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| **Scheme of Valuation/Answer Key**  (Scheme of evaluation (marks in brackets) and answers of problems/key) | | | | | |
| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018 | | | | | |
| **Course Code: CE371** | | | | | |
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| Max. Marks: 100 | | |  | Duration: 3 Hours | |
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| **PART A** | | | | | |
|  |  | ***Answer any two full questions, each carries 15 marks.*** | | | Marks |
| 1 | a) | * Definition ,Effects, Remedial measures 3+3+1 marks * Population explosion is a sudden spurtinthe rate of population growth that occurs due to a rapid fall in the mortality rate without a corresponding fall in the birth rate . * Population growth curve –exponential in developing countries Population explosion will create global warming-emission greenhouse gases- increase in demand for food -more land for cultivation- * Effects-Low per capita income,environmental damage, low living standard of people,migration to urban area,lack of basic amenities etc * Remedial –integrate population planning with economic planning, significant reduction in birth rate, rasing the per capita income by taking measures for faster economic development etc | | | (7) |
|  | b) | Atleast 4 relevant Positive effects ---4 marks  Atleast 4 relevant Negative effects ---4 marks | | | (8) |
| 2 | a) | List the main particulate pollutants ---------- 2marks  (Smoke,Fumes,Mist,Dust,Flyash,ashetc)  Source –2.5 marks  Effects --2.5 marks | | | (7) |
|  | b) | Flow chart ---------------3 marks  Demerit—-----------1 marks | | | 4 |
|  | c) | Biotic components ---------------2marks  Abiotic components -------------2marks | | | 4 |
| 3 | a) | Causes,effects,remedial measures of ozone layer --------- 2.5+2.5+2 marks | | | 7 |
|  | b) | Air quality standards ----The Central Pollution Prevention Control Board ,NewDelhi has fixed the standard for ambient air quality in India under the act of 1981.  Suspended Particulate matter (SPM),.CO,.SO2, NOX concentration for industrial, residential, sensitive areas (monuments, tourist places etc.) should be mentioned ------------5marks | | | 5 |
|  | c) | Biogeochemical cycle –definition 1marks  Classification – Gaseous cycle—(Oxygen,nitrogen and carbon)  Sedimentary cycle –phosphorous 2marks | | | 3 |
| **PART B** | | | | | |
| ***Answer any two full questions, each carries 15 marks.*** | | | | | |
| 4 | a) | Environmental significance of D Oand BOD ---4 marks each  Biochemical Oxygen Demand is an important water quality parameter because it provides an index to assess  the effect discharged wastewater will have on the receiving environment. The higher the BOD value, thegreater the amount of organic matter or “food” available for oxygen consuming bacteria. If the rate of DOconsumption by bacteria exceeds the supply of DO from aquatic plants, algae photosynthesis or diffusingfrom air, unfavourable conditions occur. Depletion of DO causes stress on aquatic organisms, making theenvironment unsuitable for life. depletion can lead to hypoxia or anoxic environments.  BOD is also used extensively for wastewater treatment, as decomposition of organic waste bymicroorganisms is commonly used for treatment. | | | (8) |
|  | b) | 1) List major pollutants ---------------4 marks  1)Organic pollutants, (2) Pathogens, (3) Nutrients and agriculture runoff, (4) Suspended solids and sediments (organic and inorganic), (5) Inorganic pollutants (salts and metals), (6) Thermal Pollution, and (7) Radioactive pollutants  2)Water borne diseases ----------3 marks  The term waterborne disease is reserved largely for  infections that predominantly are transmitted throughcontact  with or consumption of infected water.  Cholera---- Spreadbythe DrinkingbacteriumVibrio  Contaminated cholera bacterium  E. coli Infection, Dysentery, Salmonellosis etc | | | (7) |
