

UPSC ANTHROPOLOGY MAINS 2023
PAPER 1 MODEL ANSWERS
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Section A

Q.1) Write notes on the following in about 150 words each: (10 *5 = 50 Marks)

a) Scope and Relevance of social and cultural anthropology

- Social and cultural anthropology is a field of study that examines human societies and cultures from a holistic perspective.
- It seeks to understand the ways in which people in different societies organize themselves, interact with one another, and make sense of their world.

The scope and relevance of social and cultural anthropology are vast and continually evolving. Here are some key points to consider:

Scope of Social and Cultural Anthropology:

1. **Cultural Diversity:** Anthropologists study a wide range of cultures, from small-scale societies in remote areas to complex, modern urban societies.
2. **Comparative Approach:** Anthropologists often use a comparative approach, analysing similarities and differences between cultures. (Classical evolutionism)
3. **Ethnography:** Ethnographic research is a hallmark of anthropology, involving long-term fieldwork and participant observation (Franz Boas).
4. **Holistic Perspective:** Anthropologists examine various aspects of human life, including social, economic, political, religious, and symbolic dimensions.
5. **Applied Anthropology:** Anthropologists often apply their knowledge to address real-world issues.

Relevance of Social and Cultural Anthropology:

1. **Cultural Understanding:** Anthropology helps promote cultural awareness and cross-cultural competence, which are essential for global cooperation and diplomacy.
2. **Social Issues:** Anthropologists contribute to addressing contemporary social issues such as poverty, inequality, racism, and environmental sustainability.
3. **Policy and Development:** Anthropological insights are valuable in shaping policies and development programs.
4. **Conflict Resolution:** Anthropology plays a role in conflict resolution by helping to understand the cultural dynamics underlying conflicts.
5. **Healthcare:** Medical anthropology informs healthcare practices by considering cultural beliefs and practices that affect health outcomes.
6. **Archaeology and Heritage:** Anthropologists involved in archaeology preserve and interpret the cultural heritage of societies from the past. This helps us learn about human history and appreciate the value of preserving cultural artifacts.

In summary, social and cultural anthropology has a wide scope that encompasses the study of diverse cultures and human societies. Its relevance is evident in its contributions to our understanding of cultural diversity, its application to real-world issues, and its role in promoting cultural sensitivity and cooperation in an increasingly globalized world

b) Cultural impact of Iron age

- The Iron Age was a period in human history when iron became the dominant material for making tools and weapons. It had a significant cultural impact on various regions of the world, such as the Middle East, Europe, Africa, Asia, and the Americas. Some of the effects of the Iron Age were:
1. **Trade and communication:** The Iron Age enabled the development of long-distance trade and communication networks, as iron was widely available and cheaper than bronze. These Iron Age advances allowed for greater cultural exchange and the exchange of manufactured goods.
 2. **Population growth:** Trade and advances in toolmaking allowed civilizations to establish themselves and be successful in their agricultural, livestock and commercial activities.
 3. **Warfare and conquest:** Iron also enabled the production of more effective Armor, shields, helmets, and chariots. Iron also sparked conflicts and migrations among various peoples, such as the Celts, Germans, Huns, Mongols, etc.
 4. **Social and political organization:** Iron also played a role in the development of laws, administration, taxation, coinage, writing systems, and art forms. Some of the notable civilizations that flourished in the Iron Age were the Phoenicians, Israelites, Babylonians, Egyptians, Greeks, Romans, Kushites, Aksumites, Nubians, Bantu-speakers, Olmecs, Mayans etc.
 5. **Technology and innovation:** The Iron Age stimulated technological and scientific innovations that improved the quality of life and productivity of people. Some of the inventions and discoveries that occurred in the Iron Age were iron smelting and forging techniques, water mills, paper, compass, printing, gunpowder, algebra, astronomy, medicine, etc.

The Iron Age ended with the advent of new technologies that replaced iron as the main material for tools and weapons. These technologies included steel-making, which improved the quality and durability of iron; and gunpowder which revolutionized warfare and made iron weapons obsolete.

Overall, the Iron Age had a profound and far-reaching cultural impact on human societies. It marked a pivotal period of technological innovation, social change, and cultural development, laying the foundation for many aspects of the modern world. The use of iron tools and the cultural shifts associated with this era continue to influence our understanding of ancient civilizations and their legacies.

c) Race and ethnicity

- Race and ethnicity are two concepts that are often used interchangeably, but they have different meanings and implications. Race is a biological category that refers to the physical characteristics of a group of people, such as skin colour, hair texture, eye shape, etc. Ethnicity is a social and cultural category that refers to the shared identity, history, language, religion, customs, etc. of a group of people.
- Race and ethnicity are not fixed or static, but rather dynamic and fluid, as they are influenced by various factors such as migration, intermarriage, politics, etc.

India is a country that has a rich and diverse racial and ethnic composition. It is home to people belonging to various races and ethnic groups, who have different origins, histories, cultures, languages, religions, etc. Some of the major racial and ethnic groups in India are:

1. **Indo-Aryan:** This is the largest racial and ethnic group in India, comprising about 72% of the population. They are mostly found in northern and central India. They belong to the Caucasoid race, which is characterized by light to dark skin colour, straight to wavy hair, narrow to broad nose, etc. They speak languages that belong to the Indo-Aryan branch of the Indo-European language family, such as Hindi, Urdu, Bengali, Punjabi, Marathi, Gujarati, etc. Some of the sub-ethnic groups within the Indo-Aryan group are Rajputs, Jats, Brahmins, Kayasthas, Biharis, Sindhis, etc.
2. **Dravidian:** This is the second largest racial and ethnic group in India, comprising about 25% of the population. They are mostly found in southern India. They belong to the Australoid race, which is characterized by dark skin colour, curly to kinky hair, broad nose, etc. Some of the sub-ethnic groups within the Dravidian group are Tamils, Telugus, Kannadigas, Malayalis, Tuluvas, Kodavas, etc.

3. **Mongoloid:** This is a small racial and ethnic group in India, comprising about 3% of the population. They are mostly found in northeastern India and some parts of northern India. They belong to the Mongoloid race, which is characterized by yellow to brown skin colour, straight hair, slanted eyes, high cheekbones, etc. They mostly follow Buddhism or Christianity. Some of the sub-ethnic groups within the Mongoloid group are Nagas, Mizos, Meiteis, Garo, Khasi, Lepcha, etc.

India's racial and ethnic diversity is a source of its strength and richness. It reflects its long and complex history of migration, interaction, and assimilation of various peoples and cultures. It also poses some challenges and conflicts in terms of identity, representation, equality, and integration. However, India has also shown remarkable resilience and tolerance in accommodating and celebrating its diversity.

It has adopted a secular and democratic system that respects and protects the rights and interests of all its citizens. It has also promoted a culture of pluralism and multiculturalism that values and cherishes its diversity.

d) Customary laws and Environmental conservation

- Customary laws are the norms and rules that govern the behaviour and practices of tribal communities in India. They are often based on their traditions, customs, beliefs, and values that have been passed down from generation to generation. Customary laws play an important role in environmental conservation, as they regulate the use and management of natural resources by the tribal people. Here are some examples of how customary laws and environmental conservation are related in India:
 1. **The Apatani tribe** of Arunachal Pradesh has a customary law that prohibits the cutting of trees and the burning of forests for agriculture. They practice wet rice cultivation, which uses natural irrigation from streams and canals, and organic fertilizers from crop residues and wastes. This helps to conserve soil fertility, water quality, and biodiversity.
 2. **The Bishnoi tribe of Rajasthan** has a customary law that forbids the killing of animals and the felling of trees. They consider all living beings as sacred and protect them from harm. They also plant trees and conserve water sources for the benefit of wildlife and humans. Their conservation efforts have saved many endangered species, such as the blackbuck antelope.
 3. **The Khasi tribe of Meghalaya** has a customary law that protects sacred groves, which are patches of forest that are dedicated to local deities. They believe that harming these groves will bring misfortune and wrath from the gods. They also practice shifting cultivation, which involves rotating crops and fallow periods to maintain soil health and prevent erosion.
 4. **The Angami tribe of Nagaland** has a customary law that regulates hunting and fishing activities. They have a system called 'Dapo', which is a set of rules laid down by the community head to ensure sustainable use of wildlife resources. They also have hunting and fishing reserves, which are areas where hunting and fishing are prohibited or restricted to certain seasons or species.
 5. **Todas in Nilgiri Hills, Tamil Nadu:** The Toda tribe, residing in the Nilgiri Hills of Tamil Nadu, have a unique tradition of protecting their grasslands and sacred groves. They have customary laws that prohibit any harm to their sacred forests and ensure the sustainable use of grasslands for their cattle-rearing practices.

