(6 pages)

Reg. No. : ....

Code No. : 41116 E   Sub. Code : JMCH 5 C

B.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2018.

Fifth Semester

Chemistry — Main

Major Elective – II — ANALYTICAL CHEMISTRY

(For those who joined in July 2016 onwards)

Time : Three hours   Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Determinate error is due to —————.

    (a) Method error

    (b) Personal error

    (c) Instrumental error

    (d) All the above

2. The difference between the measured value and true value is called —————.

    (a) Error   (b) Deviation

    (c) Difference   (d) % error

3. What is 1 ppm?

    (a) 1 gm in 1 litre   (b) 0.1 gm in 1 litre

    (c) 1 mgm in 1 litre   (d) 0.01 gm in 1 litre

4. Which anion with Ca^{2+} and Mg^{2+} gives rise to temporary hardness in water?

    (a) $Cl^{\ominus}$ (b) $SO_4^{2\ominus}$

    (c) $HCO_3^{\ominus}$ (d) $OH^{\ominus}$

5. The bituminous coal is formed from ————— coal.

    (a) Anthracite   (b) Peat

    (c) Lignite   (d) None of these

6. ————— point of an oil is the temperature at which it gives enough vapours that ignite for a moment when these vapours are exposed to a tiny flame.

    (a) Fire   (b) Flash

    (c) Aniline   (d) All the above

Page 2   Code No. : 41116 E

7. In controlled-potential coulometry ———— instrumental units are involved.

   (a) 2   (b) 3

   (c) 5   (d) 4

8. ———— method possesses greater sensitivity than conductometric and potentiometric titrations.

   (a) Amperometric

   (b) Gravimetric

   (c) Spectrophotometry

   (d) Volumetric

9. For the measurement of very small amounts of turbidity the ———— method is one of the choice.

   (a) Colorimetric   (b) Fluorimetry

   (c) Nephelometry   (d) Potentiometric

10. ———— provides the analyst with a quantitative measurement of any weight change associated with a transition.

   (a) TGA   (b) DTA

   (c) DSC   (d) TMA

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are the types of errors encountered in analytical measurements? Explain them.

   Or

   (b) What is "Q" test? How is it used to reject a data from the experiment?

12. (a) What is BOD value? What is its significance?

   Or

   (b) What is COD value? What does it indicate?

13. (a) Explain Aniline point.

   Or

   (b) Write a note on Producer gas.

14. (a) What are the advantages and disadvantages of DME?

   Or

   (b) Write the applications and advantages of Amperometric titrations.

15. (a) What are the factors affecting DTA?

Or

(b) Explain turbidimetry.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) How is standard deviation calculated for a set of analytical data? Discuss its importance.

Or

(b) Explain the different types of errors with example.

17. (a) Explain how is colour, odour, turbidity and taste of water removed.

Or

(b) How is total alkalinity of water determined by titrimetric method?

18. (a) Discuss in detail the liquid fuels.

Or

(b) What are gaseous fuels? Write the names of two gaseous fuel and its composition.

19. (a) Describe two types of coulometric analysis.

Or

(b) Explain the applications of polarography in qualitative and quantitative analysis.

20. (a) Write the principle and instrumentation of TGA.

Or

(b) Describe the principle and applications of fluorimetry.

———————