utilized for any species and any trait that is inherited. Geneticists utilize a normalized symbol set to signify a person's sex, phenotype, and family connections.

Methodology Information is gathered through ego.

- Ego is a person of the family chosen by the researcher as the main source of information through which all kinship relations are and a family tree is built.

Caution to be taken:

- Informants should not feel that their information can be used against them.
- Good rapport with the informant
- Information collected should be interpreted in a local context.
- Phrasing of the question should be context.



## e) Participatory Rural Appraisal (PRA) and Participatory Learning and Action (PLA)

### Participatory methods

- This is a method of data collection in an inclusive way. Here the people are participated in data collection methods.

It is of 2 types – 1. PRA (participating rural appraisal) and 2. RRA (rapid rural appraisal).

### Participatory Rural Appraisal (PRA)

- Participatory rural appraisal (PRA) is a growing combination of approaches that enable vulnerable people to share, enhance, and analyse their knowledge of life and conditions and plan, act, monitor, and evaluate
- **Participatory Rural Appraisal (PRA)** is an assessment and learning approach that places emphasis on empowering local people to assume an active role in analysing their own living conditions, problems, and potentials in order to seek for a change of their situation
- Participatory rural appraisal (PRA) is the technique of initiating a process of dialog with rural poor and making them to participate in planning and decision-making process
- **In PRA** the data is collected by all the people inclusively and it is extrapolated to draw a conclusion. This conclusion gives us the data.
- **Whereas RRA**, the observer reaches each and every individual in the community and he draws the data from individuals collects the data from all the individuals and produce the collection as data.

- PRA is owned by the local people whereas RRA is owned by the observer.
- In case of RRA, information is more elicited and extracted by outsiders as part of the process of data collection, whereas in PRA, it is more generated, analysed, owned and shared by local people as part of a process of their empowerment.

#### **Participatory Learning and Action (PLA)**

- Participatory Learning and Action is a family of approaches, methods, attitudes, behaviours and relationships, which enable and empower people to share, analyse and enhance their knowledge of their life and conditions, and to plan, act, monitor, evaluate and reflect.

#### **Q 2)**

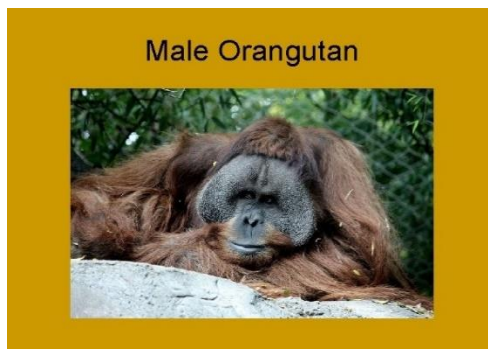
a) **“Anthropology is the systematic, objective and holistic study of humankind in times and places”. Elaborate on the argument.**

- Anthropology is a study of humankind in all places at all times as one may say it is an observer of human mind
- **Anthropology** is a study of all of the things that come together and make us human. Anthropologists usually use a holistic perspective to study humans and their history. **Holism** means looking at something as a whole. This may involve looking at individual parts, but this is a step in understanding the subject of interest as a whole.
- Archaeology is a branch of anthropology that studies artifacts that have been made and used by humans. **Artifacts** are physical objects that function as evidence of culture. Archaeologists also look at fossilized human remains and other factors of the environment such as soil samples or plant remain
- Biological anthropology is the study of the evolution of humans through their adaptations over the years. Biological anthropology is also called physical anthropology. Humans are species that can adapt and alter things in their environments to make them more liveable. Biological anthropologists study different factors that have affected humans such as disease.
- They also look at the evolution of humans and compare them to their ancestors
- Anthropologists commonly approach research and studies from a holistic perspective.
- Holism can be found in many fields, like anthropology and holistic medicine. Anthropologists look at many components of humans and the human experience in their studies.
- Holism is favoured as an attitude among anthropologists. Potential routes of research exist everywhere and must be studied to ensure understanding is complete.
- A holistic perspective offers the best chance to complete an understanding of cultures of interest. In this case, the study is of humans. Since anthropologists study the combination of factors that make us human, this holistic approach allows them to look into all of the different branches to gather research.
- Cultural anthropology is the study of the culture of the people. Cultural anthropologists are interested in how people act, what they wear, what they eat, and how they interact.
- Linguistic anthropology is the study of how individuals communicate. These anthropologists look at language and its history. People do not only communicate through speaking but also through writing and gestures
- Applied anthropology involves the use of archaeology, biological anthropology, cultural anthropology, and linguistic anthropology. These anthropologists help others, like stakeholders, solve problems.

- The supporters of holistic camp give the concept two senses, first, it is concerned with all human beings across times and places, and with all dimensions of humanity (evolutionary, biophysical, socio-political, economic, cultural, psychological, etc.).
- Further, many academic programs following this approach take a "four-field" approach to anthropology that encompasses physical anthropology, archaeology, linguistics, and cultural anthropology or social anthropology.
- Each of these unique sub-disciplines in anthropology contributes different aspects to the understanding of humans in the past and present. Rather than focusing on a single aspect of being human, such as history or biology, anthropology is distinct in its holism.
- Second, the functional school which strives for an approach of studying human society and culture in terms of integrated components together comprising a social whole.
- For example, to understand the Japanese tea ceremony, anthropologists might investigate Japanese religion, aesthetics and history, as well as the economy, social relations and the politics of gender.

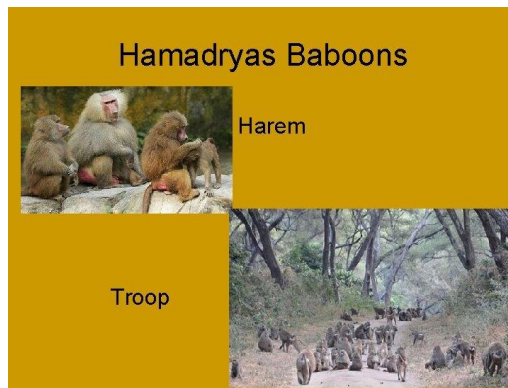
**b) Discuss different forms of primate social organization**

- **Social organization** involves several aspects of group life, such as (1) the average numbers of individuals in terms of age and sex; (2) whether group members remain in their natal group at maturity or leave, and hence whether individuals have relatives in the group; (3) whether those animals that join a group in adulthood stay permanently or tend to leave after a period of time; (4) the pattern of interactions between individuals, e.g. whether there is a dominance hierarchy and if so, if an individual's position in the hierarchy is permanent or temporary; and (5) the number of potential mates to which an individual has access.
- Approaches to social structure Today's dominant paradigm for the study of primate social structure is behavioural ecology. This approach considers both an animal's ecological adaptation, and its' sexual strategies as having an influence on its' social structure. Forms of social organization are subject to natural selection, and hence there is a genetic basis to them.
- **Male Orangutan**



- All primates possess what is called the matrifocal unit, which is a mother and her offspring. In primate species exhibiting solitary social structure this is the only form of social organization that is present.
- **Hamadryas Baboons Harem Troop**





- The important variables of social structure are territory size and the number of mature males in the group (single male – multimale).

