1. What are the institutional and legal arrangements in place to address pandemics in India? How have the panned out during COVID-19? Examine.

Demand of the question:
It expects students to write a about the institutional and legal arrangements in place to address pandemics in India. It also expects how these arrangements have resulted out during COVID-19.

Introduction:
The COVID-19 pandemic has shut businesses, disrupted supply chains ,and caused unprecedented loss to economy. Indian institutions and the foresighted legal arrangements are tackling this pandemic at breakneck speed as a result India's death rate is low as compared to that of the developed countries.

Body:
Institutional and legal arrangements in place to address pandemics in India:
- Institutional arrangement like All India institutes of medical sciences are a group of autonomous government public medical colleges of higher education.
- These institutions have a pivotal role to play during pandemic as they provide the skilled workforce and necessary expertise during the pandemics.
- The National Institute of Virology, Pune is an Indian virology research institute. It is one of the major Institutes of the Indian Council of Medical Research (ICMR). As it is a virus research institute it provide the necessary research and development during pandemics.
- The Indian Council of Medical Research (ICMR), the apex body in India for the formulation, coordination and promotion of biomedical research, is one of the oldest and largest medical research bodies in the world.
- Ministry of health and family welfare and Ministry of Home affairs play a pivotal role   during pandemic like crisis situations through the necessary guidelines, instructions, travel advisories for migrants and COVID-19 warriors etc.
- Reserve bank of India, Ministry of commerce and Industry, University grants commission, All India Council for Technical Education, Ministry of Human resource development also play a pivotal role to tackle the disruption of the economy and educational curriculum.
- The lockdown has been carried out by State governments and district authorities on the directions of the Union Ministry of Home Affairs under the Disaster Management Act of 2005, which was intended "to provide for the effective management of disasters and for matters connected therewith or incidental thereto".
- Under the Act, the National Disaster Management Authority (NDMA) was set up under the leadership of the Prime Minister, and the National Executive Committee (NEA) was chaired by the Home Secretary.
- The State governments and authorities exercised powers under the Epidemic Diseases Act of 1897 to issue necessary directions.

- Section 144 of the Criminal Procedure Code in public places authorizes the Executive Magistrate of any state or territory to issue an order to prohibit the assembly of four or more people in an area.
- The Epidemic Diseases Act, 1897 is meant for containment of epidemics by providing special powers that are required for the implementation of containment measures to control the spread of the disease.
- The Essential Services Maintenance Act is an act of Parliament of India which was established to ensure the delivery of certain services, which if obstructed would affect the normal life of the people.

Cumulatively, these institutions and legal frameworks have acted in consonance to contain the spread of pandemic and panned out in following way:

- The National Institute of Virology, Pune Isolated the 11 strains of SARS-COV-2 virus and helped India becoming the fifth country in world to isolate the strain.
- The ICMR made major scientific progress during COVID-19 as it developed PCR tests, 5 vaccines have gone for human trial.
- Council of Scientific and Industrial Research (CSIR) has initiated a randomised clinical trial to reduce mortality in critical COVID-9 patients through drug efficacy evaluation.
- Relief measures announced by Reserve Bank of India e.g. reduction in repo rate, increasing loan moratorium. Also some tax relief measures are also announced by the finance ministry. Which benefitted the vulnerable section of population.
- The Finance Minister also announced medical insurance cover of Rs 5 million per healthcare worker. About 2 million health services and ancillary workers will benefit from such insurance scheme.
- NDMA and NEA issued orders directing the Union Ministries, State governments and authorities to take effective measures to prevent the spread of COVID-19, and laid out guidelines illustrating which establishments would be closed and which services suspended during the lockdown period.
- Under the Epidemic disease act, the Health and Family Welfare Department of Tamil Nadu issued a government order, to impose social distancing and isolation measures which directed "suspected cases and foreign returnees" to remain "under strict home quarantine" and people "to stay at home and come out only for accessing basic and essential services and strictly follow social distancing norms".
- Due to the pandemic federalism in India also got much needed boost.

Worryingly, a consolidated, pro-active policy approach is absent. In fact, there has been ad hoc and reactive rule-making, as seen in the way migrant workers have been treated.

- The invoking of the Disaster Management Act has allowed the Union government to communicate seamlessly with the States. However, serious questions remain whether the Act was originally intended to or is sufficiently capable of addressing the threat of a pandemic.

