GRADIENT IAS

DAILY MAINS QUESTION & ANSWER

This PDF compiles sample question and model answers for UPSC / APSC Mains

Date of publication – 19Th December 2023

We have a lot more to offer.
Stay connected with us for free quizzes, notes, newspaper analysis, discussions etc.

Telegram: https://t.me/gradientUPSCAPSC

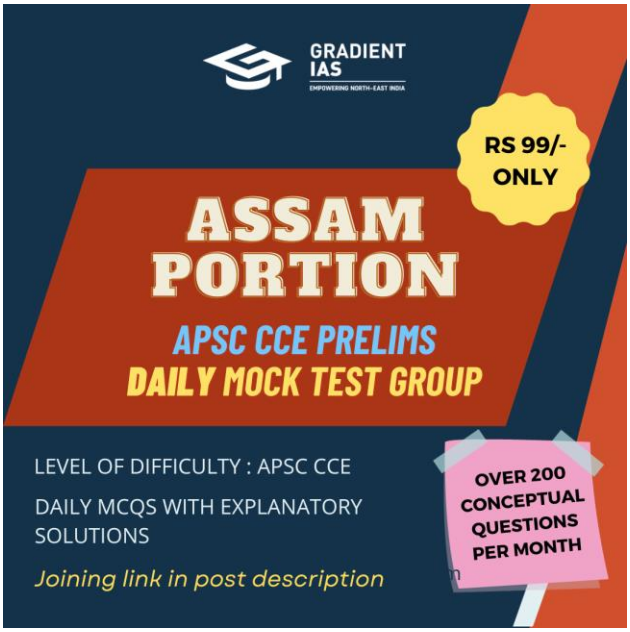
Whatsapp: https://chat.whatsapp.com/DEMKA2G9cpb2gfD5Wr0LhE

Instagram: https://www.instagram.com/gradientias

Facebook: https://www.facebook.com/gradientias

Website: www.gradientias.com

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com



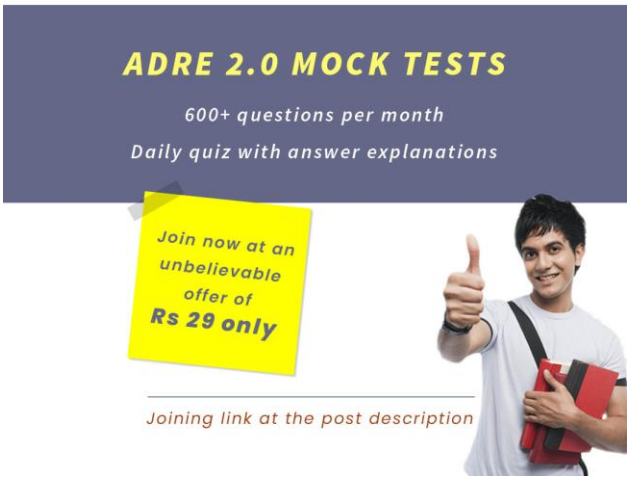
ASSAM MOCK TEST FOR APSC CCE

Daily Online quiz with explanations

Join here - **https://rpy.club/g/9O9WJlrfUR**

GRADIENT IAS

8860575759
info@gradientias.com



ADRE 2.0 MOCK TEST

Daily Online quiz with explanations

Join here - **https://bit.ly/48E99WH**

Q1. India-UAE relations have significantly improved over the last few years. Give examples of key occasions and places where India and the UAE have collaborated.

GS II

International Relations

• Due to their common cultural, religious, and economic ties, India and the United Arab Emirates (UAE) have had strong connections for a very long time. Long-standing energy trade ties between the two nations remain strong, but a new agenda is also taking shape. The two countries have recently looked into new areas of collaboration, such as entrepreneurship, artificial intelligence, education, and space.

• Significant developments and areas of cooperation between India and the UAE include:

• Economic and trade relations: India is the UAE's second-largest trading partner, accounting for 14% of all exports and 9% of all exports of commodities other than oil. India's third-largest trading partner is the UAE. Another recent agreement was the Comprehensive Economic Cooperation and Partnership Agreement (CEPA) between India and the UAE. This deal is anticipated to benefit almost 90% of bilateral trade between the two nations, increasing the value of that trade over the subsequent five years from $60 billion to $100 billion.

