Reg. No. : | | | | | | | | | | |

Question Paper Code: 55904

B.E./B.Tech. DEGREE EXAMINATION, DEC 2020

Fifth Semester

Chemical Engineering

15UCH504- INSTRUMENTAL METHODS OF ANALYSIS

(Regulation 2015)

Duration: One hour Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. Electromagnetic radiation requires for its transmission CO1- R

   (a) Physical medium (b) Chemical medium

   (c) Supporting medium (d) Organic medium.

2. The energy of a photon is proportional to the frequency of the CO1- R

   (a) Absorption (b) Emission

   (c) Radiation (d) Transformation

3. If the frequency of functional group in higher, then its wavenumber is CO2- R

   (a) higher (b) lower (c) medium (d) none of these

4. The range of UV-Visible Spectroscopy is CO2- R

   (a) 100-500 nm (b) 400-800 Nm (c) 200-400 nm (d) 200-800 nm

5. NMR is the study of absorption of _____ by nuclei in a magnetic field? CO3- R

   (a) Radioactive radiation (b) IR radiation

   (c) Radio frequency radiation (d) Microwaves

6. The difference between the field necessary for resonance in the sample and in some arbitrary chosen compound is which of the following? CO3- R

   (a) Field shift (b) Matrix effects (c) Chemical shift (d) Resonance shift

7. Adsorption chromatography is preferred for the separation of mixtures whose components CO4- R

(a) differ in polarity (b) differ in structure

(c) are very close in polarity (d) have almost similar structures

8. Synthetic ion exchange resins have widely been used for CO4- R

(a) water softening (b) water deionization (c) Ion separation (d) all of these

9. In electrolytic conductors, the conductance is due to_____ CO5- R

(a) Flow of free mobile electrons (b) Movement of ions

(c) Either movement of electrons or ions (d) Cannot be determined

10. The resistance of the conductor in the electrolytic cell _____with increase in temperature. CO5- R

(a) Increase (b) Decrease (c) Slightly increase (d) Do not change

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Discuss in detail the components of optical instruments. CO1- U (8)

12. Give various applications of IR spectroscopy. CO2- U (8)

13. Describe the theory of Mass spectrometer. CO3- U (8)

14. Explain the adsorption principle involved in chromatography CO4- U (8)

15. Explain briefly about ion selective electrodes and its uses. CO5- U (8)