- Also, the use of the archaic Epidemic Diseases Act reveals the lack of requisite diligence and responsiveness of government authorities in providing novel and innovative policy solutions to address a 21st century problem.
- Another serious failing is that any violation of the orders passed would be prosecutable under Section 188 of Indian Penal Code, a very ineffective and broad provision dealing with disobedience of an order issued by a public servant.

In contrast, the U.K. enacted the Coronavirus Act, 2020, which is a comprehensive legislation dealing with all issues connected with COVID-19 including emergency registration of healthcare professionals, temporary closure of educational institutions, audio-visual facilities for criminal proceedings, powers to restrict gatherings, and financial assistance to industry.

Conclusion:

In past instance and present too, these institutional and legal measure have proved to be effective while dealing with the pandemic like situations. However, there are some 21st century challenges posed by the evolving global architecture fell vulnerable while dealing with the COVID-19 pandemic. Hence, necessary steps needs to be taken so a comprehensive approach can be followed to tackle the COVID-19 like situations in future and better health for all can be assured.
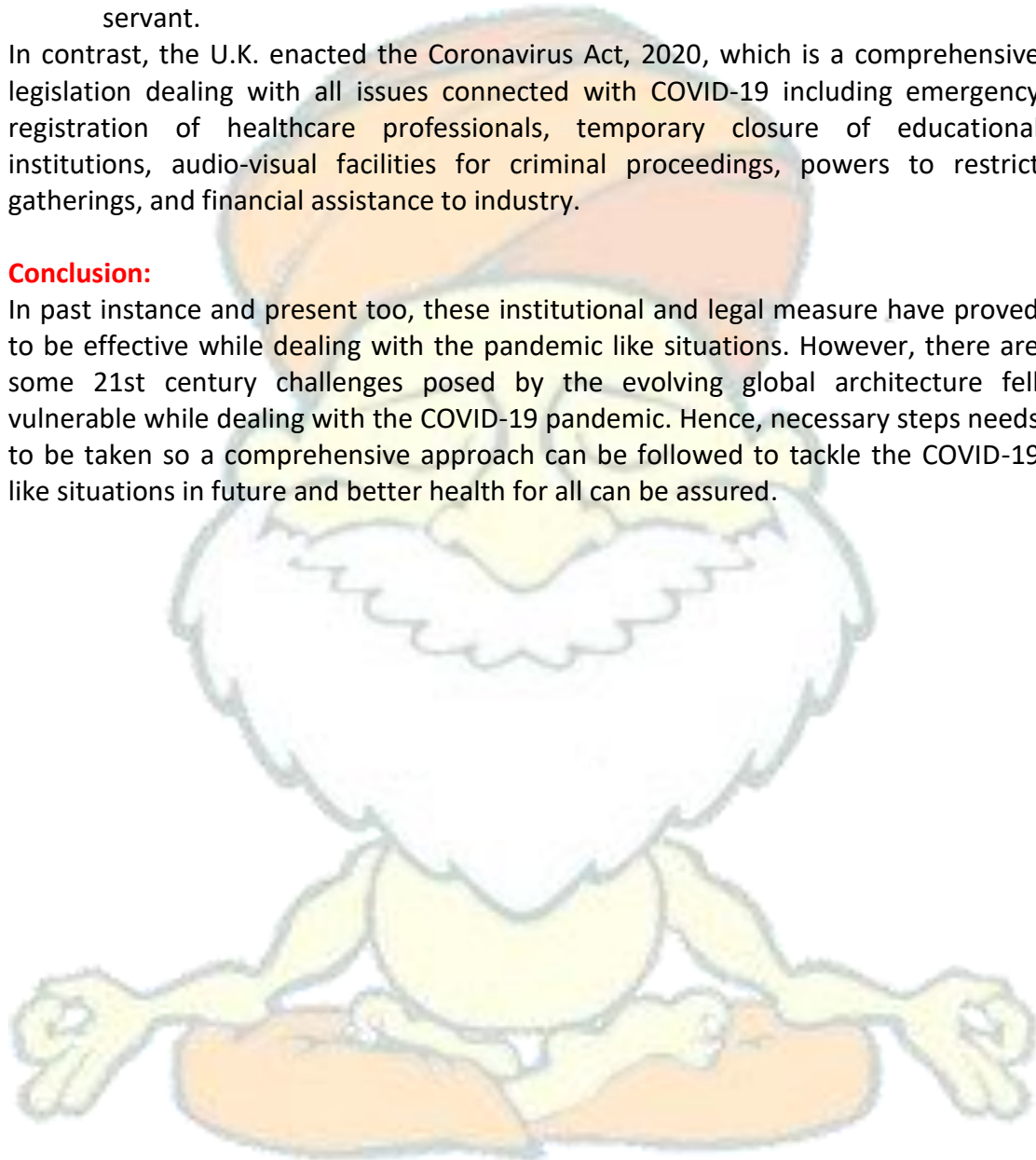
2. How is biodiversity loss associated with infrastructure development? How does environmental impact assessment help in reconciling the developmental needs with conservation imperatives? Explain.