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Terms:  
Noyau = French word means "kernel," also called **exploded unimale polygyny**

<p>Monogamy—Gibbons</p>	<p>Noyau—Orangutans</p>	<p>Polyandry—Marmosets</p>
<p>Multimale Group—Baboons and Monkeys</p>	<p>One-male Troop—Langurs</p>	
<p>Single-male Harem—Hamadryas Baboons</p>	<p>Fluid-Fusion Society—Chimpanzees</p>	

- Most primates live in groups. The best explanation for why animals form groups and endure the costs of feeding competition is to minimize the risk of predation.
- Interestingly, all of the **mating systems** seen in primates, i.e., **monogamy**, **polygyny** (one male mates with multiple females), **polyandry** (one female mates with multiple males), and **polygynandry** (both males and females are promiscuous), are also seen in humans

**SOLITARY AND DISPERSED POLYGyny**

- Except for the orangutans, **solitary foragers** are small nocturnal prosimians that forage primarily for insects and fruit. Examples of solitary foragers are the bushbabies



**TERRITORIAL PAIRS AND MONOGAMY**

- While a few species of primates are commonly referred to as monogamous, **extrapair copulations** have been observed in every one of them



**ONE-MALE GROUPS AND POLYGYNY**

- In some species, one male with one or a few females is the grouping pattern. However, in other species (Hamadryas baboons, geladas, mandrills, drills, and some odd-nosed monkeys, such as snub-nosed monkeys), one-male units (OMUs) congregate into larger and larger groupings, in a multi-tiered or nested fashion, depending on their current activity.

**ONE-FEMALE GROUPS AND POLYANDRY**

- This type of social organization is seen only in the callitrichids, i.e., the tamarins and marmosets of Central and South America. Within those groups, there is usually only one breeding female and one or two breeding males. Females gestate as many as five fetuses but on average, only two survive. Hence, we talk about “**twinning**” in the callitrichids



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**MULTI-MALE/FEMALE GROUPS AND POLYGYNANDRY**

- There are two types of multi-male/female groups (MMF). The first is the more common. They are medium to large groups of related females (female philopatric) with a sex ratio skewed in favour of females. Outsider males may congregate in all-male bands.



c) Discuss with suitable examples the typo-technological problems in the Indian palaeolithic industry with reference to environmental hypotheses.

- **MAIN PROBLEMS LIKE:**
- **Improper Stratigraphy**
- **Acidic nature of soil**
- Stone tools are perhaps the first cultural artifacts which historians can use to reconstruct the worlds of Palaeolithic peoples.
- In fact, stone tools were so important in the Palaeolithic age that the names of Palaeolithic periods are based on the progression of tools: **Lower Palaeolithic, Upper Palaeolithic, Mesolithic** (Middle Stone Age), and **Neolithic** (New Stone Age)
- **The Palaeolithic Period** is an ancient cultural stage of human technological development, characterized by the creation and use of rudimentary chipped stone tools.
- Stone tools also give us insight into the development of culture. Anthropologists think Palaeolithic people likely hunted, foraged, and employed a communal system for dividing labour and resources.
- Indian or South Asian Palaeolithic diversity is conspicuous in three typo-technological cultural complexes, viz., the sub-Himalayan Soanian, the peninsular Acheulian, and the north-eastern Hoabinhinian and Upper Anyathian
- The first two are the major Palaeolithic cultural complexes and debated on their evolutionary development-whether the Acheulian has evolved from the Soanian/ Chopper-Chopping complex or they coexisted or are supplementary or created by two different types of people or species
- To appreciate the Homo erectus-Homo sapiens interface, it is necessary to understand these complexes.
- The Palaeolithic Age in India is divided into three phases in accordance with the type of stone tools used by the people and also according to the nature of climatic change.
- The Palaeolithic age is the time period in human history characterized by the development of stone tools. It began around 3.3 million years ago with the first stone tools and ends with the end of Ice Age around 10 thousand years ago.
- The Lower Palaeolithic men lived a nomadic lifestyle.
- They did not have the knowledge of agriculture, fire, or pottery. They prefer to live near a water source. The main tools of this age were hand axes and cleavers. These were rough and unpolished in nature and made up of quartz.
- The Middle Palaeolithic men used flake-blades, points, borers, and scrappers. The tools are made on flakes obtained by striking them out from pebbles or cobbles. They are small and

much sharper than the tools of Lower Palaeolithic age. There was a regional variation in tools. The atmosphere was warmer.

- The important innovation of the Upper Palaeolithic age is the method of producing parallel-sided blades from a carefully prepared core.
- The main tools of this age are awls, scappers, blades, knives, borers and burins. First composite tools were also seen during this age. The blade tools are comparatively large, up to 8 cm.



**The Palaeolithic Age at Glance**

Age	Tools	Climate	Major Sites
Lower	Hand Axes, cleavers and choppers	Humidity decreased	Soan Valley, Shiwaliks
Middle	Flake-blades, points, borers and scrapers	Further decrease in humidity	Soan Valley and Narmada Valley
Upper	Scraper and burin	Warm Climate	Bhimbetka caves

**Q 3)**

a) Discuss how the rules of descent contradict the principles of residence in a matrilineal society, mentioning suitable examples.

- Descent rules define socially recognized kin groups by tracing connections through chains of parent-child ties. A society may focus exclusively on connections traced through the male parent (patrilineal) or through the female parent (matrilineal). In either case, the culture is employing a unilineal, or single-line, descent system.
- In the study of kinship and matrilineal versus patrilineal systems, a basic normative assumption is that the essential family unit consists of father, mother, and children. A closely linked assumption has been that one sex is dominant and the other “weaker.”
- According to scholar David M. Schneider, in classic kinship theory, it was assumed that men had authority over their wives and offspring; thus, that authority was considered a constant. As a consequence, anthropological debate and analysis also assumed that constant.

- Schneider also noted that in patrilineal societies authority and kinship were passed on through patrilineal descent, but in matrilineal societies males did not pass their status to their sons.
- Men's authority would be based only on their position in the matriline. The salient roles of the male, therefore, would be that of brother and uncle instead of husband and father.
- Under that interpretation of the structures and norms of all societies, male dominance, assumed as a given in patrilineal societies, did not translate into a corresponding female dominance in matrilineal societies.
- Under the assumed normative "principle of male authority," in a matrilineage, descent passed from a woman's brother to her son and from him to her sister's son. That meant, to some scholars, that the core structures of matrilineal groups were the positions of uncle and brother.
- Scholars are of the opinion that Mother's brother is of immense significance in matrilineal societies. His status and role are embedded and intrinsic to matrilineal social structure. As a male member of the matrilineal descent group, he **represents the placement of men vis-a-vis women in matriline.**
- Under the matrilineal social arrangement, he holds authority, role and responsibility towards matrilineal descent groups, particularly in matters concerning the affairs of his sister's children here is the contradiction because he need to transfer the proper from his sister to his sister's children not to his own children.

**b) Enumerate the evidence of animal domestication in the Indian microlithic industry**

- Mesolithic period has enormous culture-historical importance in Old World prehistory. The technological hall mark of this period are tiny stone tools or 'microliths'.
- Microliths were used as tips and barbs of arrowheads and spearheads, for forming the cutting edge of knives, sickles, daggers and harpoons.
- In addition to microliths, Mesolithic people used a variety of non-microlithic tools made on flakes, cores and blades. These comprised choppers, scrapers, notched flakes, borers and points, made on cores, flakes and blades.
- Microlithic Industry - The flaked stone industry is unusually rich, with several hundred thousand worked pieces, and comprises the most common material at Bagor. No other site in India has yielded microliths in comparable numbers.
- The finished tools and their manufacturing debris are distributed more or less uniformly all over the inhabited area showing that the tools were manufactured within the settlement and that every family or social unit may have produced them for its requirement.
- The lithic industry is truly microlithic in that it is based on the mass production of micro blades and their conversion into various microlithic forms
- The microlithic industry is essentially geometric and appears to be most suitable for hunting.
- By 6000 BC, food production became prominent part of Mesolithic life. Agriculture had not fully developed by was only a prototype of domestication of crops and animals. The earliest evidence of domestication of animals has been provided by **Adamgarh in Madhya Pradesh and Bagor in Rajasthan.**
- The economy of early period of Mesolithic age was based on hunting, fishing and food gathering. Slowly domesticating crops and animals made their way into human life. By 6000 BC, food production became prominent part of Mesolithic life.

