

- Q.27 Write a short note on conductivity meter
  - Q.28 Write various application of electro-chemical analyzer.
  - Q.29 What do you mean by liquid analysis ?
  - Q.30 Explain the working of Arduino based air, water, gas and noise quality monitoring system.
  - Q.31 Draw and explain the basic building blocks of analytical instruments.
  - Q.32 Explain pH measurement.
  - Q.33 Explain mass spectroscopy in detail.
  - Q.34 Explain working principle of infrared gas analyzer.
  - Q.35 Explain electrochemical analysis.

## **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 What do you mean by spectroscopic analysis ? Explain mass spectroscopy in detail.

Q.37 Explain in detail block diagram of IOT based air, water, gas and noise quality monitoring system.

Q.38 Write short note on any two :-

  - (a) Infra-red gas analyzer
  - (b) Detector used in gas chromatography

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**5th Sem / Instrumentation & Control / EI  
Subject:- Analytical & Environmental Instruments**

Time : 3Hrs. M.M. : 100

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## **SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Ph of neutral salt.

  - a) 7
  - b) <7
  - c) >7
  - d) 0

Q.2 Which of the statement is correct?

  - a) Gas chromatography is used to analyses gases
  - b) Gas chromatography is used to analyses solids
  - c) Gas chromatography is used to analyses gases, solution & solids
  - d) All of the above

Q.3 Mostly pollution of rivers takes place by discharge sewage.

  - a) True
  - b) False

Q.4 The thermistor whose resistance increase by increasing temperature.

  - a) NTC thermistor
  - b) PTC thermistor
  - c) RTC thermistor
  - d) Any of these

Q.5 Conductivity is defined as the ability to carry

- a) Voltage
- b) Resistance
- c) Current
- d) All of the mentioned

Q.6 What is paramagnetic gas ?

- a) It is attracted by a magnetic field
- b) It is repelled by a magnetic field
- c) It is attracted by an electric field
- d) It is repelled by an electric field

Q.7 Thermal conductivity of oxygen and nitrogen is almost

- a) Same
- b) Different
- c) Zero
- d) Infinite

Q.8 In atomic absorption spectroscopy which of the following is the generally used radiation source ?

- a) Tungsten Lamp
- b) Xenon mercury arc lamp
- c) Hydrogen discharge lamp
- d) Hollow cathode lamp

Q.9 Which among the following elements has the highest thermal conductivity ?

- a) Nitrogen
- b) Oxygen
- c) Hydrogen
- d) Chlorine

Q.10 \_\_\_\_\_ is dangerous to use in gas chromatography

- a) Hydrogen
- b) Oxygen
- c) Nitrogen
- d) None of these

## SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

Q.11 Define Cell.

Q.12 Write the full form AEI

Q.13 Define Pollutant

Q.14 Gas Pollution

Q.15 Expand IOT.

Q.16 LED.

Q.17 Power plant.

Q.18 Transducer.

Q.19 What is pH?

Q.20 Injector

## SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Discuss dust measurement.

Q.22 Explain AEI in brief.

Q.23 Write a short note on electrodes used for pH measurement.

Q.24 Discuss the detector in brief

Q.25 Write a short note on noise pollution

Q.26 Define Injector & write at least two advantages of injector