

15 Sep 2019: UPSC Exam Comprehensive News Analysis

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A. GS1 Related

Nothing here for today!!!

B. GS2 Related

Category:POLITY

DIJUS The Learning App **1. Home Minister States that Only Hindi can Work to Unite the Country**

Context:

• The remarks made by Home Minister Amit Shah on the need to promote Hindi has sparked protest from non-Hindi speakers.

Details:

- During an event associated with the Hindi Divas, the Minister said that Hindi is the only language that can unify the country and the language needs to be promoted.
- At the same time, he also mentioned that that India is home to 122 languages and over 19,500 dialects, and every language has its own importance.
- He appealed the citizens to increase the use of their mother tongue and Hindi

Need for Promoting Hindi:

- The Minister stated the following reasons for the promotion of Hindi:
- It is very important to have a language of the whole country which should become the identity of India globally.
- Hindi can unite the country since it is the most spoken language.
- 'One language for the country' was the dream of Mahatma Gandhi and Sardar Patel.
- There is a huge influence of English on the citizens of India. Loss of languages due to foreign influence is a cultural issue. A language can survive only if the new generation feels proud in speaking it.

Ways to Promote Hindi:

- Hindi needs to be promoted in the areas of law and 'science and technology'.
- Central Government will teach children in the northeastern States to read and write Hindi.
- Hindi Divas functions will be held in different parts of the country from 2020 onwards.
- In 2015, the government constituted a Hindi Advisory Committee in various Ministries and departments to ensure progressive use of 'Hindi'
- Earlier, the government issued an order that all government files need to be issued bilingually (in Hindi and English).

Hindi Divas:

- Hindi Divas is observed to mark the decision of the Constituent Assembly on September 14, 1949 to extend official language status to Hindi.
- It was first observed in 1953.

Home Ministry leads in adoption of Hindi:

- Use of Hindi in drafting files in the ministry has increased from 10% to 60%.
- Additional staff members have been engaged to translate files from English to Hindi.
- Earlier, the files in the Ministry that dealt with complex internal security matters were in English.

Concerns:

- India is a country of unity in diversity and has never banked on one language for its existence.
- According to Census-2011, only 60% of total Hindi-speakers speak the native Hindi dialect. Only 26% have native Hindi as their mother tongue.



- English is the most commonly used medium in higher education. It enables the students to go for higher education and research in major developed countries.
- The people of non-Hindi speaking states fear that the plan to promote Hindi might make them secondary citizens and undermine the country's integrity.

Legality Position of Languages in India:

- The 8th schedule of the Constitution of India lists out 22 languages.
- According to Article-343, Hindi (in Devanagari script) is the official language of the Union.
- Under Article-351, it is the duty of the Union to encourage the spread of the Hindi language so that it may serve as a medium of communication.
- Under the Official Languages Act, 1963, English is to be used for purposes of communication between the Union and a State which has not adopted Hindi as its Official Language.

2. New Bill Requires Engineers to Register Themselves and Follow a Code of Ethics

Context:

• The Ministry of Human Resource Development is drafting a Bill that requires the registration of engineers and a code of ethics.

Background:

- The bill is being prepared under the aegis of the All India Council of Technical Education (AICTE).
- The suggestion for the Bill came from E. Sreedharan, the architect of Delhi Metro Rail.
- The first draft of the Bill has been submitted to the Ministry.

Features of the Proposed Bill:

- The prospective bill requires engineers to register with a council to be able to practice their trade.
- The council will be formed on the lines of similar bodies that exist for lawyers, doctors and pharmacists.
- There will be a code of professional ethics for engineers. Violation of the code may result in the cancellation of their registration.

Category:INTERNATIONAL RELATIONS

1. Yemen Rebels Attack Petroleum Processing Facility in Saudi Arabia

Context:

• Yemen's Houthi group executed drone attacks at the world's biggest petroleum processing facility in Abqaiq, and another one at Khurais in the Kingdom of Saudi Arabia.

Details:

• The two drone attacks were targeted at plants owned by Saudi Aramco, the national petroleum and natural gas company of the Kingdom. It is the world's most profitable company.



The fire has been brought under control, but oil production and exports had been disrupted.