In all these examples, the customary laws of these tribal communities reflect their deep connection with nature and their understanding of the importance of sustainable resource management. These indigenous practices have often contributed to the conservation of biodiversity and the preservation of ecosystems in their respective regions. Recognizing and respecting these customary laws can be a valuable approach to promote environmental conservation in tribal areas.

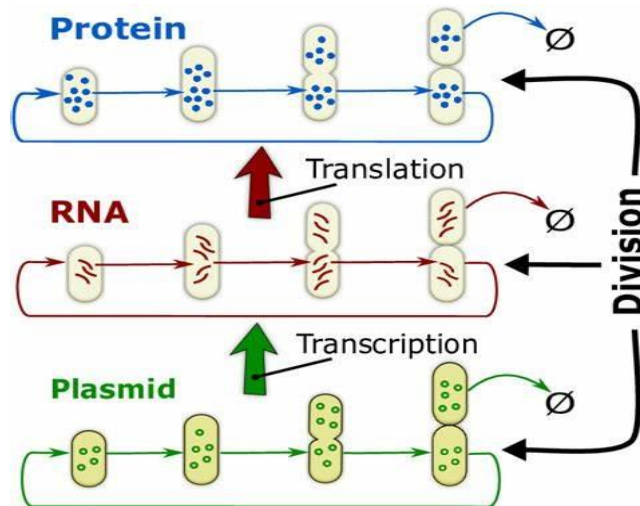
e) Gene expression.

- Gene expression is the process by which the information encoded in a gene is used to produce a functional product, such as a protein or a non-coding RNA. Gene expression involves several steps,

such as transcription, post-transcriptional modifications, RNA transport, translation, and post-translational modifications. Gene expression is regulated by various factors, such as DNA sequences, RNA molecules, proteins, and environmental signals. Gene expression determines the phenotype and function of a cell or an organism.

Here is a note on gene expression that summarizes the main points:

- Gene expression is the process of turning the genetic code into a functional product called ALLELE.
- The genetic code is stored in DNA molecules, which are composed of four nucleotides: adenine (A), thymine (T), cytosine ©, and guanine (G).
- A DNA is a segment of gene that contains the instructions for making a specific product, such as a protein or a non-coding RNA.
- Transcription is the first step of gene expression, in which an enzyme called RNA polymerase copies the DNA sequence of a gene into a complementary RNA sequence. This RNA molecule is called messenger RNA (mRNA).
- Post-transcriptional modifications are the changes that occur to the mRNA after transcription, such as splicing, capping, and tailing. These modifications help the mRNA to be stable, recognized, and transported to the cytoplasm.
- RNA transport is the movement of mRNA from the nucleus to the cytoplasm in eukaryotic cells. This allows the mRNA to interact with ribosomes, which are the sites of protein synthesis.
- Translation is the second step of gene expression, in which the mRNA sequence is read by ribosomes and translated into a chain of amino acids. This chain of amino acids is called a polypeptide or a protein.
- Post-translational modifications are the changes that occur to the protein after translation, such as folding, cutting, adding, or removing chemical groups. These modifications help the protein to be functional, stable, and localized to specific cellular compartments or extracellular spaces.
- Gene regulation is the control of gene expression by various factors that can increase or decrease the production of a gene product. Gene regulation can occur at any step of gene expression, such as transcription initiation, transcription elongation, mRNA processing, mRNA stability, mRNA transport, translation initiation, translation elongation, protein stability, protein modification, or protein interactions.
- Gene regulation can be influenced by DNA sequences that act as binding sites for regulatory proteins or RNAs that can enhance or inhibit gene expression. These sequences can be located near or far from the gene they regulate.
- Gene regulation can also be influenced by environmental signals that can trigger changes in gene expression in response to external stimuli. These signals can be physical (such as light or temperature), chemical (such as hormones or nutrients), or biological (such as pathogens or symbionts).
- Gene expression determines the phenotype and function of a cell or an organism by producing specific products that affect cellular processes and interactions. Different cells and organisms can have different patterns of gene expression depending on their identity and condition.



Q.2)

a) Discuss major species of *Australopithecus* discovered from South and East Africa. Describe the discovery, physical features and significance of Taung baby. (20 marks)

Australopithecus is a genus of extinct hominins that are closely related to modern humans. They lived in Africa from about 4.2 to 1.9 million years ago, during the Pliocene and Pleistocene epochs. The genus includes several species that have been discovered in South and East Africa, such as:

- ***Australopithecus africanus***: This species was the first one to be named and described by Raymond Dart in 1925, based on the fossil skull of the Taung Child. It lived in South Africa from about 3.3 to 2.1 million years ago, and had a brain size of about 440 to 530 cubic centimeters (cc). It had a mixture of ape-like and human-like features, such as a small canine tooth, a flat face, and a bipedal posture.
- ***Australopithecus afarensis***: This species was discovered in Ethiopia and Tanzania from 1974 to 1978, by Donald Johanson and his team. It lived from about 3.9 to 2.9 million years ago, and had a brain size of about 380 to 430 cc. It is best known for the famous fossil skeleton nicknamed Lucy, which was 40% complete and showed evidence of walking upright.
- ***Australopithecus anamensis***: This species was found in Kenya and Ethiopia from 1994 to 1995, by Meave Leakey and her colleagues. It is the oldest known member of the genus, dating back to about 4.2 to 3.9 million years ago. It had a brain size of about 365 cc, and a large canine tooth. It is considered to be ancestral to *A. afarensis*.
- ***Australopithecus garhi***: This species was identified in Ethiopia in 1999, by Berhane Asfaw and his team. It lived about 2.5 million years ago, and had a brain size of about 450 cc. It had large teeth and a long face, but also long legs that suggested it was adapted for running. It is possible that this species was the first one to use stone tools for cutting meat.
- ***Australopithecus sediba***: This species was discovered in South Africa in 2008, by Lee Berger and his son Matthew. It lived about 2 million years ago, and had a brain size of about 420 cc. It had a small body size, but also some advanced features, such as a small tooth row, a projecting nose, and a modern hand. It is thought to be a transitional form between *Australopithecus* and *Homo*.

The Taung Child is the fossilized skull of a young *A. africanus*, estimated to be about 3 years old when it died. It was discovered in 1924 by quarrymen working for the Northern Lime Company in Taung, South Africa. Raymond Dart recognized it as a new species and a primitive hominin in the journal *Nature* in 1925². The Taung Child is significant for several reasons:

- It was the first fossil evidence that human ancestors originated in Africa, contrary to the prevailing view at the time that they came from Asia or Europe.