• The Indian community in the UAE numbers 3.5 million people, or nearly 30% of the overall population of the nation. Indians make up the largest group of expats in the UAE, and their remittances are a significant source of foreign money. A temple in Abu Dhabi will be built on 26 acres provided by the UAE government, which speaks volumes about the level of respect between the two nations. Indians' role in the UAE's economic development has been recognised.

• Space cooperation: The expansion of the space sector is a top goal for the leaders of India and the UAE. The Indian Space Research Organisation (ISRO) and UAE Space Agency (UAESA) signed a Memorandum of Understanding (MoU) in 2016 to foster cooperation in the exploration and peaceful use of space. PSLV also launched Nayif-1 from Sriharikota, the UAE's first nanosatellite, to collect data on the planet's environment.

• Geopolitical changes in the West Asia region: The bilateral relations between the two countries may have an impact on regional geopolitical shifts on both a bilateral and international scale. Since the Abraham Accords, relations

between Israel and the UAE have improved. Israel's technological advancement can also be advantageous to the UAE and India. The United States, these three countries, and their alliance stand for the ultimate combination of technology, money, and the market. The promotion of security and peace in the West Asian region is significantly aided by the new alliance I2U2 (Israel, India, the United Arab Emirates, and the US).

• Cross-border trading in local currencies: During the prime minister's recent visit to the UAE, the two countries agreed to establish a framework to promote trading in local currencies like the rupee and the UAE dirham (AED). All forms of transactions, including remittances from Indians residing in the United Arab Emirates, would see lower transaction costs and faster settlement times if local currencies were used.
• India and the UAE have also discussed mutual respect and shared concerns on numerous platforms. This year, the UAE will host the 28th Conference of the Parties (COP). As India assumed the leadership of the UN Security Council in December 2022, the UAE vigorously backed India's application for permanent membership on the Security Council (SC) and for quick reforms of the SC.

• The ability of India-UAE relations to transcend the bilateral and assume a multilateral dimension with boundless potential, in addition to the expanding bilateral connections and communal objectives, is what gives them their special worth. In the Middle East and North Africa (MENA) now, India's closest ally may be the United Arab Emirates (UAE). Their connection is rooted in both their common past and their bright future.

Q2. France and India have a trust-based relationship that strives to new heights. Describe the main areas of cooperation between France and India in this situation.

GS II

International Relations

• France and India have long been strategic allies in the Indo-Pacific. The two countries have continuously cooperated since their diplomatic ties were established in 1947 and their cooperation was advanced to a strategic level in 1998, developing a high degree of confidence and sharing values rooted in international law. During the recent visit of the prime minister to France, a strategic road plan for the

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com

next 25 years named "Horizon 2047" was unveiled in order to commemorate the 25th anniversary of the strategic partnership between India and France and to deepen collaboration in a number of fields.

• In the following crucial areas, India and France work together:

• Space collaboration: For more than 50 years, the Indian Space Research Organisation (ISRO) and the French Space Agency (CNES) have collaborated on satellite launches and a range of joint research initiatives. In 2018, France and India each published a "Joint Vision for Space Cooperation" that outlines the following goals for both countries:

• taking high-quality photos of the Earth.
• and spatial situational awareness.

• involvement in joint climate monitoring missions like Megha-Tropiques and Saral-Altika.

• continuing investigation of the Trishna satellite for monitoring land infrared and the Oceansat3-Argos mission.

• collaboration in defence: An essential part of partnerships, collaboration in defence is marked by dependability and trust. Two notable ongoing defence agreements include the purchase of Rafael aeroplanes and the P-75 Scorpene project. Both countries frequently undertake exercises like Exercise Shakti (Army), Exercise Varuna (Navy), and Exercise Garuda (Air Force).

• Civil Nuclear Cooperation: In 2008, India and France signed a contract for civil nuclear cooperation. 2018 saw the signing of several agreements between the two countries, one of which was for the construction of six nuclear reactors at Jaitapur in Maharashtra. The Jaitapur Nuclear Agreement is planned to be the largest nuclear power project in the world with a 9.6 MW capacity.