- Some examples of earliest cultivation of plants around 7000-6000 years back have been found near Sambhar Lake in Ajmer Rajasthan, Mehrgarh in Pakistan etc.
- The first animals to be domesticated were dog, cattle, sheep and goat and the first plants to be cultivated were wheat and barley. *This new subsistence economy based on food production had a lasting impact on the evolution of human society and the environment.*
- In the humid lands, extending from the middle Ganga valley to China and Southeast Asia, rice cultivation and domestication of pig was accomplished probably around the same time because rice and pig existed in wild form in this region.
- The cultivation of yams and taro also took place in this region. Domesticated animals proved to be useful not only for meat but also for milk, hide, agricultural operations, and transport.

**C) Should we still distinguish between 'classic' and 'progressive' Neanderthals? 'Discuss the controversy, surrounding Neanderthal's position in human evolution.**

- The first Neanderthal fossil was found in 1829, but it was not recognised as a possible human ancestor until more fossils were discovered during the second half of the 19th century. Since then, thousands of fossils representing the remains of many hundreds of Neanderthal individuals have been recovered from sites across Europe and the Middle East.

**Controversies regarding 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) as well as other protrusions of the skull not generally seen in modern humans. They were 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 (this does not necessarily mean they were smarter; brain size and intelligence are not directly correlated). 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
- 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 north-western Europe at times of cooler temperatures.
- However, generous intermingling of Classic-type and Progressive-type amongst both cool and warm reconstructed paleoclimate 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.
- During 1970s several skeletal remains were discovered from Arago Cave in Tautavel, France. These remains represent some Neanderthal features besides H. erectus and dated at some

250,000 years. They also resemble the progressive groups which were later recognized as 'early archaic group' who remained in the parts of the world outside Western Europe. And the classic variety is designated as 'late archaic group'.

### **Phylogenetic relationship**

- The evolutionary relationships between the various forms of Homo have been the subject of great speculation and controversy. In considering the terminal phases of hominid evolution, it is important to realize that there has been some combination of selective pressures, gene frequencies, and gene flow between populations.
- Regarding the evolution of anatomically modern H. sapiens, the fact that Europe appears to record only the evolution of Neanderthal derived characters during the Middle and early Late Pleistocene. For this many interpretations are given, which indicates an early origin of modern man and completely independent evolution of Neanderthals.
- Both fossil and genetic evidence indicate that Neanderthals and modern humans (Homo sapiens) evolved from a common ancestor between 500,000 and 200,000 years ago. Neanderthals and modern separate are branches of tree (separate species)
- Three interpretations of the evolutionary relationships between Neanderthals and modern humans: (a) unilinear evolution, (b) separate lineages, and (c) preneanderthals. Ever since the first Neanderthal skulls were found in the nineteenth century, scientists have pondered the links between Neanderthals and modern humans.
- Early interpretations
  - a) that viewed Neanderthals as an intermediate ancestor between Homo erectus and anatomically modern humans have been discarded. Their restricted geographic range and distinctive physical characteristics makes this scenario unlikely. Neanderthals also appear to have coexisted with anatomically modern humans until the relatively recent past, perhaps as little as 30,000 years ago. A growing consensus among anthropologists holds that
  - b) Neanderthals were H. sapiens with distinctive physical features, but no one has come up with a cogent, widely accepted theory to explain which selective pressures produced these features. Palaeoanthropologists tend to favour the hypothesis
  - c) that a "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 genetic material extracted from Neanderthal bone.

**Q 4)**

- a) **Why Heath Carter used anthropometric measurements instead of photographs of an individual to assess the somatotype? Elaborate on their method**
  - The technique of somatotyping is used to appraise body shape and composition. The somatotype is defined as the quantification of the present shape and composition of the human body. It is expressed in a three number rating representing endomorphy, mesomorphy and ectomorphy.
  - The Heath Carter method of somatotyping is the most commonly used today. There are three ways of obtaining the somatotype.
    1. The anthropometric method, in which anthropometry is used to estimate the criterion somatotype.

2. The photoscopic method, in which ratings are made from a standardized photograph.
  3. The anthropometric plus photoscopic method, which combines anthropometry and ratings from a photograph it is the criterion method.
- Because most people do not get the opportunity to become criterion raters using photographs, the anthropometric method has proven to be the most useful for a wide variety of applications

### **Heath-Carter Anthropometric Somatotype**

- The various somatotypes can be calculated using the Heath-Carter protocol to obtain direct measurements of human body size, structure, and composition.

#### **Size measurements involve:**

1. Head height, length, and width
2. Head shape
3. Sitting and standing height (provides an indication of the trunk height and lower limb relationship)
4. Androgyny index (relative width of the shoulder and pelvis; typically, a good indicator of sexual dimorphism after puberty)

#### **Structural measurements include:**

1. Height
2. Weight
3. Body mass index

#### **Human composition measurements are based on the fact that the human body is composed of:**

1. Fat
2. Muscle
3. Bone
4. Connective tissue
5. Nervous tissue (e.g., the brain)
6. Organs (e.g., heart, liver, etc.)
7. Skin

- Typically, calculations of body composition assume that the skin, muscle, bone, and other tissues constitute lean body mass and the percentage of body fat differs between males and females (Approx. 28% vs. 40.5% for males and females, respectively).

### **HEATH AND CARTER CLASSIFICATION**

- ❖ Here, the factors considered are: - Height, Weight, and CIRCUMFERENCE. For the first time rating is given to individuals
1. ENDOMORPH - Endomorph reflects relative fatness and roundness in the individual body. - They are poor in physical fitness, eventually poor in athletics. - Heath and Carter recommended wrestling and heavy weight lifting for this group. - The rating is 7-1-1 (endoMeso-ectomorph)
  2. MESOMORPH - Reflects relative muscular-skeletal development relative to height. - The best suitable sport is short put. - The rating is 1-7-1.



3. ECTOMORPH - Linearity, high in physical fitness, the best in sport, typical long-distance runners. High flexibility and agility are the features of ectomorph. - The rating is 1-1-7.

Current Applications of Anthropometry

❖ While physical anthropologists and criminologists continue to use anthropometric measurements in the study of human evolution through the comparison of novel fossil remains to archived specimens and forensics, respectively, current applications have extended to:

- Industrial design and architecture (e.g., vehicle seating and cockpits)
- Clothing (e.g., military uniforms)
- Ergonomics (e.g., seating)
- Medicine (e.g., nutrition, aging, obesity, sports science, and diabetes) In these industries, anthropometric data is invaluable to the optimization of various products and to observe the changes which occur in response to various lifestyle, genetic, and ethnic factors.