Background:

- Houthi rebels aligned with Iran have carried out a number of cross-border missile and drone attacks in recent months.
- In August 2019, an attack claimed by Houthi rebels sparked a fire at Aramco's Shaybah natural gas liquefaction facility.
- Rebel drones also targeted two oil pumping stations on Saudi Arabia's key east-west pipeline in May 2019, shutting it down for several days.
- The Abqaiq plant has been targeted by militants in the past. In an attack claimed by al-Qaeda in February 2006, suicide bombers with explosive-laden vehicles attempted to penetrate the processing plant.
- Earlier, Saudi Arabia had launched a bombing campaign on rebel-held areas in Yemen.

C. GS 3 Related

Category:ECONOMY

1. Government Unveils Package to Boost Exports and Revive Housing Sector

Context:

• Union Finance Minister Nirmala Sitharaman has announced a third set of government decisions to revive the economy.

Background:

- The decisions follow two previous mega announcements to encourage private sector investment and to bring further stability into the banking system through several public sector bank mergers.
- Exports from India declined by 6.05% in August 2019.

Details:

• The package includes a ₹50,000 crore export incentive scheme and a ₹10,000 crore special window to provide last mile funding for unfinished housing projects.

Special Fund for Housing Projects:

- A special fund will be set up for providing last-mile funding for housing projects. It will focus on the construction of unfinished housing projects.
 - The fund will be available for affordable and middle-income projects except:
 - Those belonging to NPA category (Non-Performing Assets), or
 - Those undergoing National Company Law Tribunal proceedings
- The fund will be created on the lines of the National Investment and Infrastructure Fund.
- The fund will be operated professionally by experts from the housing and banking sectors.
- The fund will source contributions from the government, LIC and other institutions, private capital from banks, sovereign funds, etc.



- The government's contribution to the fund would be ₹10,000 crore and the other investors would contribute "roughly the same amount".
- External commercial borrowing guidelines will be relaxed to facilitate financing for home buyers eligible under the Pradhan Mantri Awas Yojana.
- Interest on house building advances will be lowered and linked with the 10 Year Government Security yields.

Reforms in the Exports Sector:

- The new scheme for the Remission of Duties or Taxes on Export Product (RoDTEP) will offset the amount paid by exporters as duties on exports.
- The revenue forgone by the government for the scheme will be Rs. 50000 Cr. per year.
- RoDTEP will replace the Merchandise Exports from India Scheme (MEIS). The rate of reward under MEIS varies between 2% and 7% of the free-on-board (FOB) value, depending on the item and the country it is being exported to.
- The existing dispensation in textiles of MEIS and the old ROSL [Rebate of State Levies] will continue up to December 31, 2019.
- An electronic refund module will be set up for the quick and automated refund of input tax credits to the exporters.
- Banks will be required to provide higher insurance cover for working capital loans to exporters.
- RBI will modify the priority sector lending norms to increase credit to exporters by Rs. 36000-68000 Cr.

2. Aadhaar Authentication to become Mandatory for GST Registration from 2020

Context:

• According to the GST Network, Aadhaar authentication or physical verification will be made mandatory for new traders coming under the Goods and Services Tax regime from January 2020.

Background:

- At present, the Aadhaar authentication of new dealers registering under GST is optional and no physical verification is required.
- Authentication using Aadhaar is expected to eliminate the ghost traders who make fake invoices.
- Those who do not prefer Aadhaar authentication can go for physical verification, which will be carried out in three days.

Simplification of Annual Returns:

- Low filing of annual returns has necessitated a more simplified annual returns system.
- All types of taxpayers will get a new system under three formats: Sahaj, Sugam and Normal.
- The new system will be rolled out in January 2020.
- The GST Network has also decided to make tax refunds entirely online from September 24, 2020. It would be done from a single source, either by the Central GST or State GST.

Category:ENVIRONMENT



Context:

• According to the National Green Tribunal (NGT), compensation needs to be recovered for the restoration of the environment and for enforcing pollution norms.

Details:

- The statement from the NGT came while dismissing a set of pleas that sought quashing of orders passed by the Delhi Pollution Control Committee (DPCC) on compensation.
- A group of steel pickling units had approached the green panel to quash the DPCC orders citing that the units were not operational any longer.
- The appeals claimed that polluting activity has been stopped and no penalty can be imposed.