• Economic cooperation: India and France have significant economic, commercial, and investment relations. France has grown to be a key source of foreign direct investment for India, with more than 1,000 French companies currently present. Renowned French companies like Dassault, SAFRAN, Schneider Electric, and others have partnered with sizable Indian companies like Reliance, Tata, Mahindra, L&T, and others in the defence and electronics sectors.

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com

• Cultural exchange: Indian culture enjoys a large following in France. The Vivekananda Cultural Centre, an Indian cultural hub, just opened in Paris. Since 2016, the International Day of Yoga has been held in the Indian Embassy in Paris and other French cities.

• Science and technology collaboration: The Indo-French Centre for the Promotion of Advance Research (CEFIPRA), established in 1987 in New Delhi, is actively participating in the S&T sector by supporting joint applications for scientific research and evaluating ongoing research projects.

• Both nations are pursuing ambitious bilateral collaboration on cutting-edge digital technologies in accordance with the Indo-French Road Map on Cyber Security and Digital Technology agreed in 2019. This covers quantum technologies, supercomputing, cloud computing, AI, and AI under the scope of the Global Partnership on Artificial Intelligence (GPIA).

• Cooperation on climate change and energy security goals: India and France are working closely together to transition to a low-carbon economy. Through multilateral and third-country efforts, including as the Indo-Pacific Parks Partnership, International Solar Alliance, and the Indo-Pacific Oceans Initiative (IPOI), India and France will provide sustainable development solutions to the nations of the region.

• Partnership for the People: The Partnership Agreement on Migration and Mobility, which went into effect in 2021, is a significant step in fulfilling a common commitment to boosting the mobility of students, recent graduates, academics, researchers, professionals, and skilled workers.

• India and France share similar goals for a multipolar world, independence in their foreign policies, and the value of their strategic autonomy. The relationship between India and France has distinguished itself from the other significant alliances that India has established around the world in these and in other ways.

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com

Q3. Green hydrogen holds the promise of fostering industrial growth while also reducing industrial pollutants. The advantages of employing green hydrogen are contrasted.

GS III

Environmental Conservation

• Green hydrogen is described as hydrogen created when water is divided into hydrogen and oxygen using renewable electricity. Green hydrogen is significant in the fight against climate change because it can replace fossil fuels in sectors and uses that have historically been more difficult to decarbonize, in addition to its potential as an energy storage technology. By 2030, India intends to produce more renewable hydrogen than any other nation at five million tonnes.

• The use of green hydrogen has the following advantages:

• Decarbonization of hard-to-abate sectors: The profound decarbonization of hard-to-abate sectors is based on the use of hydrogen as an energy carrier, which is a relatively recent phenomenon. This includes sectors like iron ore, steel, fertilisers, refining, methanol, and maritime shipping that generate large amounts of CO2.

• Supports the creation of renewable energy: The electrolysis of water to make hydrogen can support the widespread generation of renewable electricity. The price of renewable energy will also go down, which will cut the cost of creating hydrogen and make it more competitive.

• Less reliance on oil imports: Green hydrogen can help India lessen its reliance on oil imports while simultaneously helping the nation's labour market.

• Easily storable: The intermittent nature of renewable energy, especially wind energy, contributes to grid instability. Green hydrogen can store a lot of energy. Hydrogen that has been saved can be used in fuel cells to produce energy. As a result, hydrogen can support grid stability by acting as a means of energy storage.

• With its ability to be turned into power or synthetic gas and used in business, industry, or transportation, green hydrogen has a flexible nature.

• Green hydrogen is a reliable and consistent source of energy for industrial processes since it may be locally stored. This improves energy independence and lessens reliance on the electrical grid.

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com

• produces oxygen as a byproduct: One kilogramme of hydrogen creates eight kilogrammes of oxygen as a byproduct. Experts claim that the oxygen produced can also be used profitably for industrial, medical, and environmental purposes to enhance the environment.

• **Moving forward:**

• The government must support both short-term and long-term policy choices for cost reduction if green hydrogen is to be cost-competitive with alternatives.

