



MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

I SEMESTER B.TECH. MIDTERM EXAMINATIONS SEPTEMBER 2024

DEPARTMENT OF CIVIL ENGINEERING

SUBJECT: ENVIRONMENTAL STUDIES [CIE 1072]

Date of Exam: 28/09/2024 Time: 08:30 AM-10:00 AM MAX. MARKS: 30

SCHEME OF EVALUATION

Q1. Which of the following statement is true (0.5)

1. Temperature and carbondioxide are not linearly correlated
2. Earth is entering into an ice age
3. Total estimated quantity of Increase in the atmosphere carbondioxide is same as the amount emitted in the atmosphere by fossil fuels
4. None of the above

Correct option is: 1

Q2. Which of the following statement related to Tragedy of commons is true (0.5)

1. Inherent tension develops between collective and individual responsibility
2. It can always be resolved through privatization or government intervention
3. It is independent of carrying capacity of common
4. All the above

Correct option is: 1

Q3. Focussing on GDP will help in (0.5)

1. Reducing Income inequality
2. Sustainable development
3. Environmental conservation
4. All the above

Correct option is: 4

Q4. The seasonal variations in the atmospheric Carbondioxide content can be observed by (0.5)

1. Studying ice core data
2. Analyzing the pollution data
3. Studying the Keeling curve
4. Studying the Kuznets curve

Correct option is: 3

Q5. Which of the following process results in sinking of microplastic to the river bed?(0.5)

1. Bioaccumulation
2. Marine fouling
3. Leaching
4. None of the above

Correct option is: 2

Q6. Which of the following plastic is not accepted through most of the curbside recycling programmes? (0.5)

1. Polypropylene
2. Polystyrene
3. Polyethylene terephthalate
4. Low density polyethylene

Correct option is: 2

Q7. Which of the following is not a factor affecting soil formation? (0.5)

1. Slope of the land
2. **Construction activities
3. Nature of parent rock
4. Climate

Correct option is: 2

Q8. Which of the following statement with respect to soil profile is true (0.5)

1. **Minerals form the largest constituent of soil
2. Zone of clay accumulation is least in the B horizon
3. Laterite soils are the most fertile soil
4. Desert soils are mostly acidic in nature

Correct option is: 1

Q9. Choose the incorrect statement from the following (0.5)

1. Tragedy of the commons is derivative of 'self-interest' for a common resource.
2. The issue of 'tragedy of the commons' can only be managed and not solved.
3. **Keeling's curves show that the total estimated increase in the quantity of atmospheric Carbon dioxide content is same as that emitted by burning fossil fuels.
4. None of the above.

Correct option is: 3

Q10. Which one of the following fact is incorrect? (0.5)

1. ** Ozone is harmless to breathe
2. Global warming is the rise in the average temperature of the earth's climate system
3. Eutrophication is observed in water bodies
4. The greenhouse effect is a natural phenomenon

Correct option is: 1

DESCRIPTIVE QUESTIONS

Q11. Environmental Kuznets curve is right if you take countries in isolation but wrong when taken for the entire world. Infer with example (4)

Ans:

As per environmental Kuznets curve developed countries like Europe is rich enough to spend some of its income on protection of their environment while developing countries it will consume resources at a rate which will cause environmental decay and due to less income they are not able to focus on environmental protection activities. Europe is very sensitive to its environment and have very stringent rules for its protection. But it does not mean that they have low carbon footprints. It has one of the highest per capita CO₂ emissions of the world. It manages to have a clean environment by shifting the onerous of doing polluting jobs to other countries and importing the products from them. This allows them to be clean while also causing environmental degradation. This is clearly not a sustainable way to reduce environmental degradation in the world. There is therefore a need to move to better policies to reduce environmental degradation and actually develop sustainably.