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b) **Discuss the historical and cultural contexts that led to superseding ethnocentrism with cultural relativism in anthropology**

- Ethnocentrism refers to considering one's culture superior to other cultures and measuring others in terms of one's own values and standards.
- Cultural relativism is the idea that outside standards should not be used to judge a particular behaviour in a given society but instead the behaviour should be evaluated in the context of the prevailing culture in the society.
- In other words, cultural relativism is an attempt to put oneself in the shoes of the society members and see things from their point of view.
- Both ethnocentrism and cultural relativism prevent anthropologist from gaining an objective understanding of other cultures.
- Ethnocentrism results in bias against other cultures and promotes negative stereotypes. Similarly, cultural relativism results in inferior view of other cultures and may even lead the anthropologists to believe that other cultures are backward and old-fashioned.
- Ethnocentrism leads to isolation in an increasingly diverse world. It discourages us from experiencing other cultures and interacting with those from different cultural backgrounds. Instead of promoting dialogue among cultures, ethnocentrism results in division and lack of tolerance for each other.
- Similarly, cultural relativism results in inaccurate perceptions of other cultures and we forget that some moral and ethical values are not universal but instead vary across cultures. We also become judgmental towards others and criticize others without attempting to understand their reasons or motivations.
- Cultural relativists will often appreciate cultural differences, opposing ethnocentrism in the understanding and education of different cultural practices and beliefs.
- Despite this understanding and the appreciatory behaviour of different cultures, cultural relativism can be problematic as someone who is a cultural relativist may not know how to determine a cultural practice or belief to be morally or socially right or wrong.
- cultural relativism, as one may want to appreciate the differences in culture but not understand that sometimes, a specific practice or belief can be harmful or damaging to many. They may believe a cultural practice, for example, to be an injustice but are unsure of how to morally respond without judging the culture based on these practices or behaviours.
- Ethnocentrism makes value judgments from their native culture, towards another one's culture in order to judge their elements such as custom, trait, belief, activities and any other value or traditions. This can cause much room for decreasing the values of one's culture. Judgments like "weird, strange, unethical and backward" are commonly made from using ethnocentrism.
- In Islam, females are required that they wear proper, decent, modest, and clean clothes and are instructed by Allah in the Quran to wear as a minimum Hijab, or head covering. When an Islamic woman is home however, she may free her beauty in front of immediate family such as her husband, children, brothers, uncles, grandfathers, and other males. An example of cultural relativism perspective would have a statement like such: "Islamic women cover their beauty with a clean, modest Hijab when in public." This statement takes a step into the culture for the judgment, and that's why it is Cultural relativism. An example of ethnocentrism would

have a statement like such: "Islamic offensive tradition forces women to cover their face in a Hijab in public."

**C) . Critically examine various anthropological interpretations of the Kula Ring.**

- **Kula**, also known as the **Kula exchange** or **Kula ring**, is a ceremonial exchange system conducted in the Milne Bay Province of Papua New Guinea.
- The Kula ring was made famous by the father of modern anthropology, Bronisław Malinowski, who used this test case to argue for the universality of rational decision-making (even among 'natives') and for the cultural nature of the object of their effort.
- Malinowski's study became the subject of debate with the French anthropologist, Marcel Mauss, author of *The Gift*. Since then, the Kula ring has been central to the continuing anthropological debate on the nature of gift-giving, and the existence of gift economies.
- Mauss appeared to be arguing that a return gift is given to keep the very relationship between givers alive; a failure to return a gift ends the relationship and the promise of any future gifts.
- Mauss' concept of "total prestations" was further developed by Annette Weiner, who revisited Malinowski's field site in the Trobriand Islands. Her critique was twofold: first, Trobriand Island society is matrilineal, and women hold a great deal of economic and political power. Their exchanges were ignored by Malinowski.
- Secondly, she developed Mauss's argument about reciprocity and the "spirit of the gift" in terms of "inalienable possessions: the paradox of keeping while giving."
- Weiner contrasts "moveable goods" which can be exchanged with "immoveable goods" that serve to draw the gifts back (in the Trobriand case, male Kula gifts with women's landed property).
- She argues that the specific goods given, like Crown Jewels, are so identified with particular groups, that even when given, they are not truly alienated.
- Albert Schrauwers has argued that the kinds of societies used as examples by Weiner and Godelier (including the Kula ring in the Trobriands, the potlatch of the indigenous peoples of the Pacific Northwest, and the Toraja of South Sulawesi, Indonesia) are all characterized by ranked aristocratic kin groups that fit with Claude Lévi-Strauss' model of "House Societies" (where "House" refers to both noble lineage and their landed estate). Total prestations are given, he argues, to preserve landed estates identified with particular kin groups and maintain their place in a ranked society.

**SECTION "B"**

**5. Write notes on the following in about 150 words each**

**a) Balanced and transient genetic polymorphism.**

- Genetic polymorphisms may be 'transient' or 'balanced'. Genetic polymorphisms are called balanced, if **selection favours the heterozygotes**. When selection favours the heterozygotes, a stable equilibrium may be achieved and substantial frequencies of both alleles may be maintained in one environment.
- Transient and balanced polymorphism are two types of polymorphism that arise due to two alternate alleles of a gene. In transient polymorphism, from the two alternate alleles of a given locus, one allele is progressively replaced by another.

- **Transient polymorphism is the progressive replacement of one allele of a gene by another allele while balanced polymorphism is the maintenance of both two different alleles of a gene over time.**

### Balanced polymorphism

- When a gene exists in two or more forms resulting in multiple genotypes over generations. - usually stable proportion.
- Preconditions for balanced polymorphism
  - Frequency of allele should not be less than 1%
  - frequencies must be maintained naturally and not through recurrent mutations
- Illustration
  - Human red blood cells contain haemoglobin protein on their surface which carries oxygen to different parts of body. But some people have abnormal haemoglobin hb D, E, F, S etc
  - In some populations hbS frequency is maintained over generations because it creates sickle cell shaped red blood cells that provide resistance against malaria to heterozygotes but declines 10% oxygen carrying capacity which can be managed. But homozygous for hbA face malaria and HbS face sharp decline in oxygen carrying capacity. Therefore, polymorphism is maintained.
  - Found usually in Mediterranean and African populations.
  - It awards about 10,000 years ago when forest was cleared for agriculture. Therefore, environmental factors maintain polymorphism.

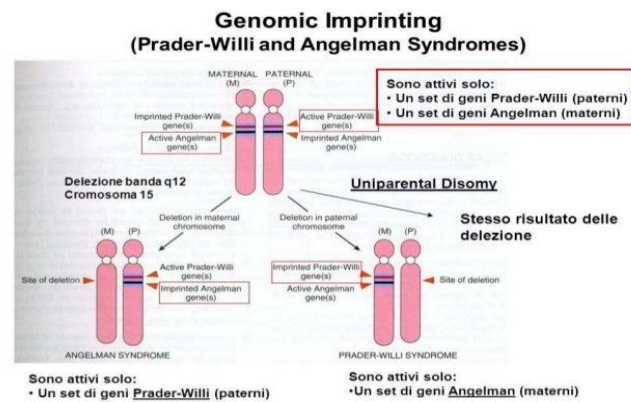
### Similarities Between Transient and Balanced Polymorphism?

1. Transient and balanced polymorphism can lead to phenotypic changes.
2. They may alter protein expression.
3. They involve alleles of a gene.
4. Both take place at a locus of a gene.