'Polluter Pays' Policy:

- The NGT refused to set aside the DPCC orders for compensation while upholding the 'polluter pays' principle.
- The 'polluter pays' principle states that those who are responsible for the pollution should bear the costs of managing it to prevent damage to human health or the environment.
- The principle was first referred at an international level by the Organization of Economic Cooperation and Development (OECD) in 1972.
- The NGT added that polluting activities in violation of master plan resulted in degradation of the environment in a big way affecting the ecology and public health.

Category:SCIENCE AND TECHNOLOGY

1. An Eco-Friendly Way to Degrade Plastics

Context:

IIT Madras has found an eco-friendly way to degrade plastics by continuous stirring in water at optimum conditions.

Details:

- The team has demonstrated a method to degrade polytetrafluoroethylene (of which Teflon is made) by continuous stirring in water containing 1,000 ppm glucose and metal ions for about 15 days at 70[°]
- Teflon is a chemically inert and physically stable plastic fluoro-polymer.
- The method can be used to degrade several varieties of plastic including Teflon, polyethylene and polypropylene.
- The polymer is supposedly being broken down into molecules through a process called 'tribo-electric degradation'. The process involves the creation of an electric potential at the interface of the polymer and water when the polymer is continuously stirred in water.

2. Blackest of All Materials



• Engineers at the Massachusetts Institute of Technology (MIT) have created a material that is 10 times blacker than anything that has previously been reported.

Details:

- The material is made from vertically aligned carbon nanotubes (CNTs).
- The team grew CNTs on a surface of chlorine-etched aluminum foil.
- The foil captures more than 99.96% of any incoming light, making it the blackest material on record.

Applications:

- The material can be useful in optical blinders that reduce unwanted glare.
- It can also help space telescopes in spotting orbiting exo-planets. An exo-planet is a planet outside the Solar System.

D. GS 4 Related

Nothing here for today!!!

E. Editorials

Category:POLITY

1. Collegium of Judges

Context:

The transfer of Chief Justice of the Madras High Court, Justice Vijaya Kamlesh Tahilramani, to the Meghalaya High Court and her subsequent resignation has created controversy over functioning of the 'collegium' of judges.

Background:

- Justice Tahilramani has submitted a request for reconsideration of the transfer. But, it was rejected by the collegium.
- The transfer and the lack of transparency about the exact reason has raised questions.
- The Supreme Court (SC) has issued an official statement that the collegium indeed had cogent reasons that could be revealed, if necessary.

The collegium system:

• The Constitution states that the **President** shall appoint the **judges of the Supreme Court and High Courts** after a process of **consultation**.



- The collegium makes appointments and transfers in the higher judiciary. It is an invention by the Supreme Court.
- Some judges were superseded in the appointment of the Chief Justice of India in the
- Attempts were made subsequently to effect a mass transfer of High Court judges across the country.
- There was a perception that the **independence of the judiciary** was under threat.
- This resulted in a series of cases over the years:
- The 'First Judges Case' (1981) ruled that the 'consultation' with the CJI in the matter of appointments must be full and effective. However, it rejected the idea that the CJI's opinion should have primacy.
- The Second Judges Case (1993) introduced the Collegium system, holding that 'consultation' really meant 'concurrence'. It added that it was not the CJI's individual opinion, but an institutional opinion formed in consultation with the two senior-most judges in the Supreme Court.
- The Third Judges Case (1998) expanded the collegium to a five-member body, comprising the CJI and four of his senior-most colleagues.

Procedure followed by the collegium:

- The **President of India** appoints the CJI and the other SC judges.
- The **outgoing CJI recommends his successor**. In practice, it has been strictly by seniority ever since the supersession controversy of the 1970s.
- The **Union Law Minister** forwards the recommendation to the Prime Minister who, in turn, advises the President.
- The proposal for the appointment of other judges of the Supreme Court is initiated by the CJI.
- The CJI consults the rest of the **collegium members**, as well as the senior-most judge of the High Court to which the recommended person belongs.
- The consultees must record their opinions in writing and it should form part of the file.
- The collegium sends the recommendation to the Law Minister, who forwards it to the Prime Minister to advise the President.
- The **Chief Justice of the High Courts** is appointed as per the policy of having Chief Justices from outside the respective States. The collegium takes the call on the elevation.
- **High Court judges** are recommended by a collegium comprising the CJI and two senior-most judges. The proposal is initiated by the Chief Justice of the High Court concerned in consultation with two senior-most colleagues.
- The recommendation is sent to the Chief Minister, who advises the Governor to send the proposal to the Union Law Minister.