Explanation on EKC- 2 Marks, Comparision with the case of Europe or developed countries- 2 Marks

Q12. Watershed management ensures the protection of ecosystem services. Explain (3)

Ans:

Watershed management ensures protection of ecosystem services by **(Any 6 points)**

- Controlling damaging runoff and degradation and thereby conservation of soil and water.
- Managing and utilizing the runoff water for useful purpose.
- Protecting, conserving the land of watershed for more efficient and sustained production.
- By protecting and enhancing the water resource originating in the watershed.
- By checking soil erosion and reduce the effect of sediment yield on the watershed.
- Moderating the floods peaks at down stream areas.
- Increasing infiltration of rainwater.
- Improving and increasing the production of timbers, fodder and wild life resource.
- Enhancing the ground water recharge, wherever applicable

(6 x 0.5 Marks = 3 Marks)

Q13. Why is considering hydroelectric dam a renewable or sustainable energy resource problematic? Explain using any three points. (3)

Ans:

Student need to explain the answer focussing on below 3 points

- Rivers and their flow are not infinite; therefore, they cannot be dammed indiscriminately.
- They cannot be considered sustainable as they cause immense environmental damage to downstream areas and cause massive human displacement.
- They also change river ecology and flow, due to which there is loss of livelihoods such as local fishing and agriculture.

(3 x 1 Marks = 3 Marks)

Q14. Explain biocapacity and ecological footprint through the lens of commons. (3)

Ans:

- For a commons, its biocapacity would be the rate at which it can provide resources to all its stakeholders.
- The ecological footprint would be how much resources all the stakeholder combined consume from the commons.
- An ecological deficit will occur when the stakeholders consume more than the commons can provide. This is a classic case of tragedy of commons. The deficit will then need to be extracted from other sources (including other commons) thereby potentially causing other commons to also suffer from the same fate.

(3 x 1 Marks = 3 Marks)

Q15. Discuss the policy and actions being taken towards managing single use plastic in India. (3)

Ans:

- Single use plastics are those which is intended to be used once before being disposed or recycled. According to plastic waste management rules thickness of plastics has been increased to 120 microns from 50 microns to enhance the better segregation of plastic waste
- Manufacture, import, stocking, distribution, sale and use of all single-use plastic commodities are prohibited under amended rules.
- Focussing on developing economically viable alternatives for plastic bags.

Q16. Explain the importance of wetland conservation in urban planning with respect to the Chennai City . (3)

Ans:

- Chennai, based on its geography and geology, has historically been characterized as a flood plain where a set of interconnected wetlands and natural water channels **store and drain the surcharge during its two monsoonal seasons**
- It is also dependent on many of these wetlands for **protection against cyclones**, to which the entire Indian Eastern coastline is particularly vulnerable.
- Wetland conservation also ensure the **water availability** during the summer months as otherwise the city has to rely on underground water for its **water supply and irrigation**.

(3 x 1 Marks = 3 Marks)

Q17. Forest support the four pillars of food security as specified by Food and Agriculture Organisation. Infer (2)

Ans: Forest support the four pillars of food security as per FAO by

- Food availability: Soil quality and pollinators are essential for wild and cultivated foods which is being supported by forest
- Stability over time: Forest and resources are resilient to climate change compared to conventional farming system which is ideal from the point of preserving resources over period of time
- Food use: Medicinal plants and nutrients ensure healthy lifestyle of people
- Access to food: Giving revenue through the forest resources it helps millions a way to access food.

(4 x 0.5 Marks = 2 Marks)

Q18. Mismanagement of wetlands in Chennai hampered the agriculture sector. Infer. (2)

Ans:

- Due to the IT boom, the city has seen an unsustainable and unscientific urbanization which in numerous cases has led to loss of green cover and encroachment of waterbodies.
- Since the wetlands are not connected or are encroached on, they don't receive sufficient water to ensure that they have water during the summer months. As a consequence, the city has had to rely on ground water in the summer for its supply which has also started to dry.
- Chennai is on the coast, the drained aquifers are intruded by seawater, increasing the salinity of the land above them destroying the agriculture of the region.
- This has led to increased burden on the already in-debt farmers leading to a sharp rise in farmer suicides

(4 x 0.5 Marks = 2 Marks)

Q19. Distinguish between primary and secondary microplastic . (2)

Ans:

- Primary microplastics are micro-sized synthetic polymers and used as exfoliates of various processes such as chemical formulations, sandblasting media, maintenance of various plastic products and also in the manufacturing of synthetic clothes.
- Secondary microplastics are the fragmented product of macro or meso plastics and mostly generated under the effect of various environmental processes such as biodegradation, photodegradation, thermo-oxidative degradation, thermal degradation and hydrolysis.

(2 x 1 Marks = 2 Marks)