• India might be a magnet for domestic and foreign investment in green hydrogen. A mission secretariat can reduce financial risks and expedite project approval for green hydrogen.

• India must collaborate with other significant economies to develop rules for a green and sustainable hydrogen economy. Since there are no globally recognised frameworks, private industry groups rather than formal international processes are driving efforts to set rules and standards.

• Green hydrogen is a novel technology, therefore anyone considering using it or producing it needs to learn more about it and develop their skills. It is crucial to present evidence of the advantages, security, and practicality of green hydrogen across a range of settings and sectors.

• India has a unique opportunity to control the global hydrogen energy ecology. Recognising the promise of green hydrogen, the government earlier established a national green hydrogen mission and a green hydrogen strategy. Consequently, green hydrogen could play a significant role in assisting India in achieving its objectives of becoming energy independent by 2047 and Net Zero by 2070.

Q4. India's efforts to protect endangered species take an ambitious step with the introduction of Project Cheetah. Examine whether restoring extinct species is necessary in this case.

GS III

Environmental Conservation

• India's Project Cheetah was started as a cheetah relocation initiative, seven decades

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com

after the last cheetah died out in the country. As part of the plan, the animals are being moved from the forests of South Africa and Namibia to the Kuno National Park in Madhya Pradesh.

• The following justifications are used to back up the introduction of Project Cheetah:

• The introduction of wild cheetahs into Kuno National Park is a step towards diversifying India's biodiversity. The spotted cat will promote the preservation of biodiversity.

• Restoration of the Ecosystem: To increase the conservation value of cheetahs across the country, the goal for translocation also aims to establish vast open systems across the

• landscape and restore grasslands. It will also enhance ecosystem processes including soil moisture retention, carbon sequestration, and water security, which will have a positive impact on human survival in many ways.

• rise tourism: The existence of charismatic and iconic animals may result in a rise in tourism, which will benefit the local economy and generate employment. In India, this would boost ecotourism and open up new development prospects.

• Increase genetic diversity by reintroducing extinct species to the environment. The long-term survival and adaptation of species, as well as the health of ecosystems, depend on genetic diversity.

• Predator rehabilitation takes time, but the effort in India is moving better than expected, according to the Cheetah Conservation Fund, which is assisting the Indian government with the reintroduction of cheetahs to the nation. Fifty years after the start of Project Tiger, the tiger population has now formally surpassed the historic threshold of 3,000. As a result, the project's success can only be evaluated in the long run.

• The following arguments are in opposition to Project Cheetah's introduction:

• Many wildlife and conservation experts who have condemned the proposal believe Kuno National Park may not be a suitable environment for hosting a sizable population of cheetahs. This is due to the fact that in order to move freely, cheetahs typically require extensive habitats that span thousands of square miles. The estimated area of Kuno is less than 500 square miles.

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com

• Critics have brought up the cheetahs' spatial and habitat ecology requirements as well as the risk for conflict with humans and other carnivores like tigers and leopards during large-scale distribution.

• Inadequate scientific analysis: The cheetah is the only known case of an animal species disappearing in India due to factors related to humans. Therefore, it is crucial to conduct scientific research on the ecological connections between habitat composition, habitat quality, and demography in order to ensure the sustainability of cheetahs and their prey.

• Negative consequences on the species: Species that are transported across continents could feel anxious and stressed out, and they might have a hard time adjusting to their new surroundings. As an illustration, consider the numerous deaths among the cheetahs that were moved.

• Resources are scarce: Given the scarcity of resources for development in India and the generally poor track record of such programmes, the restoration of the cheetah could be considered as an expensive indulgence and useless endeavour.

• A long variety of initiatives, including the historic reintroduction of cheetahs in India, have been implemented to assure sustainability and environmental protection. The key challenges must be overcome, and the species' long-term survival must be preserved, for the effort to be successful.

Q 5. What do you mean by "bacterophages"? Discuss the advantages and disadvantages of using bacteriophages to treat bacterial diseases.