- It showed that bipedalism preceded brain enlargement in human evolution, as the skull had a foramen magnum (the hole where the spinal cord enters) at the base, indicating an upright posture, but also a small brain capacity of about 405 cc.
- It suggested that early hominins were hunted by large predators, such as eagles or leopards, as the skull had marks of damage and scavenging on the eye sockets and the back of the head.

b) Discuss the Paleolithic environment in light of available evidences with special reference to India. (15 marks)

- **The Palaeolithic period, also known as the Old Stone Age**, spanned from about 2.6 million years ago to 10,000 years ago, and was marked by the emergence and evolution of the earliest human ancestors and their stone tool technology. The Palaeolithic environment in India was influenced by various factors, such as climate change, tectonic movements, sea level fluctuations, vegetation patterns, and animal distribution.
- **The Palaeolithic period in India can be divided into three phases: Lower, Middle, and Upper, based on the type and complexity of the stone tools used by the hominins.**
 1. **The Lower Palaeolithic phase** (about 600,000 to 150,000 years ago) was marked by a cooler and drier climate, with grassland and scrubland vegetation, and large mammals such as elephants, rhinos, and giraffes. The hominins of this phase were *Homo erectus* or *Homo heidelbergensis*, who **used hand axes and choppers made of quartzite or basalt**. They lived in open-air sites near water sources or in caves and rock shelters. They were mainly hunters and gatherers of plant and animal resources
 2. **The Middle Palaeolithic phase** (about 150,000 to 35,000 years ago) witnessed a gradual transition to a warmer and wetter climate, with tropical and temperate forests expanding, and new fauna such as deer, gazelles, and monkeys appearing. The hominins of this phase were *Homo sapiens* or *Homo neanderthalensis*, **who used flake tools made of quartz or chert, and developed new techniques such as Levallois and Mousterian methods**. They lived in more varied habitats than their predecessors, ranging from coastal areas to high altitudes. They were more sophisticated in their subsistence strategies,
 3. **The Upper Palaeolithic phase** (about 35,000 to 10,000 years ago) coincided with the last glacial maximum, which caused a drop in sea level and exposed the continental shelf. The vegetation became more arid and sparser, and the fauna included smaller mammals such as antelopes, hares, and foxes. The hominins of this phase were fully modern *Homo sapiens*, **who used blade tools made of chert or agate, and also produced art and ornaments such as beads, pendants, and paintings**.

c) Elucidate the different forms of malnutrition. Describe protein-calorie malnutrition with suitable examples. (15 marks)

- **Nutritional deficiency diseases, also known as malnutrition or undernutrition**, occur when the body does not receive an adequate amount of essential nutrients required for proper growth, development, and functioning. **These nutrients include macronutrients (carbohydrates, proteins, and fats) and micronutrients (vitamins and minerals)**.
- Nutritional deficiency diseases can have severe health consequences and are prevalent in various parts of the world, including both developed and developing countries.

Here are some common types of nutritional deficiency diseases:

Protein-Energy Malnutrition (PEM): PEM is characterized by a lack of sufficient protein and/or calories in the diet. It includes two major forms:

1. **Kwashiorkor:** This occurs when there is an inadequate intake of protein, resulting in symptoms such as swelling, edema, skin lesions, and stunted growth.

2. **Marasmus:** This occurs when there is a severe deficiency of both calories and protein, leading to severe wasting, muscle and fat loss, weakened immune system, and growth retardation.

Micronutrient Deficiencies:

1. **Iron deficiency anaemia:** Insufficient iron intake leads to a decreased production of red blood cells, causing fatigue, weakness, and impaired cognitive function.
2. **Vitamin A deficiency:** Lack of vitamin A can result in night blindness, increased susceptibility to infections, and impaired growth.
3. **Iodine deficiency disorders:** Inadequate iodine intake can lead to goitre (enlarged thyroid gland) and impaired mental and physical development, known as cretinism in severe cases.
4. **Vitamin D deficiency:** Insufficient vitamin D can cause rickets in children, leading to weakened bones and skeletal deformities.
5. **Vitamin B12 deficiency:** Lack of vitamin B12 can result in pernicious anaemia, neurological problems, and impaired cognitive function.

To tackle the issues related to nutritional deficiency diseases in the present lifestyle, several strategies can be implemented:

1. **Nutrition Education:** Raising awareness about the importance of a balanced diet and the consequences of nutritional deficiencies is crucial.
2. **Food Fortification:** Fortifying staple foods with essential micronutrients (e.g., adding iodine to salt or iron to flour) can improve nutrient intake in populations where specific deficiencies are prevalent.
3. **Dietary Diversification:** Encouraging a diverse diet that includes a variety of fruits, vegetables, whole grains, legumes, lean proteins, and dairy products can help ensure adequate nutrient intake.
4. **Public Health Programs:** Implementing targeted public health programs, especially for vulnerable populations such as pregnant women, infants, and young children, can help prevent and address nutritional deficiencies.
5. **Improved Agricultural Practices:** Enhancing agricultural practices, including crop selection, soil fertility management, and irrigation techniques, can help increase the availability and accessibility of nutrient-rich foods.
6. **Socioeconomic Interventions:** Addressing underlying socioeconomic factors such as poverty, food insecurity, and lack of access to healthcare can help improve nutritional status.
7. **Collaboration and Policy Support:** Collaboration between governments, non-governmental organizations, healthcare providers, researchers, and communities is crucial to developing and implementing effective policies, guidelines, and interventions to tackle nutritional deficiency diseases.

By implementing these strategies, it is possible to address the issues related to nutritional deficiency diseases and improve the overall nutritional status and well-being of populations. However, it requires a multi-sectoral approach, long-term commitment, and sustained efforts from various stakeholders.

Q.3)

a) What is hominization process? Discuss the major trends in human evolution with the help of suitable examples and illustrations. (20 marks)

- Hominization is the process of becoming human, and it involves the evolutionary transformation of hominoids (apes) into hominins (human ancestors and relatives). Hominization is studied from different perspectives, such as palaeontology, archaeology, genetics, and anthropology. Hominization is not a single event, but a gradual and complex process that spans millions of years and involves multiple species and lineages.

Some of the major trends in human evolution are:

- **Bipedalism:** This is the ability to walk upright on two legs, which is one of the defining features of hominins. Bipedalism has many advantages, such as freeing the hands for carrying objects,

manipulating tools, and gesturing, as well as improving the vision, thermoregulation, and locomotion efficiency. Bipedalism also has some costs, such as increased vulnerability to predators, spinal problems, and obstetric difficulties. The earliest evidence of bipedalism comes from the fossil footprints of *Australopithecus afarensis* at Laetoli, Tanzania, dated to about 3.6 million years ago.

- **Encephalization:** This is the increase in brain size and complexity relative to body size, which is another distinctive feature of hominins. Encephalization is associated with higher cognitive abilities, such as language, memory, reasoning, and social skills. Encephalization also requires more energy, oxygen, and nutrients, as well as longer periods of growth and development. The average brain size of hominins increased from about 400 cubic centimeters (cc) in *Australopithecus* to about 1350 cc in *Homo sapiens*.
- **Tool use:** This is the ability to modify and manipulate natural materials for various purposes, such as hunting, processing food, making shelter, and expressing culture. Tool use reflects the intelligence, creativity, and adaptability of hominins. Tool use also influences the evolution of other traits, such as bipedalism, encephalization, and dentition. The oldest evidence of tool use comes from the stone tools of *Homo habilis* at Olduvai Gorge, Tanzania, dated to about 2.6 million years ago.
- **Culture:** This is the shared system of symbols, values, beliefs, and behaviours that shape the identity and behaviour of a group of hominins. Culture enables hominins to communicate, cooperate, learn, and innovate. Culture also influences the evolution of other traits, such as language, morality, and art. The oldest evidence of culture comes from the symbolic artifacts and ornaments of *Homo sapiens* at Blombos Cave, South Africa, dated to about 100,000 years ago.
- **Evolution from Australopithecines** -> *Homo erectus* -> Neanderthal -> *Homo sapiens*

These are some of the major trends in human evolution that illustrate how hominins became more human-like over time. However, human evolution is not a linear or simple process, but a branching and dynamic one that involves diversity, variation, interaction, and adaptation among different populations and species

b) How did Clifford Geertz look at religion? Differentiate between Anthropological and Psychological approaches to the study of religion. (15 marks)