### b) Genetic imprinting in human diseases

- Even though both parents contribute equally to the genetic content of their **offspring**, a developmental process called **genomic imprinting** sometimes leads to the exclusive expression of specific **genes** from only one parent.
- This process was first described in 1984, when two laboratories discovered a mark, or "imprint," that differentiates between certain genes on the **maternal** and **paternal** chromosomes and results in the expression of only one copy of those genes in the offspring.
- Appropriate imprinting of certain genes is important for normal development. Human diseases involving genomic imprinting include **Angelman syndrome, Prader-Willi syndrome and male infertility**.
- Examples of classical human disorders related to alterations of genomic imprinting, besides Prader-Willi and Angelman syndromes, include Silver-Russell syndrome, Beckwith-Wiedemann syndrome, Albright hereditary osteodystrophy and, more recently, uniparental disomy 14 (both paternal and maternal forms)
- Genomic imprinting is a phenomenon in which only one gene is expressed, either from your mother or from your father, while the other is suppressed.

- In the vast majority of cases, children inherit one set of genes from their mother and one from their father. When these genes undergo recombination, the alleles reconstitute and a unique genetic expression is generated. However, in some cases, only one gene is expressed—and an instance of **genomic imprinting** occurs.



### c) Stages of human prenatal development.

- The prenatal phase is also an important portion of a child’s development. It lays down the very foundation of the child’s mental growth, as the brain continues to grow throughout childhood

### Prenatal Baby Development Stages

- The prenatal period is divided into three major stages. These are the most important prenatal stages of human development for a baby.

#### Germinal Stage

- This is when conception takes place. The sperm of the father and the egg of the mother combine inside a Fallopian tube of the mother to form a zygote. It journeys gradually towards the uterus, taking over a week’s time to reach there, and then the process of growth begins. The cells divide by mitosis, and the first steps of the baby’s formation begin.
- The cells which develop to form the nervous system and the skin of the baby are termed as ectoderm. The cells which develop to form the respiratory and digestive systems for the baby are called endoderm. The other cells are called mesoderm, and they form the skeletal and muscular systems. This blastocyst then attaches itself to the wall of the uterus (implantation).
- A successful implantation interrupts the menstrual cycle in the woman, which will lead her to check if she is pregnant or not.

#### Embryonic Stage

- The cells that have grown until now together constitute the embryo. This growth takes place until the entire mass of cells starts to resemble the vague shape of a baby. This is also where the first steps of the brain’s development begin.
- The formation of a neural tube takes place first. Multiple ridges start forming along the neural plate, which leads to the creation of a hollow, tube-like structure. This later develops into the spinal cord and the brain. The tube closes, and brain cells start developing inside, forming the foremost, middle, and rear sections of the brain.
- The head also begins to form rapidly, as the first signs of facial features start showing themselves. A single blood vessel that later grows to become the heart starts pulsating lightly.
- This is then followed by formation of the limbs, roughly around 5 weeks into pregnancy. By 8 weeks, the embryo has developed most of the basic organs a human being needs to function,

but its gender still remains undetermined. Neural networks begin to form at around 6 weeks when neurons first start appearing and then move to different areas of the brain to form the connections.

### **Foetal Stage**

- Around the completion of 9 weeks of pregnancy, the growth of the embryo finally reaches a stage where it then is referred to as a foetus.
- The growth from here on continues right until the delivery of the baby. The body systems continue developing and strengthening within the baby. Neural networks and synapses begin to develop, with brain development at its highest. Gradually, the foetus starts making movements using its limbs.
- On the completion of 3 months of pregnancy, the genitals begin to form properly, and by the end, all organs have developed fully. The height and weight of the foetus keep increasing throughout.
- As the second trimester of the pregnancy begins, the heart gets stronger, and you can hear the baby's heartbeats clearly through a monitor. Smaller features such as hair, eyelashes, and nails start appearing on the baby. In this trimester, the growth of the foetus is rather exponential, and becomes nearly six times larger than before.
- Throughout this period, the development of the brain takes place rapidly, and the nervous system begins to respond to the growth of the foetus. At 28 weeks of pregnancy, the brain activity resembles that of a sleeping baby. Following this until birth, the baby keeps growing, and the lungs start to expand and contract, preparing the body to breathe after birth.

### **d) Shaman, sorcerer, and medicine man**

- The magico-religious Practitioners are those who perform religious practices and magical practices. They are intermediaries between human beings and super natural forces.

#### **Priest**

- Priest is a ceremonialist who operates as a representative of the group and under group aspects he works as intermediary between God and men.
- Priest is a member of religious organization, where he receives special training. Priests are present in simple societies but found mostly in mainstream societies with fairly elaborate cultures and organized religious cults having theological doctrines and standardized ceremonies.
- If the treatment is failed by the priest, then he is not subjected to criticism. The means of priests are prayers, offerings and sacrifices. The priest charges high prices for his service.
- E.g.: In Gonds, priests will enjoy higher social status, religious decision making is done by the priests.

#### **Shaman**

- The word shaman is taken from Siberia, the shamans are popular magico-religious Practitioners.
- Shamans devotes part of his time serving as an intermediary between the super natural and the individual. [priest is of full time].
- Shamans are employed to determine the cause of an illness and to cure it.

His functions are:

- Works as a healer.

- Weather controller
- Locating the hunt
- Where to find the resources
- Disaster forecaster.
- E.g.: Yakut's and Chukchee's have shamans of Siberia region

### Medicine man

- The term shaman and medicine man, both are synonymous, because the role played by shaman is similar to medicine man. The difference is medicine man is more concerned in treating illness which is because of natural origin and not of super natural origin. Solving health problem is more often the goal of medicine man.
- E.g.: In Chencho's an individual who is expert in Ayurveda will be treating the illness

### Present relevance of the Magico-religious functionaries- case studies

- Religious beliefs and practices have long influenced human perceptions and uses of nature. Animals in particular play a prominent role in magico-religious practices and provide historical and cultural depth of these relationships.

### e) Household and domestic group

- Anthropologists use the term household loosely to refer to a residential unit, whose members cooperate in some activities of production, consumption, or child rearing. They differentiate the household from the family by defining the former as a residential unit and the latter as a kinship unit.
- The domestic group, in addition to one or more nuclear families, might include **people without kinship links** either taking part in its productive activity, such as servants, journeymen or apprentices, or not, as in the case of tenants, lodgers and so forth.
- If the concept of the domestic group is clearly a wider one than that of the nuclear family, how does it stand in relation to that of the household (which has the advantage of referring to residence, house, hearth), an ancient term used when calculating the number of families? 'Household' is not used here, 'domestic group', which is a wider and more neutral expression, being preferred.

### Q 6)

#### a) Discuss the mechanism of social control in different kinds of political systems

- Anthropological political systems are categorized into two groups, the centralized and the decentralized. Centralized anthropological political systems include the band and tribe while the decentralized include the chiefdom and state. Band is a form of anthropological political system noted for its simplicity.
- In every society there are institutions that encourage and emphasize conformity to social and customary rules or norms. These institutions are referred to as sanctions. According to Radcliffe Brown a sanction is a reaction on the part of a society or of a considerable number of its members to a mode of behaviour which is thereby approved or disapproved.
- Malinowski defined law as the obligation of one person and the rightful claim of another sanctioned not by mere psychological motive but by a definite social machinery of binding force based upon mutual dependence.

- The purpose of law is three-fold
  1. To define the norms regulating social interaction in terms of right/duty relationships.
  2. To establish procedures to manage disputes arising from conflicting interests.
  3. To create institutions to facilitate the legislation, application and enforcement of norms

### **Classification of Societies, Band, Tribes, Chiefdom & State**

#### **Band**

- Some societies are composed of bands which are the small and nomadic group of people. The earlier food collectors and hunting people had the band organization. Band is small in size and in population but exist an integrated system of political organization.
- They used to visit different regions in food search and settled there but there was no permanent place of their setting.
- Band is annually or seasonally classified or divided into small groups classified or divided into small groups which becomes other bands. Band societies are egalitarian societies and have no private property.
  - The political organization is informal, in which no single person or place is nominated to decide any problem but the decision takes place collectively by the group.