Does the collegium recommend transfers too?

- The collegium also recommends the transfer of Chief Justices and other judges.
- Article 222 of the Constitution provides for the transfer of a judge from one High Court to another.
- When a CJ is transferred, a replacement must also be simultaneously found for the High Court concerned. There can be an **acting CJ in a High Court** for not more than a month.
- In matters of transfers, **the opinion of the CJI 'is determinative'**, and the consent of the judge concerned is not required.
- However, the CJI should take into account the views of the CJ of the High Court concerned and the views of one or more SC judges who are in a position to do so.
- All transfers must be made in the **public interest** for the **betterment of the administration of justice**.

Challenges:



- The collegium is being seen as **something unforeseen by the Constitution makers.**
- The system is criticised for lack of transparency and the scope for nepotism.
- The **small base** from which the selections were made and the **secrecy and confidentiality** leads to the possibility of wrong appointments.
- Full disclosure of **reasons for transfers** may make lawyers in the destination court wary of the transferred judge.
- Embroilment in **public controversies** and having **relatives practising in the same High Court** might become common reasons for transfers.
- The status of a proposed **new memorandum of procedure** to infuse greater accountability is unclear.

National Judicial Appointments Commission:

- The attempt made to replace the collegium by a 'National Judicial Appointments Commission' was struck down by the Supreme Court in 2015.
- It was struck down on the grounds that it posed a threat to the **independence of the judiciary**.
- However, the **dissenting judge** termed the strike down as inherently illegal. Even the majority opinions admitted the **need for transparency**.

Future Prospects:

- In an effort to boost transparency, the collegium's resolutions are **now posted online**, but the reasons **are not given.**
- The 'zone of consideration' must be expanded to avoid criticism that many appointees hail from families of retired judges.

Category:SCIENCE AND TECHNOLOGY

1. What does Ancient DNA Show about History?

Context:

Two research papers published recently have led to insights about the evolution of human civilization in the Indus valley.

Background:

- Recently, the journal 'Cell' published a paper which claimed that the inhabitants of the **Indus Valley civilisation** lacked the steppe-pastoralist ancestry which had brought **Indo-European languages** into South Asia. The findings of the paper are based on the DNA sequencing of the remains of a woman found at **Rakhigarhi** in present-day Haryana.
- Another paper published in the journal 'Science' (by the same authors) had established baselines for the DNA of **South and Central Asian populations** over the last 10,000 years.

What is ancient DNA (aDNA)?

- DNA extracted from **archaeologically recovered bones**, **teeth or fossil plant remains** is called ancient DNA. It **becomes degraded** due to ageing, climate and soil conditions.
- Techniques developed over the past three decades have led to a revolution in the understanding of the evolution and **genetic history** of a range of animals and plants, including **extinct species**.



- Small fragments of aDNA are processed to sequence the genome of those ancient organisms.
- **Palaeogeneticists** have established how genetic variation might relate to the **independent evolution of species on different continents** or how populations that today appear distinct in different geographical areas were once related and likely existed together in one region.

Applications of aDNA from human samples:

- Modern human DNA databases are built on **samples from people who are alive today**.
- The comparison of aDNA samples with other aDNA and modern DNA databases can reveal **unsuspected genetic histories**.
- **99%** of all human DNA is common.
- However, **specific variant genes (alleles)**, **mutations and other markers** can be compared with that of modern groups.
- The applications of such comparison include:
- Understanding the genetic predisposition towards **certain diseases** and responses to medicines in different social groups in South Asia.
- Tracing the **deep ancestry of ancient individuals** and assess how their genetic makeup is distinct.
- However contamination from modern human DNA is a real challenge and requires special techniques at every stage of the recovery and extraction process.

Genetics and Ethnicity:

- Genes may vary with a group's ethnicity (the combination of language and material practices) but they also may not.
- : There is no necessary correlation between the **genes** of an author (or the reader) and what **language** his/her ancestors must have spoken.
- The social processes of history are not the same as those which can be observed through population genetics.
- Populations display aggregate trends of deep shared ancestry. But, there are no 'Aryan' or 'Harappan' or 'Dravidian' genes.