- Clifford Geertz was an American anthropologist who looked at religion as a cultural system of symbols that create and express meanings, moods, and motivations for human beings.
- He defined religion as “a system of symbols which acts to establish powerful, pervasive, and long-lasting moods and motivations in men by formulating conceptions of a general order of existence and clothing these conceptions with such an aura of factuality that the moods and motivations seem uniquely realistic”.
- He argued that religion provides a model of reality and a model for reality, that is, a way of understanding the world and a way of acting in the world.
- He also emphasized the importance of interpreting religious symbols in their cultural context, using a method he called “thick description”.
- Anthropological and psychological approaches to the study of religion are different in their focus, methods, and assumptions.
- **Anthropological approaches** tend to view religion as a social and cultural phenomenon that reflects and shapes human behaviour, values, and identity. They use methods such as ethnography, comparative analysis, and historical reconstruction to examine the diversity and complexity of religious beliefs and practices across time and space. They also try to understand religion from the perspective of the people who practice it, without imposing their own biases or judgments.
- **Psychological approaches** tend to view religion as a mental and emotional phenomenon that influences and is influenced by human cognition, personality, and development. They use methods such as experiments, surveys, and case studies to investigate the psychological functions and effects of religious experience, feelings, thoughts, and attitudes. They also try to explain religion in terms of universal or general principles or theories, such as Freud’s psychoanalysis, Jung’s archetypes, or Maslow’s hierarchy of needs

c) **What is mixed-longitudinal method of studying human growth? Discuss its merits and demerits (15 marks)**

- The mixed-longitudinal method of studying human growth is a method that combines the cross-sectional and longitudinal methods. In this method, a group of children is followed over a period of time, but some children leave the study and others join it as new entrants at different ages. This way, the study can have both longitudinal and cross-sectional elements, and can provide more information than either method alone.

Some of the merits of the mixed-longitudinal method are:

- It can overcome some of the limitations of the cross-sectional and longitudinal methods, such as sample size, attrition, cohort effects, and age effects.
- It can estimate the population mean and variation of growth parameters, such as stature and increment, more accurately than the cross-sectional method.
- It can capture the individual variations and trends in growth rates, such as the adolescent spurt, better than the cross-sectional method.
- It can reduce the time and cost required for a pure longitudinal study, while still providing valuable longitudinal data.

Some of the demerits of the mixed-longitudinal method are:

- It can be more complex and difficult to design, implement, and analyse than the cross-sectional and longitudinal methods.
- It can still suffer from some of the problems of the cross-sectional and longitudinal methods, such as selection bias, measurement error, and missing data.
- It can introduce new sources of error and uncertainty, such as the effects of different sampling methods, time intervals, and age groups on the results.

Q.4)

a) **Discuss the role of marriage regulations in traditional societies in India for strengthening social solidarity. (20marks)**

There are various types of marriage regulations in traditional societies that govern who can marry whom, how the marriage is performed, and what are the rights and obligations of the spouses and their families. Some of the common types of marriage regulations are:

- 1) Preferential marriages
- 2) Prescribed marriages
- 3) Proscribed marriages

Main marriage regulations are Preferential marriages, those are

1. **Endogamy and exogamy:** These are rules that specify the group or category from which the spouse must be chosen or avoided. Endogamy requires a person to marry within a certain group, such as caste, sub-caste, clan, tribe, or religion. Exogamy forbids a person to marry within a certain group, such as gotra, sapinda, or village. These rules help to maintain the identity and boundaries of the group, as well as to avoid inbreeding and genetic disorders.
2. **Monogamy and polygamy:** These are rules that determine the number of spouses a person can have at a time. Monogamy allows a person to have only one spouse, while polygamy allows a person to have more than one spouse. Polygamy can be further divided into polygyny (a man having multiple wives) and polyandry (a woman having multiple husbands). These rules are influenced by various factors, such as gender ratio, economic status, social norms, and religious beliefs.
3. **Hypergamy and hypogamy:** These are rules that regulate the social status or rank of the spouse in relation to the other. Hypergamy means marrying someone of higher status or rank, while hypogamy means marrying someone of lower status or rank. These rules affect the mobility and prestige of the

individuals and families involved in the marriage, as well as the distribution of resources and power in the society.

4. **Levirate and sororate:** These are rules that prescribe the marriage of a widow or widower to a relative of the deceased spouse. Levirate means marrying the brother or another male relative of the deceased husband, while sororate means marrying the sister or another female relative of the deceased wife. These rules help to provide support and protection to the bereaved spouse and children, as well as to preserve the property and lineage of the deceased spouse.

Marriage regulations in traditional societies in India play an important role in strengthening social solidarity, which is the sense of belonging and cooperation among the members of a society. By defining and regulating the kinship ties, resource exchanges, role expectations, and value orientations that accompany marriage, they create a sense of order, stability, harmony, and identity among the people. They also facilitate social integration and cohesion by promoting mutual respect, tolerance, and cooperation among different groups and categories within the society.

b) Discuss various methods of personal identification based on skeletal remains. (15 marks)

Personal identification based on skeletal remains is the process of determining the identity of an individual whose body is decomposed, burned, mutilated, or otherwise unrecognizable. This process is important for legal, medical, and humanitarian reasons, such as solving crimes, establishing cause of death, and identifying victims of disasters or conflicts. There are various methods of personal identification based on skeletal remains, such as:

1. **Anthropometry:** This is the measurement and comparison of the dimensions and proportions of the bones and skull. This method can provide information on the sex, age, height, weight, and race of the individual, as well as any anomalies or injuries. For example, the pelvic bone can indicate the sex of the individual, as females have wider and rounder pelvises than males. The length of the long bones can indicate the height of the individual, as there is a correlation between bone length and stature. The shape and size of the skull can indicate the race of the individual, as different racial groups have different cranial features.
2. **DNA analysis:** This is the extraction and examination of the genetic material from the bones or teeth. This method can provide information on the identity and kinship of the individual, as well as any genetic disorders or diseases. For example, DNA analysis can compare the DNA profile of the individual with those of relatives or databases to establish a match. DNA analysis can also reveal the sex and ancestry of the individual, as well as any mutations or markers that indicate certain traits or conditions.
3. **Dental analysis:** This is the inspection and comparison of the teeth and dental work. This method can provide information on the identity and health of the individual, as well as any habits or lifestyle factors. For example, dental analysis can compare the dental records of the individual with those of missing persons or databases to establish a match. Dental analysis can also reveal the age and diet of the individual, as well as any dental diseases or treatments.
4. **Radiographic analysis:** This is the use of X-rays or other imaging techniques to visualize and compare the internal structures of the bones or teeth. This method can provide information on the identity and history of the individual, as well as any trauma or pathology. For example, radiographic analysis can compare the radiographs of the individual with those of antemortem records or databases to establish a match. Radiographic analysis can also reveal the age and growth of the individual, as well as any fractures or infections.

These are some of the methods of personal identification based on skeletal remains that can help to solve forensic cases and humanitarian issues. However, these methods are not always conclusive or reliable, and they may require additional evidence or confirmation from other sources.

c) Identify the major Mesolithic sites and describe the typo-technological features with special reference to India (15 Marks)

- **The Mesolithic period in India is characterized by the appearance of microliths, which are small stone tools with sharp edges and points.**
- Microliths were used as composite tools, such as arrowheads, knives, and sickles, by attaching them to wooden or bone handles. The Mesolithic people also used macroliths, which are larger stone tools, such as scrapers and axes, as well as bone and antler tools, such as harpoons and needles.
- **The Mesolithic culture in India reflects a transition from hunting and gathering to fishing and farming, as well as an increase in artistic and symbolic expression.**

Some of the major Mesolithic sites in India are:

1. **Bagor:** This is a site located on the bank of the Kothari River in Rajasthan. It dates back to about 10,000 to 6,000 years ago. It has yielded evidence of fishing, hunting, domestication of animals, and burial practices. It also has rock paintings depicting animals and humans.
2. **Langhnaj:** This is a site situated near the Sabarmati River in Gujarat. It dates back to about 12,000 to 5,000 years ago. It has revealed evidence of hunting, fishing, plant gathering, and pottery making. It also has bone tools, such as points and awls.
3. **Adamgarh:** This is a site located near the Narmada River in Madhya Pradesh. It dates back to about 9,000 to 4,000 years ago. It has shown evidence of fishing, hunting, domestication of animals, and cultivation of crops. It also has rock paintings depicting animals, humans, and geometric designs.
4. **Sarai Nahar Rai:** This is a site situated near the Ganga River in Uttar Pradesh. It dates back to about 8,000 to 5,000 years ago. It has indicated evidence of fishing, hunting, plant gathering, and pottery making. It also has microliths made of chert and quartzite.