#### **Tribes**

- Tribal societies in the sense of political organization are the same as band societies. Their political system is egalitarian and informal. But the difference is that tribe's societies are food producers in which agricultural & husbandry is more important than food collection & hunting.
- The size of tribe's population is large and the groups are big as compare to band. In case of any external aggression, the integration of the people among kinship plays a vital role is defence and the bands are tight.
- The head of the tribe was nominated by the age and wisdom, so, the aged person was to be the chief or head of the tribe because of the agedness and experience. The aged man was the library of wisdom and had the experience to decide a situation. So, the political organization was informal.

#### **Chiefdom**

- Chiefdom has some formal structure, integrated community and rules populated and the position of the chief is hereditary & almost permanent.
- Chiefdom have more economic productivity and the chief have the authority of redistribution as compare the tribes' societies.
- The chief of a chiefdom posse a high status and rank in the society. He coordinate & manage the religious activities as well as labour responsibilities. He had the responsibility of directing and managing military activities. Chiefdom societies are practical in, south pacific chiefdom, Ayes and Tahiti etc.

#### **State**

- State is a self-governing unit surrounded by many communities within a territory, having the power and authority to collect taxes, use men for work & war and enforce laws. State has a formal system of written rules and regulation. The economic system is highly developed and having technology. State societies have its centralized political structure.



- State has many social institutions in which executive, legislature, Judiciary and a large bureaucracy is practicing.
- Different forces are used to control and defence indoor & out aggression control and defence indoor & out aggression of the country. For security purpose these forces include Army, Navy, Air force and various police. The implementation of law and order is with the help of these forces. These state societies are found all over the world presently.

**b) What is meant by health? Is the burden of lifestyle diseases on the rise? Justify your answer with suitable examples.**

- It is a state of complete physical, mental, social and psychological well-being.
- Lifestyle diseases are illnesses that are mostly caused by people's daily lifestyle. Habits that keep people from being active and push them toward a sedentary lifestyle can lead to a variety of health problems, including chronic noncommunicable diseases with life-threatening effects.
- **Lifestyle diseases are on the rise**, and they are affecting not just adults but children too. Obesity and even diabetes are affecting children in recent years. Lack of nutrition and poor diet, when combined with low levels of activity, can lead to the development and progression of such chronic lifestyle diseases in children.
- Lifestyle diseases share risk factors similar to prolonged exposure to three modifiable lifestyle behaviours -- smoking, unhealthy diet, and physical inactivity -- and result in the development of chronic diseases, specifically heart disease, stroke, diabetes, obesity, metabolic syndrome, chronic obstructive pulmonary disease, and some types of cancer

**lifestyle diseases are on a constant rise because of the following reason:**

1. **Unhealthy diet choices**
2. **Sedentary Lifestyle**
3. **Drugs and Alcohol Overuse**
4. **Rising Levels of Stress**
5. **Inadequate Sleep**

- Today, chronic diseases are a major public health problem worldwide. In 2005, the World Health Organization (WHO) estimated that 61 per cent of all deaths -- 35 million -- and 49 per cent of the global burden of disease were attributable to chronic diseases. By 2030, the proportion of total global deaths due to chronic diseases is expected to increase to 70 per cent and the global burden of disease to 56 per cent.
- The combination of four healthy lifestyle factors -- maintaining a healthy weight, exercising regularly, following a healthy diet, and not smoking -- seem to be associated with as much as an 80 per cent reduction in the risk of developing the most common and deadly chronic diseases.
- However, despite the well-known benefits of a healthy lifestyle, only a small proportion of adults follow such a routine; in fact, the numbers are declining. Unfortunately, there is very little public awareness of the association between health and lifestyle.
- Lifestyle is -generally considered a personal issue. However, lifestyles are social practices and ways of living adopted by individuals that reflect personal, group, and socio-economic identities
- A comprehensive public health approach to tobacco control effectively inhibits the beginning of tobacco use and promotes its cessation, through a range of measures including tax and price policy, restriction on tobacco advertising, promotion and sponsorship, packing and labelling requirements, educational campaigns, restrictions on smoking in public places, and cessation support services.
- A comprehensive approach must include young people to reach the entire population. National policy measures known to have the biggest impact on individual levels of consumption, cessation

rates, and initiation rates require sustained political will and engagement and, above all, effective and well-enforced legislation.

- Furthermore, effective public health measures are urgently needed to promote physical activity and improve health around the world. The challenge of promoting physical activity is as much the responsibility of governments, as of the people.
- However, individual action for physical activity is influenced by the environment, sports and recreational facilities, and national policy. It requires coordination among many sectors, such as health, sports, education and culture policy, media and information, transport, urban planning, local governments, and financial and economic planning.

**c) Critically evaluate the reasons for the reduction in age at menarche in human females over successive generations**

- A secular declining trend in the age of menarche has been reported in most of the developed and developing countries since the beginning of 20th century across the globe
- Results of the study showed that in Europe, the menarcheal age decreased from 16 to 17 years in the mid-19th century to 13 years in the mid-20th century, and among the Chinese girls the age at menarche declined from 14.25 in girls born before 1976 to 12.60 in girls born after 2000, with an estimated decline of 0.51 years per decade.
- A similar study showed that average age of menarche in India was 14 years in 1955 and evidence from Indian Human Development survey showed that there has been a reduction in age of menarche by nearly one month per decade suggesting of secular decline in age of menarche among Indian women.
- Several studies have observed a sharp decline in the menarche age of women in India
- As per doctors, today one out of three female children experience early maturity and growing up earlier than scheduled has become a concerning trend for parents and paediatrics.
- Puberty is a phase of life marked by the emanation of sexual hormones in a human of both genders characterized by physical and psychological changes. Girls hit puberty at the age of 10 to 12 years. A significant mark of puberty in females is menarche.
- “Early puberty limits the height. Due to early maturation of bones, the child may appear taller than her peer but it also has the drawback. Early puberty can exert a great psychological and physical pressure on any child. Females having more emotional inclination become more vulnerable to social stigmas related to puberty,”
- Early maturity increases the risk of breast cancer in adulthood. As per doctors, because young girls are not equipped to handle the psychological changes associated with maturity, it leads them to depression, anxiety and eating disorder
- It is known that genetic, nutritional status, area of residence, geographic region, and linguistic groups, racial, climatic and cultural background, socio-economic status, have an influence over the menarche age.
- From reported studies it was noted that girls with a higher BMI (overweight and obesity) attained menarche early compared than those without excess weight. Girls from urban areas, high socio income families attained menarche earlier than the girls from poor socio-economic status and girls from urban areas attained menarche earlier compared to the girls in rural area.
- Most of the studies were on the association of the age of menarche with nutritional status, BMI, residence region, socio-economic status, geographical location. Very few studies were

reported in the aspect of association between menarche and the environmental changes, lifestyle patterns, among which most of them are foreign studies

- The mean age of menarche in adolescent girls is 12.5 ( $\pm 1.42$ ) years and their mother is 14 ( $\pm 1.10$ ) years. The study revealed that in menstrual history, age of menarche, regularity, menstrual flow and habitual and lifestyle factors like outside food consumption, sedentary/active lifestyle, sleep, dietary habits, polycystic ovary syndrome (PCOS) showed significant difference between adolescent girls and their mother.
- In univariate analysis outside food consumption, sedentary lifestyle and hours of activity were found significant. In multivariate analysis sedentary lifestyle was only found to be significant for early menarche.