Recent Results:

- The two recent papers have provided insights into South Asian population history.
- The conclusions are based on 523 aDNA samples ranging over 8,000 years across **Eurasia**.
- The authors demonstrate that over the last 10,000 years, the present-day distinctive mix of South Asian genetic variability was formed through the admixture of populations then resident in the region with successive groups who moved into the region.
- This process happened **several times**.
- The papers make it clear that these mixing of populations were **not invasions**. The trends in their data show slow long-term processes of **migration**, **co-mingling and integration**.
- : Genetic interaction of populations then resident in **Northern South Asia** with groups associated with **'steppe pastoralist'** ancestry (2000-1500 BCE).
- This period is a complex era of **post-Harappan de-urbanisation**.
- During this period, different regions from Gujarat to Haryana show varying trends in crop patterns, settlement sizes and material culture.
- Rainfall and climate patterns underwent significant changes during the period.
- Distributions of this 'steppe pastoralist' genetic ancestry broadly correlate with the distribution of **Indo-European language** speakers today, and the presumed areas where earlier Indo-European speaking groups lived.
- Since Sir William Jones's Third Discourse in 1786, many scholars have tried to find links between **Sanskrit, Persian and Latin** (Indo-European language family) and ancient migrations, material culture and ancient literatures.



The aDNA studies make clear that the genetic makeup of South Asian populations changed between 2000-1500 BCE.

The woman from Rakhigarhi:

- Efforts to extract archaeological DNA have been few in South Asia and several attempts resulted in DNA that was too **degraded or was contaminated**.
- Individual 6113 was an elite woman **buried between 2300 and 2800 BCE** (estimated) in a cemetery on the outskirts of the Harappan town of Rakhigarhi.
- The DNA from Rakhigarhi is a mixture with contributions coming from very ancient ancestry shared with **Iranian populations** and that from what the authors term **Andamanese or South-East Asians** in the deep past of her ancestry.
- The DNA is genetically closest to another group who were buried in **Khorasan** (Shahr-i-Sokhta in Iran).
- The graves of these individuals had objects that were previously known to have connections to the **Indus Valley Civilisation**.
- These individuals share a **similar mixture of ancestry** and are also **outliers** in the larger comparative database.
- Much media coverage has stressed her '**indigeneity**' and not the fact that her genetic admixture makes one rethink the **social geographies** which the data groups her with, which are significantly more westerly than the limits of present day India.
- The Indus Valley Civilisation, famed for its technical virtuosity, wonderful ornaments and cosmopolitan urbanisms were not one 'people' of one genetic signature.
- The ancestor from Rakhigarhi was so different from people of present day that no one alive today has her particular suite of admixed DNA ancestry.
- Rakhigarhi is one Harappan settlement out of thousands, in one of several cultural domains known within the larger civilisation and we know that only the elite were buried in these cemeteries.
- This is only the first aDNA result from the Indus Valley Civilisation. Hundreds of samples from the South Asian archaeological past are needed to begin to understand the complexity of South Asian population genetic history.

What are the Implications?

- **Population genetic history** open new lines of evidence into pasts.
- The aDNA results reflect that a host of **Chalcolithic** (**Copper-Bronze using**) and **Iron Age cultures** prosper between **2000 and 1000 BC** in almost all regions of the subcontinent.
- Most people today would readily accept information about their **susceptibility to diabetes or cancer from their genetic data**.
- But people would hesitate to accept that genetic cleavages that happened a 100 generations ago define their actions, choices and identity today.
- However, no single story of genetics, of language families, or of the movement of people can explain the geographic, technological and cultural complexities of this millennium.

F. Tidbits

1. J&K Offers Land for Twin Medi-Cities

• The Jammu and Kashmir government proposed the first major move to invite private investors to



buy land in the region.

- The proposal involves the setting up of twin medi-cities in Kashmir and Jammu.
- The proposal was cleared by the State Administrative Council (SAC) headed by the Governor.
- It offers various incentives to private investors and entrepreneurs.
- It envisages declaration of well-defined geographical areas having potential to promote medical tourism in Jammu and Kashmir.