| 5 | a) | Definition and explanation ---2 +2 marks  Eutrophication is an enrichment of water by nutrient salts that causes structural changes to the ecosystem such as: increased production of algae and aquatic plants, depletion of fish species, general deterioration ofwater quality In excessive amounts, however, nutrientslike nitrogen and phosphates cause a type of pollution called eutrophication.  Eutrophication stimulates an explosive growth of algae (algal blooms) that depletes the water of oxygen when the the algae die and are eaten by bacteria. Estuarine waters may become hypoxic (oxygen poor) or  anoxic (completely depleted of oxygen) from algal blooms. While hypoxia may cause animals in estuaries  to become physically stressed, anoxic conditions can kill them.fishes eat algal blooms.When animals eatthis fishes toxic chemicals in their body, that affect calcium metabolism and can impact reproduction and  development of exposed animals. Birds were major victims of the chemicals' effects. They experiencereproductive failure as their eggs lacked sufficient calcium, were extremely thin, and shells broke when satupon by the nesting adult birds. So that there is tremendous decrease in next generation of bird species | | | (4) |
|  | b) | Recycling -- Economic aspects –—1.5 marks  For stable economic growth,resources must be used carefully and technologies for recycling of wastes are to be evolved .  Recycling techniques with examples ----------- 3.5 marks  Construction materials from wastes, agricultural waste into fuels,energy from urban and industrial wastes ,melting plastic domestic toys and moulding into new ones,use of incineration heat,composting garbage etc | | | 5 |
|  | c) | Methods ------------3marks  Land filling,Incineration,Pulverization,Composting,Pyrolysis,Disposal into sea  Advantages of land filling --1.5marks (any three)  Disadvantages of land filling—1.5marks (ant three ) | | | 6 |
| 6 | a) |  | | | 5 |
|  | b) | Composition of MSW—2.5 marks  Composition of industrial waste --2.5 marks | | | 5 |
|  | c) | Defintion--------2 marks  Sources of generation E waste with an examples in daily life------ 3 marks | | | 5 |
| **PART C** | | | | | |
| ***Answer any two full questions, each carries20 marks.*** | | | | | |
| 7 | a) | List any 5 relevant points and explain | | | (10) |
|  | b) | Any 3 points with explanations | | | (5) |
|  | c) | Waste land –2.5 marks  Wetlands –2.5marks | | | (5) |
| 8 | a) | List Major sources ----- 4marks  Explanation --------- 6 marks | | | (10) |
|  | b) | Explanation ----4marks  Equation of sound level + Explaination of each term –2 marks  Loudness of sound is measured in decibels (dB). This is actually a measure of intensity, which relates to how much energy the pressure wave has. Decibels are a relative measurement. They relate the intensity of a pressure wave to a normal or standard pressure.  **L = 10 log10 Q/ Q0 (dB)** (log to the  base 10 of sound intensity ratio multiplied by 10 gives required decibel).  • Q=Measured quantity of sound intensity  • Q0= Reference standard quantity of sound intensity  • L= Sound level in decibels | | | 6 |
|  | c) | Physical effects ----–2marks  Physological effects--------- --2marks | | | 4 |
| 9 | a) | Sources –5 --------- marks  Control measures –------------5 marks | | | 10 |
|  | b) | pH definition –------1 mark  Importance ---------4 marks  pH is a measure of the quantity of hydrogen present in the soil.  As the amount of hydrogen in the soil increases, the soil pH decreases, thus becoming more acidic.  Hydrogen carries a weak positive electrical charge which enables it to attach to negatively charges sites on the clay and humus particles in the soil that contain most of the nutrients the grass needs to thrive. Therefore these negatively charged sites become clogged with positively charged hydrogen; thus the positively charged mineral nutrients are not able to attach to these same sites.  pH of a natural soil depends on the mineral composition of the [parent material](https://en.wikipedia.org/wiki/Parent_material) of the soil, and the weathering reactions undergone by that parent material. | | | 5 |
|  | c) | Definition pitch—------2.5 marks  Sound pressure level –---------2.5 marks | | | 5 |
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