**The factors responsible for decrease in average age of menarche is: -**

1. Genetical factors
2. Environmental factors
3. Nutritional factors (in Delhi, it is 11.20 years and in Gujarat it is 14.6 years)
4. Climatic factors (in Nigeria, it is 14.3 years and in Australia, it is 12.9 years)

**Genetical factors affecting menarche age are:**

1. In identical twin sisters, the difference in occurrence of menarche is only two months.
2. In non-identical twin sisters, the difference is 22 months.
3. There is similarity in occurrence of menarche age for mother and daughter.

Q 7)

**a) Discuss the role of evolutionary forces in creating human diversity.**

- The forces which bring about evolutionary changes by natural selection are called evolutionary forces. These forces are **random genetic drift, gene flow and mutation**.
- **Genetic drift** - The change in gene frequencies by chance is called genetic drift. Chance plays an important role in maintaining a gene in a population.
- Chance becomes more significant in a smaller population. Chance encounters reproductive individuals. Thus, it promotes reproduction. Some traits of a population do not survive. But they come in the gametes by chance involved in fertilization.
- **Inbreeding** is also common in small populations. Genetic drift and inbreeding reduce genetic variation within a population.
- Suppose mutation introduces a new allele into a population. That allele is less adaptive than existing alleles. Genetic drift may help the new allele to establish in the population. Or the new allele may be lost due to genetic drift. Thus Hardy-Weinberg equilibrium does not occur due to genetic drift in small populations.
- **GENE FLOW**- Changes in gene frequency due to migration of individuals are called gene flow. The Hardy-Weinberg theorem assumes that there is no immigration and emigration. Immigration means that no individuals enter a population from the outside. Emigration means that no individuals leave a population
- Immigration or emigration upsets the Hardy-Weinberg equilibrium. They cause changes in gene frequency (evolution). Some natural populations do not have significant gene flow. But most populations have significant gene flow.

- **MUTATION** - Changes in the structure of genes and chromosomes are called **mutations**. The Hardy-Weinberg theorem assumes that no mutations occur. Or mutational equilibrium exists in the populations. However, mutations are a fact of life.
- Mutations are the sign of all new genes. They are source of variation. These variations may prove adaptive for an animal. Mutation counters the loss of genetic material from natural selection and genetic drift. It increases the chance of variations in the population. These variations allow a group to survive in future environmental shocks. Mutations are always random. All mutations are not useful.

**b) Write the historical development of fieldwork tradition in anthropology till recent times**

- Anthropology is popularly known as a “field science”. This is because in its study of humans, both socially and biologically, it depends on authenticating its data from real experiences and knowledge. This reality is captured not by suppositions and theories but by gathering first-hand knowledge on it. This is where fieldwork as an approach of study comes in.

**The evolution of Fieldwork of anthropologists –**

- Malinowski’s fieldwork among Trobriand islanders – Participant observation – seen as landmark in fieldwork tradition in anthropology
- Franz Boas in America and Alfred C. Haddon in Britain – conducted quite notable expeditions in British Columbia and Torres strait respectively to expand their knowledge and understanding of human beings.
- Anthropologists like Levi-Strauss were more interested in oral and textual traditions than in fieldwork of ethnographer
- Morgan is influential in promoting the development and use of the genealogical method during fieldwork while studying family, marriage, and kinship.
- Rivers focused on the understanding of kinship relations and by the time he studied the Todas of Southern India, anthropologists realized the importance of visiting and directly gathering knowledge of societies they were interested in rather than theorising from their homes.
- Boas has introduced new ways of doing fieldwork in anthropology where he emphasised on ethnographic fieldwork, cultural relativism and participant observation method.
- Malinowski changed the way fieldwork was conducted in anthropological investigation.
- He mainly stressed the following while doing fieldwork: Intensive ethnographic fieldwork; Participant observation; and Communicating in the local language.
- It was no surprise then that Boas’ students, Ruth Benedict, Margaret Mead, Cora Du Bois etc. were women who did their fieldwork in the 1920s and 30s and became leading anthropologists of their time.
- In the late 1940s, women like Mary Douglas came to the forefront, doing her fieldwork in the Congo and became famous for her works on ritual purity and impurity and symbolism

**Significance –**

- Fieldwork is equally important to the socio-cultural anthropologists, the physical anthropologists and the archaeological anthropologists. It is one methodology they follow in their distinct branches throughout their academic lifetime due to the remarkable awareness it provides.
- Anthropologists depend on fieldwork as their ultimate source of gathering valid data.

- Fieldwork is a kind of characteristic custom, a procedure that assists anthropologists in the inquiry of human life.
- It offers a huge level of flexibility to the fieldworker as s/he can modify approaches and techniques of investigation and collection of data, create and add newer processes and formulate “on-the-spot strategies to come to grips with unforeseen challenges of fieldwork”
- Important method by which cultural anthropologists gather data to answer their research questions.
- Through fieldwork, the social anthropologist seeks a detailed and intimate understanding of the context of social action and relations.
- While interacting on a daily basis with a group of people, cultural anthropologists document their observations and perceptions and adjust the focus of their research as needed.
- They typically spend a few months to a few years living among the people they are studying.

**c) Discuss the approaches of Leslie White, Julian Steward, and Marshall Sahlins in the light of cultural evolution.**

- In 20th century there evolved Neo-Evolutionism with Leslie White, Julian Steward, Marshall Sahlins and Elman Service as main propounders.
- Leslie White emphasized that the evolutionary stages are abstractions applicable to the growth of human culture. He also believed that culture is to be studied in its own terms. He suggested the term **culturology** to the science of culture.
- He is known to be the proponent of **General Evolution** where he says that it has been studied entirely on a **culturological** level. According to him culture grows out of culture with new combinations, **syntheses** continually formed.
- He also says that **technology** is the basic determinant of cultural evolutionism. He also refers to it as **Cultural Materialism**. According to him, the other factors remaining constant, culture evolves as energy harnessed per capita, per year is increased, the system not only increase in size but become more highly evolved, they become more differentiated and more specialized functionally.
- Julian Steward says that **Cultural Evolution** may be defined as quest for regularities or laws. There are three ways in which evolutionary data can be analysed
  1. **Unilineal evolution:** the classical 19th century formulation which dealt with particular cultures, placing them in stages of universal sequence.
  2. **Universal evolution:** This designates the modern revamping of unilineal evolution which is concerned with culture than with cultures.
  3. **Multilinear evolution:** It is distinctive in searching parallels of limited occurrence instead of universals. He doesn't believe that culture followed a single line of development. His generalizations are based on intensive study of particular cultures. For him, multilinear evolution is a methodology based on the assumption that regularities in culture change occur. This is concerned with historical reconstruction with any set laws.
- Marshall Sahlins and Elman Service have combined the White and Steward's views by recognizing two kinds of evolution.
- **Specific Evolution** refers to the particular sequence of change and adaptation of a particular society in a given environment.
- **General Evolution** refers to general progress of human society in which higher forms arise and surpass lower forms

Q 8)











a) **Discuss the contemporary population problems in light of various socio-cultural demographic theories.**

