

Total No. of Questions : 12]

SEAT No. :

P881

[Total No. of Pages : 2

[4659]-339

B.E. (Instrumentation and Control Engineering)

a-ENVIRONMENTAL INSTRUMENTATION

(2008 Course) (Elective-II) (Semester-I)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answer 3 questions from Section-I and 3 questions from Section-II.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume suitable data, if necessary.*

SECTION-I

- Q1) a)** Explain the operating principle of the flame ionization detector with the help of neat diagram. Also explain applications of flame ionization detector in measurement of total hydrocarbon concentrations. **[8]**
- b) List the different types of measurement techniques used in ultraviolet analyser. Explain the emissive technique in detail. **[8]**

OR

- Q2) a)** List the different detectors used in Gas chromatography. Explain photoionization detector in detail. **[8]**
- b) Elaborate the need and importance of instrumentation and control system in environment instrumentation. **[8]**
- Q3) a)** Explain the different Sensors used thermal conductivity measurement. **[8]**
- b) Explain briefly different elements of water treatment facilities. **[8]**

OR

- Q4) a)** Describe the single pass opacity with the help of neat diagram. **[8]**
- b) What are the different conductivity measurement techniques in conductivity analyser. Explain the electrode conductivity measurement techniques. **[8]**
- Q5) a)** What is sedimentation? What is criteria for sizing of settling basins? Also describe the circular and rectangular basin. **[9]**
- b) Discuss any three methods used in ground water monitoring. **[9]**

OR

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- Q6)** a) Explain the different level measurement techniques in ground water monitoring wells. [9]
- b) Explain any three commonly used instruments in laboratory for analysis of groundwater samples. [9]

SECTION-II

- Q7)** a) What is water sampler? What are different elements of automatic sampling system? Explain them briefly. [8]
- b) Explain any two level measuring instruments used in waste water treatment. [8]

OR

- Q8)** a) Elaborate clearly which locations should be avoided in waste water sampling. [8]
- b) Explain any two types of waste water sampling system. [8]
- Q9)** a) Classify the air pollutants in detail. Also explain their properties and ill effects on human beings. [9]
- b) Explain the typical air sampling set up. Explain briefly methods available for collection of gaseous air pollutants from atmosphere. [9]

OR

- Q10)**a) List basic methods for removing particulate matter from gas stream. Explain electrostatic precipitator in detail. [9]
- b) Explain the analytic method for measurement sulphur dioxide. [9]
- Q11)**a) What is open channel flow metering? Explain secondary devices used for the open channel flow meters. [8]
- b) What is necessity of rain water harvesting? Explain different rain water harvesting techniques. [8]

OR

- Q12)**a) List different types air flow measurement techniques. Explain any two in detail. [8]
- b) How does gas flow measuring devices are categorized? Explain the spirometer in detail. [8]