Demand of the question:
It expects students to write about negative impact of infrastructure development as a biodiversity loss. It also expects students to write about how the Environment impact assessment can help to reconcile the developmental needs with conservation imperatives.

Introduction:
The loss of biodiversity due to large scale infrastructural developmental programmes has wide scale implications. In this scenario, Environmental impact assessment which is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse can prove to be useful to conserve the biodiversity.

Body:
Humans have evolved, grown and thrived, in nature. Modern human society needs the resources of nature to thrive. The infrastructural developments impact the biodiversity in various ways, hence biodiversity loss is associated with the infrastructural development as follows:

- Increasing land demand: Due to the growing human population, wetlands are being made dry through landfills, as the demand for land increases. Natural forests are cleared for industry, agriculture, dams, habitation, recreational sports, etc.
- The most dramatic examples of habitat loss come from tropical rain forests. Once covering more than 14 per cent of the earth's land surface, these rain forests now cover no more than 6 per cent. They are being destroyed fast.
- The Amazon rain forest (it is so huge that it is called the 'lungs of the planet') harbouring probably millions of species is being cut and cleared for cultivating soya beans or for conversion to grasslands for raising beef cattle.
- Man-Animal Conflict: It refers to the interaction between wild animals and people and the resultant negative impact on people or their resources, or wild animals or their habitat.
- It occurs when wildlife needs overlap with those of human populations, creating costs to residents and wild animals.
- Land use transformation: Industrialization, infrastructure development, commercial farming etc. leads to species habitat loss, degradation and fragmentation due to above-mentioned reasons. In turn reducing their survival chances hence loss of biodiversity.
- Increasing livestock population in the livestock sector is encroaching on the necessary fodder for wild herbivores and led to competitive exclusion of wild herbivores.

In this way biodiversity loss is associated with the infrastructural development. However, Environmental Impact Assessment (EIA) process can help to reduce the scale of negative impact of infrastructural development on biodiversity los in following ways:

- UNEP defines Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making.
- It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.
- Thus it ensures that there will be minimal negative impact on the surrounding once an infrastructural development programme is implemented. It also ensures the conservation of biodiversity in sustainable way.
- EIA involves certain processes such as screening, scoping, collection of baseline data, risk assessment etc. which help to analyse scale of impact and its probable solutions.
- EIA links environment with development for environmentally safe and sustainable development.
- EIA provides a cost effective method to eliminate or minimize the adverse impact of developmental projects.
- EIA enables the decision makers to analyse the effect of developmental activities on the environment well before the developmental project is implemented.
- EIA encourages the adaptation of mitigation strategies in the developmental plan.
- EIA makes sure that the developmental plan is environmentally sound and within the limits of the capacity of assimilation and regeneration of the ecosystem.

Hence, in these ways Environmental Impact Assessment help in reconciling the developmental needs with conservation imperatives.

Conclusion:

With its pre-development assessment approach EIA could prove to be a game changer for developmental needs and conservation imperatives. EIA's implementation in true letter and spirit can surely help to cope up with infrastructural development while conserving the wonderful biodiversity of our planet earth.

3. There are certain stretches of the Himalayan rivers that are extremely polluted and hazardous for human consumption. Can you identify those stretches? What makes these stretches so polluted? Examine.

Demand of the question:
It expects students to identify and write about those stretches of Himalayan rivers that are extremely polluted and hazardous for human consumption. It also expects students to state the reasons for the pollution of these river stretches with possible applicable solutions and government initiatives.

Introduction:
The larger Himalayan region is known as the water tower of Asia. Many rivers such as the Ganga, Brahmaputra, Barak (in the Meghna basin) and Indus originate in this region. However, water quality index has placed India at 120th place amongst 122 countries due to 70% of its river water is polluted.