- ❖ Differences in their social, economic and cultural systems lead to different sets of problems relating to population in developing and developed countries
- ❖ Currently, the global demographic problem manifests itself in such aspects and trends as:
  - Fast population growth (overpopulation of territories) in the developing countries of Asia, Africa, and Latin America (over 80% according to some estimates and about 95% according to other estimates), which are characterized by a low space economy;
  - Most Third World countries have no population growth control or clear demographic policy;
  - Ageing and depopulation resulting from narrowed population reproduction (demographic crisis) in industrialized countries, primarily in Western Europe;
  - Uneven population growth worldwide;
  - Population reproduction growth typical of the planet when mortality decline is not matched with birth rate decline.
- ❖ It is characteristic that the lower the economic level of a country and the quality of life of its citizens the higher its birth-rate; and conversely, there is a sustained tendency of birth-rate decline with high economic growth, resulting in the fact that the elderly become a majority (converse proportionate relationship).
- ❖ The intensity of the global demographic problem derives from its environmental implications: the current population of the planet exceeds by ten times the limit the Earth can support. Population density and growth outpace the capacity and technology of agricultural production to meet growing food demands and the need to intensify the economy.
- ❖ According to social scientists, the reasons why the current demographic problem has acquired a global character lie in the so-called “demographic boom” of the second half of the 20<sup>th</sup> century, when after World War II appropriate conditions formed for population growth and longer average life expectancy. It is believed that every second the world population increases by three people.
- ❖ The demographic boom and uneven population growth in different regions lead to the aggravation of associated global problems, for example:
  - demographic pressure on the environment;
  - ethnic and intercultural problems (interethnic and intercultural conflicts);
  - immigration and migration;
  - destitution, poverty, and food shortages;
  - urbanization (“slum urbanization”);
  - unemployment, production forces placement deformation etc.
- ❖ The demographic problem is one of the most important and problematic. First, no clear and, more importantly, legally and ethically acceptable world mechanism has yet been developed to decrease the population growth rate. Second, even from the financial point of view the problem is hard to solve due to the paradox of reverse proportionate dependence between the standard of living and birth-rate in various countries.

- ❖ Proposals to resolve demographic problems of the global world have special value in light of their complex character.
- ❖ Thus, the developing and the developed countries share many of the problems related to population. But, the problems of low population developing countries and the high population developing countries differ substantially

**b) What do you understand by blood group systems? How is the HLA system different from those based on red cell antigens?**

- ❖ Blood groups are antigenic determinants on the surface of blood cells, but the use of the term is generally restricted to antigens on red blood cells. A blood group system is one or more blood group antigens encoded either by a single gene or by a cluster of two or more closely linked, homologous genes.
- ❖ Karl Landsteiner, an Austrian scientist discovered the ABO blood group system in the year 1900. In his experiments, he mixed different blood types and noted that the plasma from certain blood type produced agglutinates or formed clusters which were caused by the absence of molecules on red blood cells and resulting in antibodies to defeat that molecule. He then made a note of the agglutination and divided the blood types into 4 different groups. For the discovery of ABO blood group, he was awarded the Nobel Prize.
- ❖ The blood grouping system is pivotal in blood transfusion. Our immune system recognizes another blood type as foreign and attacks it if introduced in the body causing a **transfusion reaction**. Any inappropriate match with the Rh and ABO blood types, causes the most serious and life-threatening transfusion reactions. Therefore, before blood transfusion, it is suggested to have a blood group checked.
- ❖ The basis of ABO grouping is of two antigens- Antigen A and Antigen B. The ABO grouping system is classified into four types based on the presence or absence of antigens on the red blood cells surface and plasma antibodies.
  1. **Group A** – contains antigen A and antibody B.
  2. **Group B** –contains antigen B and antibody A.
  3. **Group AB** –contains both A and B antigen and no antibodies (neither A nor B).
  4. **Group O** – contains neither A nor B antigen and both antibodies A and B.
- ❖ The ABO group system is important during blood donation or blood transfusion as mismatching of blood group can lead to clumping of red blood cells with various disorders. It is important for the blood cells to match while transfusing i.e., donor-recipient compatibility is necessary. For example, a person of blood group A can receive blood either from group A or O as there are no antibodies for A and O in blood group A.

	GROUP A	GROUP B	GROUP AB	GROUP O
RED BLOOD CELL TYPE				
ANTIBODIES IN PLASMA	 Anti-B	 Anti-A	None	 Anti-A and Anti-B
ANTIGENS IN RED BLOOD CELL	 A Antigen	 B Antigen	 A and B Antigens	None

- ❖ HLA typing is a kind of genetic test used to identify certain individual variations in a person's immune system. The process is critical for identifying which people can safely donate bone marrow, cord blood, or an organ to a person who needs a transplant. HLA stands for **human leukocyte antigen**, but it is almost always referred to as HLA.
- ❖ Human leukocyte antigens (HLA) restrict immune responses by binding antigenic peptides and presenting them in the context of self to T lymphocytes
- ❖ To investigate the clinical significance of HLA determinants expressed on red cells (RBCs), 51Cr survival studies were carried out in six women (four healthy individuals, two patients with solid carcinoma) immunized against HLA antigens by pregnancy or blood transfusions, respectively.
- ❖ Donors were selected who were compatible in typical RBC antigen systems assayed by conventional techniques but were mismatched for the HLA antigens in question. Crossmatches also were performed with RBC, as well as with lymphocytes, by means of a radioimmune anti-IgG test (RIAT).
- ❖ They found that RBC survival was shortened in all cases. The mean life-span of RBCs depended on antigen specificity rather than on the antibody strength. HLA incompatibility of RBCs could be monitored by the RIAT in all donor/recipient pairs.
- ❖ Thus, it concludes that a shortened mean life-span of RBC is to be expected by HLA antibodies, especially when HLA-B7 is involved, but the severity of an in vivo immune reaction in HLA incompatible transfusions cannot be predicted from the in vitro tests used

**c) Discuss how anthropological knowledge of the human body may be used in designing equipment and articles of human use**

- Applied anthropology is simply "anthropology put to use" (to quote John Van Willigen). It is any kind of anthropological research that is done to solve practical problems. This means that there are stakeholders and clients who stand to gain or lose from the project.
- Anthropology can be used to solve problems in an enormous variety of fields
- Design anthropology is a form of applied anthropology that makes use of ethnographic methods to develop new products, services, practices, and forms of sociality.
- Anthropometry is used as a set of techniques associated with methods of measuring and aids in the creation of design which suits individual needs. The term anthropometry was introduced by Georges Cuvier.
- The first use of anthropometry in anthropology was in physical anthropology where it was used to study human variability among different human races. Anthropometry comes from the Greek words, Anthropos (man) and metron (measure).
- Anthropometry uses data of body parts to design clothes, tools and apparatus. Ergonomic anthropology uses technology, engineering, physiology and psychology and ergonomics.

**Role of the anthropology in designing the equipment**

- Anthropology has always had an important place in Design Thinking, since the founders of this methodology already included anthropologists in their projects. In many ways these two disciplines are aligned and are a perfect match. Both consider that experience is personal, subjective, and contextual.
- E-Lab is important because it fostered an equal partnership between research and design, with teams of roughly equal representation and influence, and ethnographic methods were the core of their research methods.



- The cross-cultural and trans-historical scope of their discipline enables anthropologists to explore the cultural and symbolic meanings of clothing, examine continuities and changes in dress practice in contexts of socioeconomic and political transformation, and undertake comparative studies in more depth and detail.
- Applied anthropology is simply "anthropology put to use" (to quote John Van Willigen). It is any kind of anthropological research that is done to solve practical problems. Anthropology can be used to solve problems in an enormous variety of fields.
- The measurement done through anthropometry concentrates on bodily characteristics like body composition and body shape, which is known as static anthropometry and measurement of the body's movement and strength capacities and how space is used. This is known as dynamic anthropometry.

