

- 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 :-
- Infra-red gas analyzer
  - Detector used in gas chromatography

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

Time : 3Hrs.

M.M. : 100

#### SECTION-A

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

- Q.1 Ph of neutral salt.
- 7
  - <7
  - >7
  - 0
- Q.2 Which of the statement is correct?
- Gas chromatography is used to analyses gases
  - Gas chromatography is used to analyses solids
  - Gas chromatography is used to analyses gases, solution & solids
  - All of the above
- Q.3 Mostly pollution of rivers takes place by discharge sewage.
- True
  - False
- Q.4 The thermistor whose resistance increase by increasing temperature.
- NTC thermistor
  - PTC thermistor
  - RTC thermistor
  - 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 phramagnetic gas ?

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