Body:
Stretches of river which are extremely polluted and hazardous for human consumption:
- The Ganga river holds deep religious significance in India. But the alarming levels of pollutants and sewage waste that are discharged into it every day by over 1100 industrial units and several towns situated on its banks, have made it one of the most polluted rivers in the world.
- A recent report by the Central Pollution Control Board declared that the Ganga water is unfit for bathing, let alone drinking directly.
- The 2900-km long river and Assam's lifeline, the Brahmaputra, today is reeling under water pollution in the form of sewage waste and oil discharge.
- Rapid urbanisation and lack of efficient waste disposal systems have now rendered it lifeless. A recent report states that at least 28 kms of the river stretch in Assam is heavily polluted.
- The Yamuna rivers stretch in the Delhi NCR region, which was once the lifeline of Delhi and one of India's most sacred rivers, has also been reduced to being one of the most polluted rivers in the world.
- Once a major water source for Lucknow, the Gomti rivers stretch in lucknow and nearby region and its marine life is almost dead now, consumed by the high pH levels in it.
- Flooding during monsoons worsens Himalyan rivers pollution problem, as it washes and moves solid waste and contaminated soils into its rivers and wetlands.

Water pollution is a major environmental issue in India. Due to the large scale industrial development, long term effects of green evolution and other soci-economic reasons, the pollution of Himalayan rivers forms a centre of debate. The following are the reasons for the pollution of these stretches of river:
- Untreated Sewage: A 2007 study found that discharge of untreated sewage is the single most important source of pollution of Himalayan rivers water in

India. There is a large gap between generation and treatment of domestic waste water in India. The problem is not only that India lacks sufficient treatment capacity but also that the sewage treatment plants that exist do not operate and are not maintained.

- A 1995 report claimed 114 Indian cities were dumping untreated sewage and partially cremated bodies directly into the Ganges River. Lack of toilets and sanitation facilities causes open defecation in rural and urban pill areas of India, like many developing countries.
- Organic matter: In 2010 the water quality monitoring found almost all Himalayan rivers with high levels of BOD (a measure of pollution with organic matter). For instance, BOD in river Yamuna canal (247), river Yamuna at Delhi (70).
- Coliform levels: Rivers Yamuna, Ganga, Gomti, Ghaghara River, are amongst the other most coliform polluted water bodies in India. For context, coliform must be below 104 MPN/100 ml, preferably absent from water for it to be considered safe for general human use, and for irrigation where coliform may cause disease outbreak from contaminated-water in agriculture.
- Heavy untreated water effluents are directly send in to river without treatment is also one of the aggravating factor.
- Recently, the Central Water Commission (CWC) has reported that the samples from two-thirds of the water quality stations spanning India's major rivers are contaminated by one or more heavy metals, exceeding safe limits set by the Bureau of Indian Standards.

Water conservation in India is gaining pace. The Ganga rejuvenation efforts by the union government, the Yamuna clean up are some of the government initiated efforts.

- The Union government recently formed a new Jal Shakti (water) ministry, which aims at tackling water issues with a holistic and integrated perspective on the subject.
- The government has given importance to the problem of river pollution with the establishment of a National River Conservation Authority chaired by the Prime Minister. The river conservation programme was initiated with the Ganga Action Plan (GAP) in the year 1985.
- Namami Gange Programme', is an Integrated Conservation Mission, approved as 'Flagship Programme' by the Union Government to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of National River Ganga.
- Citizen led initiatives to keep clean river will also be one of the most effective ways. e.g. Every weekend, a group of professionals - doctors, engineers, and scientists - assemble at the banks of Yamuna river near the ITO, armed with brooms and shovels for cleaning up the waste strewn along the ghat.
- A larger perspective of pollution needs to be taken. Encouraging farmers to move towards organic farming, failing which they must be encouraged to use biological pesticides or safer chemical pesticides.

- One way to deal with the problem will be to permit water quality rights of citizens. State governments are responsible for implementing water pollution control laws.

Conclusion:

Rivers are considered sacred in India. The large scale urbanization and impacts of unscientific agriculture and biodiversity loss led to worsen the problem of river water pollution in India. If sustained efforts and decentralised approach is taken then it will surely help to prevent the pollution of this precious natural resource and achieve the target of safe drinking water for all by 2024.