GS III

Biotechnology related issues

• Bacteriophages, also known as phages or beneficial viruses, are a class of viruses that infect bacteria. They hunt down bacteria, attach to the surface of the bacterial cell, and then inject viral DNA inside the cell to complete their work. The bacterial DNA replication machinery may occasionally be used to help the

viral DNA reproduce inside the bacterium. When the bacterial cell has produced enough fresh viruses, it explodes and releases the fresh viral poop.

• The use of bacteriophages to treat bacterial infections has several advantages:

• Combating antibiotic resistance: Since bacteriophages are efficient against bacteria that have evolved antibiotic resistance, this has increased interest in them. The rise of bacterial strains that are resistant to antibiotics is one of the largest medical challenges facing the world today.

• In contrast to many chemical antibiotics, which often have a wider spectrum of activity and are prone to generating superinfections, phages have little impact on the normal flora bacteria that protect human health because of their host specificity.

• Low toxicity: Because they are mostly composed of nucleic acids and proteins, phages are inherently non-toxic to humans, plants, and animals.

• They are suited for the majority of administration routes, have a variety of application forms, including liquids, creams, impregnated solids, etc. Phages are versatile in nature and can be employed in a variety of formulations, including the combination with specific antibiotics.

• Possibility of a single dose: During therapy, phages multiply and develop in quantity on their own; hence, only one dose may be necessary, thereby lowering the phage doses required to achieve efficacy and reducing treatment costs.

• Since phages are naturally occurring items, the public's resistance to GMOs or medications created in a lab shouldn't also apply to those substances.

• Phages are thought to be a 'intelligent' substance that proliferate at the infection site until there are no longer any bacteria, at which point they expel them.

• There are certain disadvantages to treating bacterial illnesses with bacteriophages:

• Phage therapy needs to be uniquely customised to the microorganisms that infect patients; there should be no standardisation in treatment; yet, the absence of therapeutic standardisation is a significant problem.

• Data on using bacteriophages to treat bacterial infections in people are sparse, occasionally conflicting, or negative.

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com

• Phages are more difficult to give than antibiotics, and a doctor needs specialised training to properly deliver and use phages.

• There may not be enough variability among phages to treat all bacterial infections, not all phages are beneficial as medications, and it may be difficult to identify the precise phage necessary to treat an infection.

• Since bacteria already have or have the ability to evolve a multitude of defensive mechanisms against viral infections, the risk of the emergence of bacterial resistance against bacteriophages exists.

• Concerns regarding the immune system: Phages are recognised by the human immune system when injected into the bloodstream, and some of them are immediately expelled, and the body eventually begins to produce antibodies to the phages. This suggests that a specific type of phage can only be used intravenously once.

• Concerns about phage therapy can be alleviated by selecting the proper phage, developing an efficient formulation, and improving clinician knowledge and comfort with product delivery. Bacteriophages are attractive alternatives to pharmaceutical antibiotics due to a number of characteristics that make them antibacterial agents.

Q 6. Examine how pressure groups have contributed to strengthening the democratic system in the country.

GS II

Pressure groups and associated issues

• The term "pressure groups" can also refer to interest or vested groups, and they concentrate on particular initiatives and topics, and their only function is to influence the government to defend and advance the interests of their members. A political party, on the other hand, is a formalised association of individuals with shared political objectives.

• The advancement of the country's democratic system was facilitated by pressure groups in the following ways:

• Accountability and transparency: Pressure groups promote more accountability and transparency by analysing government policies and procedures and proposing the necessary corrections.

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com

• Common people's interests are not organised; pressure organisations help to give the interests of the people a tangible form. The role of pressure groups in forming and aggregating interests is significant. Pressure organisations act as a liaison between the public and the government.

• Pressure organisations are essential intermediary institutions between the government and the community that play a crucial role in the distribution of political power and serve as important checkpoints against the consolidation of power in order for a democracy to function effectively.

• Pressure groups function as a safety valve by providing a forum for people to voice their grievances, which promotes the growth of social integration.

• Political participation and the protection of democratic freedoms: Pressure groups support means for people to participate in politics without joining a party and also allow the protection of democratic freedoms of expression, assembly, and association.

• Pressure groups can act as change agents by drawing the government's attention to the socioeconomic concerns of various segments of society.