Section B

Q.5) Write notes on the following in about 150 words each: (10 * 5 = 50 Marks)

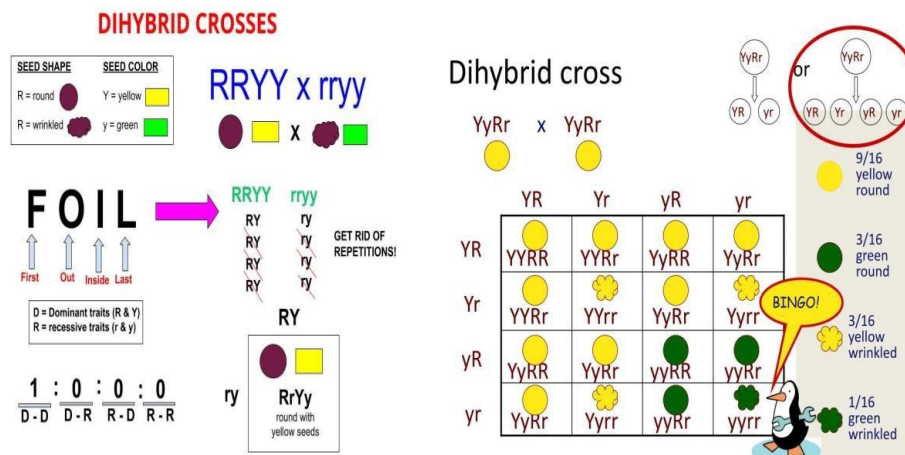
a) Polygenic Inheritance

- **Mendelian genetics, also known as classical genetics, refers to the principles of inheritance formulated by Gregor Mendel based on his experiments with pea plants in the 19th century.**
- While Mendel primarily studied pea plants, his principles are applicable to many organisms, including humans. **The two main categories of inheritance in Mendelian genetics are single-factor inheritance and multifactor inheritance.**

Multifactor Inheritance (Polygenic Inheritance):

- **Mendel's Experimental Method:** Mendel primarily focused on single-gene traits, but many traits in humans, **such as height, skin colour, and intelligence**, are influenced by multiple genes. These traits are known as **polygenic or multifactorial traits**.
- Mendel did not specifically study polygenic inheritance, but his principles form the foundation for understanding the inheritance of complex traits.
- **The principle:** In polygenic inheritance, multiple genes contribute to the phenotype, and each gene may have multiple alleles. **The combined effects of these genes result in a continuous range of phenotypes rather than distinct categories.** For example, height in humans is influenced by the interaction of multiple genes, and individuals can exhibit a wide range of heights.

- **Quantitative Traits:** Polygenic traits are often referred to as quantitative traits because they can be measured on a continuous scale. Their inheritance follows the principles of probability and statistical analysis.



In multifactorial inheritance, family studies can also help identify patterns and estimate the contribution of genetic and environmental factors to the trait. By studying families with individuals displaying a range of phenotypes, researchers can perform statistical analyses to determine the relative contributions of genetic and environmental factors to the trait variation.

Overall, Mendelian genetics provides a fundamental understanding of inheritance patterns, and family studies play a crucial role in applying these principles to human populations.

b) Prehistoric significance of Rakhigarhi

Rakhigarhi is a prehistoric site that shows the remarkable achievements of the Indus Valley Civilization, one of the oldest and most advanced urban cultures in the world. Here are some points to note about its significance:

- Rakhigarhi is the largest and oldest Harappan site, covering an area of 550 hectares and dating back to 2500 BCE.
- Rakhigarhi reveals the sophisticated urban planning and architecture of the Harappans, who built well-planned streets, drainage systems, granaries, warehouses, and public baths.
- Rakhigarhi demonstrates the technological innovations and trade networks of the Harappans, who used standardized weights and measures, seals and scripts, pottery and metalwork, and exchanged goods with distant regions like Mesopotamia and Central Asia.
- Rakhigarhi provides insights into the religious beliefs and burial practices of the Harappans, who worshipped various deities, animals, and natural forces, and buried their dead with personal ornaments and pottery.
- Rakhigarhi offers clues to the genetic diversity and ancestry of the Harappans, who were a mixed population of different groups, such as hunter-gatherers, farmers, and pastoralists.

c) Glottochronology.

Glottochronology is a method of studying the history of languages using the rate of change in their words. Here are some points about it:

- It uses a list of basic words that are common to all languages and compares how many of them are shared or replaced by different languages over time.
- It estimates how long ago two languages diverged from a common ancestor or when an ancient language existed by applying a mathematical formula.

- It was developed by Morris Swadesh in the 1950s and is based on two assumptions: that there is a stable core vocabulary in all languages that is resistant to borrowing, and that the replacement of words happens at a constant or average rate across all languages and cultures.
- It has been criticized for its simplicity and accuracy, as many factors can affect the vocabulary and evolution of languages, such as culture, geography, contact, and variation.
- It is also limited by the availability and reliability of linguistic data and evidence.
- It is sometimes used in conjunction with other methods, such as archaeology, genetics, and historical linguistics, to reconstruct the past and understand the origin and development of human languages.

d) Menopausal symptoms

Menopausal symptoms are the changes that occur in a woman's body as she approaches the end of her reproductive years. Menopause is the stage when the ovaries stop producing estrogen and progesterone, the hormones that regulate menstruation and fertility. Menopause usually occurs around the age of 51, but it can vary from person to person. Some of the common symptoms of menopause are:

- **Irregular or missed periods:** As the ovaries produce less hormones, the menstrual cycle becomes less predictable and eventually stops completely.
- **Hot flashes and night sweats:** These are sudden sensations of heat, sweating, and flushing that can affect the face, neck, chest, and other parts of the body. They are caused by changes in the hypothalamus, the part of the brain that controls body temperature.
- **Vaginal dryness and discomfort:** The decrease in estrogen levels can reduce the blood flow and lubrication in the vagina, leading to dryness, itching, irritation, and pain during sexual intercourse.
- **Mood changes and emotional distress:** The hormonal fluctuations can affect the mood and mental health of some women, causing them to feel sad, anxious, irritable, or depressed.
- **Sleep problems:** The hot flashes, night sweats, and mood changes can interfere with the quality and quantity of sleep, leading to insomnia, fatigue, and difficulty concentrating.
- **Physical changes:** The lower levels of estrogen and progesterone can also affect other parts of the body, such as the skin, hair, breasts, bones, muscles, joints, heart, and bladder. Some of the physical changes that may occur during menopause are:
 - **Thinning hair and dry skin:** The loss of estrogen can reduce the collagen and elastin in the skin and hair, making them more fragile and prone to damage.
 - **Loss of breast fullness:** The breasts may lose their shape and firmness as the glandular tissue shrinks and the fat tissue increases.
 - **Weight gain and changes in body fat distribution:** The metabolic rate may slow down and the muscle mass may decrease during menopause, leading to weight gain and more fat accumulation around the abdomen.
 - **Osteoporosis and increased risk of fractures:** The lower levels of estrogen can affect the bone density and strength, making them more brittle and susceptible to breaks.
 - **Increased risk of cardiovascular disease:** The lower levels of estrogen can also affect the blood vessels and cholesterol levels, increasing the risk of high blood pressure, heart attack, stroke, and other heart problems.
 - **Urinary problems:** The loss of estrogen can weaken the pelvic floor muscles and the lining of the urethra, causing urinary incontinence (leaking urine), urinary tract infections (UTIs), or urinary urgency (feeling a strong need to urinate).

