SYLLABUS FOR THE POST OF LECTURER 10+2
ENVIRONMENTAL SCIENCE

1. Definition, principle and scope of Environmental Science.
2. Origin and structure of earth.
3. Atmosphere, structure and composition.
4. Hydrosphere: Global water resources and hydrological cycles.
5. Lithosphere: a brief account.
6. Biosphere: its components.
7. Chromatography: GLC, HPLC.
8. Thermochemical and photochemical reactions in the atmosphere and their effects.
9. Lake optics.
10. Thermal phenomena in lakes and streams.
11. Dissolved gases in water – CO2, DO2, H2S and NH3 and Biochemical oxygen demand and chemical oxygen demand.
12. Structure and function of ecosystem.
13. Primary productivity.
14. Secondary productivity.
15. Energy flow and laws of thermodynamics; energy models and energy relations in ecosystems.
16. Characteristics of populations.
17. Population growth.
18. Population interactions.
19. Population regulations; density dependent and density independent.
20. Concept and Characteristics of communities.
21. Community Development.
    a) Types of succession.
    b) Climax characterization.

22. Water resources of India.
23. Metals and minerals from land and oceans.
24. Animal Resources: current status with special reference to India.
25. Renewable Energy Resources
    a) Solar energy.
    b) Wind and tidal energy.
    c) Geothermal energy.
    d) Energy from biomass.
26. Non-renewable energy Resources.
    a) Fossil fuels and their global distribution.
    b) Nuclear energy.
    c) Hydrogen as a source of energy.
27. Medicinal plants of the Himalayas.
28. Wild life of Jammu & Kashmir.
29. Hydro-power resources in the Himalayas with special reference to Kashmir.
30. Definition, scope, goals and divisions of toxicology.
31. Toxicity of chemical mixtures.
32. Membrane permeability & mechanism of chemical transfer.
33. Biomagnification of pesticides, heavy metals and radioactive substances.

34. Sources, classification and properties of primary and secondary air pollutants.
35. Smog.
36. Acid rains, causes, consequences and control.
37. Green house gases.
38. Ozone layer depletion.
39. Indoor air pollution: smoke, HCs, particulate matter, Radon.
40. Effects of air pollutants on ecosystem.
41. Noise pollution – definition and sources.
42. Impact of noise on human health.
43. Noise control and abatement measures.
44. Types of radioactive pollutants and their sources.
45. Soil erosion – causes, assessment and environmental impacts.
46. Soil conservation and control of soil erosion.
47. Sources and types of water pollution.
48. Industrial effluent treatment.
49. Treatment of sewage.
50. History and scope of microbiology.
51. Role of microbes in fixation and solubilization/mineralization of nutrients – sulphur, nitrogen, phosphorus, carbon.
52. Nature and function of micro-organisms in Soil, Water and Air.
53. Microbial spoilage of food and its preservation.
54. Application of micro-organisms in the control of
    a) Oil pollution.
    b) Chemical pollution.
55. Biodeterioration of materials.
56. Air borne diseases – Epidemiology (Reservoir of infection, communicability and control)
    a)Tuberculosis.
57. Water and food borne disease.
    a) Typhoid.
58. Bronchial asthma, allergic bronchitis.
59. Occupational diseases.
60. Environment protection – issues and problems.
61. Wildlife Protection Act, 1972.
62. The Water (Prevention and Control of Pollution) Act, 1974.
63. Air (Prevention and Control of Pollution) Act, 1987.
64. The Environmental (protection) Act, 1986.
65. National Environment Tribunal Act, 1995.
66. Environmental impact assessment – concept, objectives, origin and approaches.
67. EIA Guidelines 1994.
68. River Valley projects.
69. Mining.
70. Oil Refineries.
71. Thermal and Power Projects.
72. Cement industries.
73. Land use planning.
74. Impact of Tourism on environment.
75. Organisation and working of a computer.
76. Computer architecture fundamentals.

77. Hardware: types of memory – primary and secondary.
78. Software: Windows operating systems.
79. Basic principles of remote sensing.
    a)Definition, scope and its role in environmental science.
    b)Electromagnetic radiation (EMR) and electromagnetic spectrum.
    c)Earth's and atmospheric interaction with EMR.
    Satellite systems – IRS and Landsat.
80. Aerial photography.
    a)Definition and specifications for aerial photography.
    b)Types of aerial photography.
81. Fundamentals of photogrammetry.
82. River valley projects.
83. Forest management.
84. Watershed management.
85. Monitoring of Biodiversity.
86. Environmental impact analysis.
87. Natural disaster management.
88. Environmental economics – Definition and concerns.
89. Concept of threatened and endemic species and their conservation.
90. Forest conservation
    a)Causes of forest degradation.
    b)Forest conservation measures – Social forestry.
91. Energy crisis and Conservation of renewable and non-renewable energy resources.
92. Management of fresh water resources.
93. Conservation of plants and animals.
    a)In-situ conservation – National Parks, Sanctuaries, Biosphere Reserves, Ramsar Sites.
    b)Ex-situ conservation - Botanical gardens, Zoological parks, Zoos, Seed Banks, Agricultural Research Institutes.
94. Management of solid wastes.
95. Biotechnology.
    a)Concept and environmental relevance.
96. Biotechnology in Pollution control and bioremedies.

Sd/-
Secretary & COE
JK PSC