• As a result, political parties and pressure groups are extra-constitutional organisations that are crucial to the political process. On the one hand, political parties play a significant role in addressing their concerns. Despite the fact that they are not the same, it is obvious that they are close. Pressure groups help by educating the parties regarding the concerns of their members and by assisting in the cross-fertilization of ideas and labour.

Q 7. When we talk about marine heat waves, what do we mean? Describe the effects of maritime heat waves on human life and ocean ecosystems.

GS I

Geography related issues

• A marine heatwave (MHW) is an instance of extreme weather. When the sea surface temperature rises by three or four degrees Celsius for at least five days in a row, it occurs. They can occur in a variety of oceanic regions, and recently, both their frequency and amplitude have increased, having a detrimental impact on ecosystems, maritime industries, and human activities.

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com

• Effects of marine heat waves on the ocean's ecosystem:

• Mass fatalities: Just as they aggravate human health issues and have the potential to kill people on land, marine heatwaves have an effect on the health of marine species. For instance, MHWs along the coast of Western Australia in 2010 and 2011 resulted in a number of "devastating" fish kills, which are defined as the sudden, unexpected death of a great number of fish or other aquatic species during a short period of time and mostly within a certain area.

• Under certain conditions, heat stress can harm marine environments. Fish, whales, and sea turtles are forced to move to the cooler parts of the ocean. Even though these species naturally move to reproduce and search for food, marine heat waves cause them to substantially modify their migration behavior.

• Kelp is a large brown algae that dwells in cool, shallow waters near the beach. Kelp forests are being destroyed. On Kleps, several aquatic species live and eat. Marine heat waves have in the past destroyed kelp forests and significantly altered the coastal ecology.

• Marine heatwaves impact one particular ecosystem in particular—coral reefs—by aggravating instances of coral bleaching. These heat waves could cause coral bleaching, coral disease outbreaks, or algal blooms. Corals are significantly impacted by the water's temperature where they are found. When the water temperature rises too high, they eject the zooxanthellae algae that dwell in their tissues, turning totally white. For instance, the tropical Atlantic and Caribbean saw a large coral bleaching episode in 2005 as a result of warm water temperatures.

• Increase of invasive alien species: These invaders have the potential to permanently transform habitats, obliterate biodiversity, and drive native plants and animals extinct. Ocean heat waves promote the spread of alien species that can disrupt the marine food webs.

• Deoxygenation and acidification: Marine heat waves typically coexist with ocean stressors such ocean acidification, deoxygenation, and overfishing, which endanger marine

• ecosystems. In these conditions, MHWs increase the danger of habitat damage as well as deoxygenation and acidification.

• Effects of marine heat waves on human life:

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com

• A rise in extreme weather events: Hurricanes and tropical cyclones may become more intense as a result of warmer water temperatures associated with MHWs. As storms move over warm oceans, they absorb more heat and water vapor. Storms that impact the land produce stronger winds, heavier rain, and flooding, all of which worsen human misery.

• Coastal communities may suffer a great financial loss as a result of marine heat waves. MHWs can cause losses in fisheries and aquaculture by eliminating or reducing the productivity of economically important species. For instance, the abalone fishery in Western Australia was impacted by the 2011 marine heatwave. MHWs have also affected lobster and snow crab in the northwest Atlantic and in Western Australia.

• The southwest monsoon, which is the main rain-producing system across the Indian subcontinent, is being affected by the marine heat waves in the Indian Ocean. This could have an adverse effect on the agriculture and food security of the area.

• Markets, job prospects, and food supply may be impacted by reduced fishing and aquaculture as a result of marine heat waves. Furthermore, this might harm regional tourism.

• The oceans are significant because they generate a variety of economic benefits, including food production, tourism, and all the jobs related to those industries. By raising public awareness of the phenomena known as MHWs, establishing marine protected areas, and advancing scientific knowledge of their physical properties and biological consequences, we can improve our ability to predict future events and protect critical marine ecosystems and resources.

Gradient IAS | H/No - 1A, 2nd Floor
Zoo Road Tiniali, Hridoy Ranjan Path,
Next to Central Bank (Opposite Decora Tent House)
Guwahati – 781024 , 8860575759 / info@gradientias.com