Not all women experience all these symptoms or to the same degree. Some women may have mild or no symptoms at all, while others may have severe or bothersome symptoms that affect their quality of life. There are various ways to manage menopausal symptoms, such as lifestyle changes (e.g., healthy diet, regular exercise, stress management), hormone therapy (e.g., estrogen or progesterone pills, patches, creams), or complementary therapies (e.g., herbal remedies, acupuncture). However,

not all treatments are suitable or effective for everyone. Therefore, it is important to consult a doctor before starting any treatment for menopausal symptoms.

e) William Ogburn and Cultural lag

William Ogburn was an American sociologist who developed the concept of cultural lag, which refers to the gap between material and non-material culture caused by unequal rates of change. Here is a note on his theory and its implications:

- Material culture consists of the physical objects and artifacts that are created and used by a society, such as technology, tools, clothing, and buildings. Non-material culture consists of the ideas, beliefs, values, and norms that shape and guide the behaviour of a society, such as religion, language, law, and morality.
- Ogburn argued that material culture tends to change faster and more frequently than non-material culture, which is more resistant and stable. This creates a mismatch or a lag between the two aspects of culture, leading to social problems and conflicts.
- Ogburn coined the term cultural lag in his 1922 work *Social Change with Respect to Culture and Original Nature*. He identified four stages of cultural change: invention, accumulation, diffusion, and adjustment. Invention is the creation of new material or non-material elements of culture. Accumulation is the increase in the number and variety of cultural elements. Diffusion is the spread of cultural elements from one group to another. Adjustment is the process of adapting to the new cultural conditions and resolving the conflicts caused by cultural lag.
- Ogburn's classic example of cultural lag was the period of adaptation when automobiles became faster and more efficient. It took some time for society to start building infrastructure that would cater mainly to the new vehicles, such as roads, bridges, traffic lights, and parking lots. This is because people were not comfortable with change and it took them a while to adjust their habits and norms.
- Cultural lag can also occur in other domains of society, such as politics, economics, education, health, family, and religion. For instance, Ogburn pointed out that the political system was lagging behind the economic system in terms of regulation and taxation. He also noted that the family structure was lagging behind the changes in women's roles and rights in society.
- Cultural lag can have positive or negative consequences for society. On one hand, it can preserve valuable traditions and customs that provide stability and continuity for a culture. On the other hand, it can hinder progress and innovation and cause social unrest and dissatisfaction among different groups. Therefore, Ogburn suggested that society should strive to achieve a balance between material and non-material culture by promoting social learning and communication.

Q.6)

a) Critically discuss the controversies related to fieldwork of Bronislaw Malinowski and Margaret Mead? (20 Marks)

Bronislaw Malinowski and Margaret Mead were two influential anthropologists who conducted fieldwork in different parts of the world in the early 20th century. Their fieldwork and publications have been widely acclaimed, but also criticized and controversial for various reasons. Some of the controversies related to their fieldwork are:

- **Bronislaw Malinowski's fieldwork in the Trobriand Islands of Papua New Guinea** between 1914 and 1918 was pioneering in its use of **participant observation and ethnography**. He described the complex social organization, economic practices, and religious beliefs of the Trobriand Islanders, especially their system of exchange known as the Kula ring. However, **his work has been accused of being ethnocentric, sexist, and biased**. Some critics have argued that **he approached the Trobriand culture from a Eurocentric perspective, imposing his own categories and values on them**. Others have claimed that **he ignored or misrepresented the role and status of women, children, and**

minorities in the Trobriand society. Still others have challenged his methods and conclusions, suggesting that he manipulated or fabricated some of his data.

- **Margaret Mead's fieldwork** in Samoa between 1925 and 1926 was influential in its exploration and comparison of different sexual mores and customs. She argued that Samoa was a sexually permissive society, where adolescents experienced little stress or conflict during their transition to adulthood. She contrasted this with the American society, where she saw sexual repression and anxiety as major sources of social problems. However, her work has also been disputed and debunked by some scholars and critics. **Some critics have alleged that she was naive and gullible, relying on unreliable informants who lied or joked with her.** Others have asserted that she was ideologically driven and agenda-driven, seeking to support her own views on sexuality and culture. Still others have pointed out that **she overlooked or ignored the diversity and complexity of the Samoan culture, such as the role of religion, violence, and hierarchy**

b) Discuss the impact of globalization on the economic systems of indigenous communities? (15marks)

Here is a note on the impact of globalization on the economic systems of indigenous communities in Indian states:

Globalization is the process of integration and interdependence of the world economy, culture, and communication. It has both positive and negative effects on different aspects of human life, including the economic systems of indigenous communities in India. Indigenous communities, also known as tribal or Adivasi, are the original inhabitants of various regions in India, who have their own distinct culture, language, and way of life. According to the 2011 census, there are about 104 million tribal people in India, constituting 8.6% of the total population.

1. **The economic systems of indigenous communities** in India are largely based on natural resources, such as land, forest, water, and minerals. They practice subsistence agriculture, animal husbandry, fishing, hunting, gathering, and handicrafts. They also have their own traditional institutions and norms for managing and sharing these resources among themselves and with other communities. However, these economic systems have been adversely affected by the forces of globalization in various ways.
2. **One of the major impacts of globalization on the economic systems of indigenous communities in India** is the loss of land and forest rights. Due to the liberalization and privatization policies of the Indian government since the 1990s, many multinational corporations and domestic industries have acquired large tracts of land and forest areas for mining, hydroelectric projects, industrial development, tourism, and urbanization. This has resulted in the displacement and dispossession of millions of tribal people from their ancestral lands and habitats². For example, in Odisha, more than 40% of the mineral leases are located in tribal areas, affecting the livelihoods and environment of the local communities³. Similarly, in Jharkhand, more than 1.5 million tribal people have been displaced due to mining and industrial projects since 1951.
3. **Another impact of globalization on the economic systems of indigenous communities in India is the loss of biodiversity and traditional knowledge.** The rapid expansion of commercial agriculture, monoculture plantations, genetically modified crops, and biotechnology has eroded the diversity of crops and livestock that the tribal people have cultivated and domesticated for centuries. This has also reduced their food security and nutritional status. Moreover, the patenting and appropriation of their traditional knowledge and practices by multinational corporations and research institutions has deprived them of their intellectual property rights and cultural identity. For example, in 1997, a US company obtained a patent on the use of neem as a biopesticide, which was challenged by an Indian NGO as a case of biopiracy.
4. **A third impact of globalization on the economic systems of indigenous communities in India is the marginalization and exploitation in the market economy.** The integration of the Indian economy with the global market has exposed the tribal people to new opportunities as well as challenges. On one hand, some tribal people have benefited from selling their products and services to national and international markets, such as handicrafts, organic farming, ecotourism, etc. On the other hand,

many tribal people have faced discrimination, exploitation, indebtedness, and poverty due to their lack of education, skills, bargaining power, and access to credit and infrastructure. For example, in Maharashtra, many tribal farmers have been trapped in a cycle of debt and distress due to the failure of cotton crops and low prices in the market.

In conclusion, globalization has had a significant impact on the economic systems of indigenous communities in India. It has brought both opportunities and threats to their livelihoods, resources, culture, and identity. Therefore, there is a need for a balanced approach that respects their rights and interests while promoting their development and empowerment.

c) Describe the practical applications of DNA technology in the current scenario.? (15 Marks)

Here is a note on the practical applications of DNA technology in the current scenario in India:

DNA technology is the manipulation of genetic material for various purposes, such as diagnosis, treatment, identification, and improvement of living organisms. DNA technology has many applications in different fields, such as medicine, agriculture, forensics, and biotechnology. Some of the current applications of DNA technology in India are:

1. **Medicine:** DNA technology is used to produce recombinant DNA therapeutic products, such as insulin, interferon, vaccines, growth hormone, and clotting factors. These products are used to treat various diseases, such as diabetes, cancer, hepatitis B, anaemia, and haemophiliac. DNA technology is also used to diagnose genetic disorders, such as thalassemia, cystic fibrosis, and sickle cell anaemia. DNA technology can also help in gene therapy, which is the delivery of functional genes to replace defective or missing ones in patients with genetic diseases.
2. **Agriculture:** DNA technology is used to produce genetically modified organisms (GMOs), such as crops and animals. GMOs have enhanced traits, such as resistance to pests, diseases, drought, and herbicides. They also have improved quality, yield, and nutritional value. Some examples of GMOs in India are Bt cotton, Bt brinjal, golden rice, and transgenic fish. DNA technology can also help in marker-assisted selection (MAS), which is the use of molecular markers to identify and select desirable traits in plants and animals.
3. **Forensics:** DNA technology is used to establish the identity of individuals or groups based on their DNA profiles. DNA profiles are unique patterns of DNA fragments that can be obtained from biological samples, such as blood, saliva, hair, or bones. DNA technology can help in solving crimes, finding missing persons, identifying disaster victims, determining paternity or kinship, and tracing ancestry. The DNA Technology (Use and Application) Regulation Bill 2019 aims to regulate the use of DNA technology for these purposes and to establish a national and regional DNA data bank.
4. **Biotechnology:** DNA technology is used to create novel products and processes using living organisms or their parts. Biotechnology has applications in various sectors, such as health care, agriculture, environment, energy, and industry. Some examples of biotechnology products in India are biofertilizers, biopesticides, biofuels, biosensors, biopolymers, and bioinformatics. Biotechnology can also help in developing new drugs, vaccines, enzymes, antibodies, and diagnostics using recombinant DNA technology

Q.7)

a) Describe various methods of qualitative data analysis. Highlight some popular computer software used in qualitative analysis? (20 marks)

Qualitative data analysis is the process of examining and interpreting non-numerical data, such as text, audio, video, or images, to discover meaningful patterns and themes. There are various methods of qualitative data analysis, depending on the research question, the type of data, and the analytical approach. Some of the common methods are:

1. **Content analysis:** This method involves coding and categorizing textual data based on predefined or emergent themes, concepts, or keywords. Content analysis can be used to analyse various types of data, such as documents, interviews, surveys, social media posts, etc. Content analysis can be performed manually or with the help of computer software.
2. **Thematic analysis:** This method involves identifying and describing the main themes or topics that emerge from a set of qualitative data. Thematic analysis can be used to explore the meanings and experiences of participants, as well as the patterns and relationships among them. Thematic analysis can be performed inductively (without a predefined framework) or deductively (based on a theoretical model or prior research).
3. **Narrative analysis:** This method involves analysing the stories or narratives that people talk about their lives, events, or phenomena. Narrative analysis can be used to understand how people construct and communicate their identities, values, beliefs, and emotions through storytelling. Narrative analysis can be performed in different ways, such as structural analysis (focusing on the form and sequence of the story), thematic analysis (focusing on the content and meaning of the story), or dialogical analysis (focusing on the interaction and context of the story).
4. **Discourse analysis:** This method involves analysing the use of language and communication in social contexts. Discourse analysis can be used to examine how people construct and negotiate meanings, identities, power relations, and ideologies through language. Discourse analysis can be performed at different levels, such as micro-level (focusing on the details and features of speech or text), meso-level (focusing on the patterns and structures of discourse), or macro-level (focusing on the social and cultural influences of discourse).

There are many computers software that can assist researchers in performing qualitative data analysis. Some of the popular ones are:

- **MAXQDA:** This is an all-in-one software for qualitative and mixed methods data analysis. It can handle various types of data, such as text, audio, video, images, PDFs, etc. It offers a range of features and functions, such as coding, memoing, querying, visualizing, mapping, exporting, etc.
- **NVivo:** This is one of the most widely used software for qualitative data analysis. It can also handle various types of data, such as text, audio, video, images, social media data, etc. It offers similar features and functions as MAXQDA.
- **Cauliflower:** This is a no-code software that uses artificial intelligence to analyse qualitative data. It can process text data from surveys, reviews, social media posts, etc. It offers ready-made visualizations and insights based on themes and sentiments.
- **Quirkos:** This is a simple and intuitive software for qualitative data analysis. It can process text data from documents, interviews, surveys, etc. It offers a colourful interface and interactive graphs to code and explore data.

b) What assumptions must be met for a population to be in genetic equilibrium? Explain the importance of genetic equilibrium (15 Marks)

Here is a note on the assumptions that must be met for a population to be in genetic equilibrium and the importance of genetic equilibrium:

- **Genetic equilibrium** is the condition of an allele or genotype in a gene pool (such as a population) where the frequency does not change from generation to generation. Genetic equilibrium describes a theoretical state that is the basis for determining whether and in what ways populations may deviate from it. One of the most commonly used models for studying genetic equilibrium is the Hardy-Weinberg principle, which provides a mathematical framework for predicting the genotype frequencies in a population based on the allele frequencies.

According to the Hardy-Weinberg principle, a population can be in genetic equilibrium if the following assumptions are met:

- No gene mutations occurring at that locus or the loci associated with the trait
 - A large population sizes
 - Limited-to-no immigration, emigration, or migration (gene flow)
 - No natural selection on that locus or trait
 - Random mating (panmixis)
1. These assumptions are rarely met in nature, as there are always factors that can alter the allele frequencies in a population, **such as mutation, genetic drift, gene flow, natural selection, and non-random mating**. Therefore, genetic equilibrium is more of an idealized situation that serves as a null hypothesis for testing whether evolution is occurring in a population.
 2. The importance of genetic equilibrium lies in **its ability to provide a baseline for measuring evolutionary change**. By comparing the observed genotype frequencies in a population with the expected genotype frequencies under genetic equilibrium, researchers can estimate how much and in what direction the population is evolving. For example, if the observed genotype frequency of a recessive trait is lower than the expected genotype frequency under genetic equilibrium, it may indicate that natural selection is favouring the dominant trait. Alternatively, if the observed genotype frequency of a heterozygous trait is higher than the expected genotype frequency under genetic equilibrium, it may indicate that heterozygotes have an advantage over homozygotes (heterozygote advantage).
 3. **Genetic equilibrium can also help researchers understand the effects of different evolutionary forces on different types of traits**. For example, traits that are controlled by many genes (polygenic traits) are more likely to be influenced by natural selection than traits that are controlled by one gene (monogenic traits). This is because natural selection can act on each gene independently and produce a continuous variation of phenotypes. On the other hand, traits that are influenced by environmental factors (plastic traits) are more likely to be influenced by gene flow than traits that are determined by genes alone (fixed traits). This is because gene flow can introduce new alleles into a population and increase its genetic diversity.

In conclusion, genetic equilibrium is a theoretical state that assumes no evolutionary forces acting on a population. It is important for studying evolutionary change because it provides a reference point for comparing the actual allele and genotype frequencies in a population. Genetic equilibrium can also help researchers understand how different evolutionary forces affect different types of traits

c) Discuss political and methodological aspects of national character studies. Elucidate the contemporary relevance of such studies. (15Marks)

National character studies are a set of anthropological studies that aim to describe the enduring personality characteristics and unique lifestyles found among the populations of particular national states. These studies emerged during and after World War II, when some anthropologists believed that understanding the cultural and psychological differences among nations could help explain their sociopolitical behaviours and conflicts. However, these studies also faced many political and methodological challenges, such as:

- The risk of reinforcing stereotypes and prejudices about other nations, especially those that were considered enemies or rivals in the war¹. Some national character studies were accused of being biased or ethnocentric, and of serving the interests of certain powers or ideologies.

- The difficulty of defining and measuring national character, which is a complex and dynamic phenomenon that may vary across regions, classes, genders, generations, and historical contexts. The variables considered in these studies were often neither comparable nor rigorously defined.
- The lack of empirical evidence and theoretical coherence to support the claims of national character studies. Some critics argued that these studies were based on anecdotal observations, subjective interpretations, and untested assumptions. They also pointed out the logical flaws and inconsistencies in the arguments of national character theorists.

The contemporary relevance of national character studies is a matter of debate among scholars. On one hand, there are scholars who cite benefits in pursuing national character studies, such as:

- The contribution to the modern anthropological understanding of the rise of nations and international relations. National character studies helped to explore the cultural dimensions of nationalism, identity, and power in the global context.
- The recognition of the diversity and complexity of human societies and cultures. National character studies challenged the notion of universal standards of behaviour and values, and acknowledged the existence of multiple perspectives and worldviews.
- The application to various fields and disciplines, such as psychology, sociology, education, business, and politics. National character studies provided insights into the motivations, attitudes, preferences, and behaviours of different groups of people, which could be useful for designing policies, programs, interventions, and strategies.