2. Downplay Suicide Coverage: PCI

- The Press Council of India (PCI) has issued guidelines for the reporting of cases of suicide and mental illness.
- The guidelines said that the media shall not publish photographs or any other information of the person undergoing treatment at a mental health establishment without the consent of the person.
- The PCI also adopted certain guidelines from the World Health Organization's publication, 'Preventing Suicide: A Resource for Media Professionals-2017'.
- The PCI said that newspapers and news agencies must refrain from placing stories about suicide prominently and unduly repeating such stories.
- The newspapers or news agencies are also restricted from using language which sensationalizes or normalizes suicide.
- To know more about the PCI: <u>Click Here</u>

G. Prelims Facts

1. Mangu Mutt

- The Punjab Chief Minister urged the government of Odisha to retract the decision to demolish the Mangu Mutt in Puri.
- The Mangu Mutt is believed to have been visited by Guru Nanak, the founder of Sikhism.
- The Mutt is among many structures within 75-metre radius of the Jagannath Temple that are being demolished to ensure the safety and security of the temple.

2. Pulikali

- Pulikali (Tiger Dance) is a folk art of Kerala.
- Artists wear a tiger mask, paint their bodies like tigers and dance to the rhythm of traditional percussion instruments such as thakil, udukku and chenda.
- It is performed on the fourth day of Onam festival.
- The main theme of this folk art is tiger hunting with participants playing the role of tiger and hunter.

3. Jaipur House

• Jaipur House was built in 1936 as the home of the Maharaja of Jaipur.



- It serves as the National Gallery of Modern Art (NGMA) since 1954.
- It will be re-opened soon, after over a year of renovations.
- With a focus on preserving its architectural heritage, the renovations have also led to more space for exhibiting art in the building.

4. Whistling Villages of Meghalaya

- The Kongthong village of Meghalaya has approached the government for initiating the procedure for its inclusion in the UNESCO list of Intangible Cultural Heritage.
- The villagers have a practice of giving each child a unique tune instead of a name. The tune is called 'jingrwai iawbei' (in the Khasi language).
- Mothers compose a tune for her child until they attain a certain age to be called by normal names.
- Some villages around Kongthong also follow a similar practice. Those villages are also claiming for a recognition by UNESCO.
- The area comes under the Sohra Hima (a traditional administrative unit) headed by a syiem or chieftain.
- Khat-ar means an area belonging to 12 clans of the Khasi community and Shnong means village.
- In 2017, UNESCO had put Turkey's whistled language on the List of Intangible Cultural Heritage in need of urgent safeguarding.

H. UPSC Prelims Practice Questions

Q1. Which of the following festivals is associated with the performance of 'Pulikali', a folk art form of Kerala?

a) Pongal

- b) Onam
- c) Bihu
- d) Dussehra

Answer: b

Explanation:

Pulikali is performed on the fourth day of Onam festival.

Q2. Consider the following statements with reference to `Mangu Mutt' located in Puri, Odisha.

- 1. It is an important shrine revered by the followers of Sikhism.
- 2. It is believed that the shrine was visited by Guru Nanak.

Which of the statement/s is/are correct?

a) 1 only

b) 2 only

c) Both 1 and 2

d) Neither 1 nor 2



Explanation:

Both the statements are correct.

Q3. What are the applications of Carbon Nanotubes?

- a) Optical blinders that reduce unwanted glare.
- b) Space telescopes for spotting exo-planets.
- c) Supply of power to wearable devices.
- d) All of the above.

Answer: d

Explanation:

Blackest of All Materials made from Carbon Nanotubes can be used in optical blinders as well as in space telescopes. Another application of Carbon Nanotubes is the supply of power to wearable devices, when used as a coating on cotton yarns.

Q4. Consider the following statements with reference to the scheme of 'Remission of Duties or Taxes on Export Product' (RoDTEP):

- 1. The objective of the scheme is to provide incentives to exporters.
- 2. The scheme does not involve any decline of revenue by the government.
- 3. The scheme will replace the Merchandise Exports from India Scheme (MEIS).

Which of the statement/s is/are correct?

- a) 1 and 2 only
- b) 1 and 3 only
- c) 2 and 3 only
- d) 3 only

Answer: b

Explanation:

The revenue forgone by the government for the scheme will be Rs. 50000 Cr. per year.

I. UPSC Mains Practice Questions

- 1. The 'polluter pays' principle is an effective tool to ensure the responsibility of the generators of pollution. Discuss. (250 words, 15 marks)
- 2. How does the study of DNA samples help the early diagnosis and treatment of non-communicable diseases? Discuss. (250 words, 15 marks)