On the other hand, there are scholars who question the validity and usefulness of national character studies, such as:

- The criticism of the essentialist and deterministic nature of national character studies. These studies tended to assume that national character was a fixed and stable trait that determined the fate and actions of nations. They also ignored the role of agency, choice, change, and contingency in human affairs.
- The awareness of the limitations and biases of national character studies. These studies were often influenced by the political agendas and cultural backgrounds of the researchers. They also reflected the historical circumstances and dominant discourses of their time.
- The emergence of alternative approaches and paradigms to study human cultures and societies. These approaches include cultural relativism, cultural determinism, cultural diffusionism, cultural symbiosis, cultural hybridity, postmodernism, postcolonialism, globalization, multiculturalism, etc. These approaches offer more nuanced and dynamic ways to understand the diversity and complexity of human phenomena.

In conclusion, national character studies are a controversial but influential set of anthropological studies that have both advantages and disadvantages. They have contributed to the knowledge and appreciation of human cultures and societies, but they have also faced many criticisms and challenges. They may still have some relevance in the contemporary world, but they need to be revised and updated to reflect the changing realities and perspectives of human beings.

Q.8)

a) Critically examine Arjun Appadurai's conceptualization of global cultural economy? (20 Marks)

- Arjun Appadurai's conceptualization of global cultural economy is a way of understanding how cultures and societies interact and influence each other in the context of globalization.
- Appadurai proposes that there are five dimensions of global cultural flow that shape the world: ethnoscapas, technoscapas, mediascapas, finanscapas, and ideoscapas. These are not fixed or

bounded entities, but rather fluid and dynamic landscapes that are constantly changing and overlapping.

- Appadurai argues that these flows are disjunctive and chaotic, meaning that they do not follow a coherent or predictable pattern, but rather create gaps and differences among cultures and regions. He also suggests that these flows are scalar and contextual, meaning that they operate at different levels and depend on the specific situations and actors involved.
- Appadurai's conceptualization of global cultural economy has been influential in the fields of anthropology, communication, and cultural studies, as it offers a way of analysing the complexity and diversity of human phenomena in the global era.
- It also challenges the binary oppositions and hierarchical classifications that were imposed by colonialism and modernity, such as global vs. local, north vs. south, east vs. west, etc. Appadurai emphasizes the role of imagination as a social practice that enables people to create new meanings and identities in response to the global flows.
- He also recognizes the potential of grassroots globalization, which is the bottom-up mobilization of people and organizations to address social issues and promote justice and equity.
- However, Appadurai's conceptualization of global cultural economy has also been criticized for some limitations and weaknesses. Some critics argue that Appadurai is too optimistic and celebratory about globalization, and that he ignores or downplays its negative effects, such as inequality, exploitation, violence, and homogenization. Some also question the validity and usefulness of his scapes theory, as it is based on vague and abstract concepts that are hard to define and measure empirically.
- Some also point out that Appadurai does not provide a clear explanation of how the global flows are produced and regulated, and what are the power relations and structures that shape them. Some also suggest that Appadurai's approach is too descriptive and relativistic, and that it lacks a normative and critical perspective on how to evaluate and transform the global cultural economy.

In conclusion, Appadurai's conceptualization of global cultural economy is a valuable contribution to the understanding of globalization and its cultural implications. It offers a way of capturing the diversity and dynamism of human cultures and societies in the global context. However, it also has some limitations and challenges that need to be addressed and overcome. It needs to be more attentive to the dark side of globalization, more rigorous in its theoretical and empirical foundations, more explicit in its political implications, and more engaged in its ethical commitments.

b) Describe the causes of structural abnormalities of chromosomes with suitable examples. (15 Marks)

Structural abnormalities of chromosomes are caused by changes in the structure or parts of a chromosome. These changes can occur due to errors in cell division, exposure to radiation or chemicals, viral infections, or inherited mutations. Some examples of structural abnormalities of chromosomes are:

1. **Deletions:** A part of a chromosome is missing or deleted. This results in having too little genetic material and missing some genes. For example, Cri du Chat syndrome is caused by a deletion of part of chromosome 5p. This causes a high-pitched cry, intellectual disability, and other health problems in affected individuals.
2. **Duplications:** A part of a chromosome is duplicated or present in two copies. This results in having too much genetic material and extra genes. For example, Pallister-Killian syndrome is caused by a duplication of part of chromosome 12p. This causes distinctive facial features, intellectual disability, and other health problems in affected individuals.
3. **Inversion:** A part of a chromosome is reversed or flipped. This changes the order of the genes on the chromosome. For example, haemophilia A is caused by an inversion of part of chromosome Xq. This causes a bleeding disorder in affected males.
4. **Translocation:** A part of a chromosome is exchanged with another part from a different chromosome. This changes the location and arrangement of the genes on the chromosomes. For example, chronic myeloid leukaemia (CML) is caused by a translocation between chromosomes 9

and 22. This creates an abnormal gene called BCR-ABL that causes uncontrolled growth of white blood cells.

c) Critically discuss A.L. Kroeber's contribution to kinship studies? (15 marks)

A.L. Kroeber was a prominent American anthropologist who made significant contributions to the field of kinship studies. He was interested in understanding the patterns and variations of social organization among different cultures, especially in relation to their environment, history, and psychology. Some of his main contributions to kinship studies are:

- He developed the concept of basic and secondary patterns of social organization, which he applied to the analysis of kinship systems. He argued that there are some universal and primary features of social organization, such as the nuclear family, that are based on biological and psychological factors. He also argued that there are some derived and secondary features of social organization, such as clans, moieties, and phratries, that are based on cultural and historical factors. He used this concept to explain the diversity and complexity of kinship systems in different regions and cultures.
- He conducted extensive ethnographic research on the kinship systems of various Native American groups, especially in California. He documented and compared the kinship terminologies, marriage rules, descent groups, and social functions of different tribes and cultures. He also traced the historical changes and influences that affected their kinship systems over time. He contributed to the preservation and appreciation of the rich and diverse cultural heritage of Native Americans.
- He proposed a typology of kinship systems based on the degree of ramification or branching. He distinguished between lineal, bifurcate merging, generational, and bifurcate collateral systems. He also identified some intermediate and mixed types, such as Hawaiian, Eskimo, Crow, Omaha, Sudanese, etc. He related these types to the size and complexity of societies, as well as to their ecological and cultural contexts. He provided a useful framework for classifying and comparing kinship systems across the world.

However, Kroeber's contribution to kinship studies has also been criticized for some limitations and weaknesses. Some critics argue that:

- His concept of basic and secondary patterns of social organization is too **simplistic and rigid**. It assumes that there is a clear distinction between biological and cultural factors, and that they operate independently of each other. It also ignores the role of agency, choice, change, and contingency in shaping social organization. It fails to account for the diversity and dynamism of human societies and cultures.
- **His ethnographic research on Native American kinship systems is too descriptive and static**. It focuses on documenting the formal aspects of kinship systems, such as terms, rules, groups, etc., but neglects the informal aspects, such as practices, meanings, emotions, etc. It also treats kinship systems as isolated and stable entities, rather than as interconnected and changing phenomena. It lacks a critical and comparative perspective on the historical and political contexts of Native American cultures.
- His typology of kinship systems is too abstract and arbitrary. It relies on a single criterion of ramification or branching, which is not always consistent or relevant for different cultures. It also imposes artificial categories and labels on diverse and complex kinship systems, which may obscure or distort their actual features and functions. It reduces kinship systems to static structures, rather than dynamic processes.

In conclusion, A.L. Kroeber's contribution to kinship studies is a valuable but flawed one. He offered a way of understanding the patterns and variations of social organization among different cultures.

However, he also faced some challenges and criticisms that need to be addressed and overcome. He needs to be more attentive to the interplay between biological and cultural factors, more sensitive to the informal and dynamic aspects of kinship systems, more aware of the historical and political contexts of different cultures, and more flexible in his typology of kinship systems.

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