

Roll No.

D-982**M. Sc. (Fourth Semester) (Main/ATKT)
EXAMINATION, May-June, 2020**

CHEMISTRY

Paper Fourth (CH-22)

(Environmental and Applied Chemical Analysis)*Time : Three Hours]**[Maximum Marks : 80***Note :** Attempt all Sections as directed.**Section—A**

1 each

(Objective/Multiple Choice Questions)**Note :** Attempt all questions.

Choose the correct answer :

1. Which of the following is a secondary air pollutant ?
 - (a) SPM
 - (b) PAN
 - (c) SO₂
 - (d) NO₂
2. Which of the following is a liquid form of aerosol ?
 - (a) Fume
 - (b) Dust
 - (c) Mist
 - (d) Smoke

3. Which of the following pollutants are considered when measuring air quality ?
 - (a) CO, O₃, PM_{2.5}
 - (b) NH₃, PM₁₀, Pb
 - (c) NO₂, SO₂
 - (d) All of the mentioned
4. Which of the following technique is better for monitoring of air pollutants ?
 - (a) AAS
 - (b) FIPLC
 - (c) NDIR
 - (d) ICP-AES
5. Which of the following is responsible for turning yellow Taj Mahal ?
 - (a) Nitrogen dioxide
 - (b) Sulphur
 - (c) Chlorine
 - (d) Sulphur dioxide
6. The online monitoring of pollutants in water bodies can be carried out by using :
 - (a) Motors
 - (b) Automatic sensors
 - (c) Automatic motors
 - (d) Turbines

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7. The following unit is not used to measure turbidity of water :
- (a) NTU
 - (b) ATU
 - (c) JTU
 - (d) FTU
8. In which method of disposal of municipal solid waste, the waste is dumped in the soil ?
- (a) Composting
 - (b) Incineration
 - (c) Land filing
 - (d) Shredding
9. In which process, the fluoride content of water is raised ?
- (a) Chlorination
 - (b) Fluoridation
 - (c) Defluoridation
 - (d) Flocculation
10. What is called for the movement of surface liner and topsoil from one place to another ?
- (a) Soil submerge
 - (b) Soil degradation
 - (c) Soil erosion
 - (d) Soil pollution

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11. The full form of PFA is :
- (a) Prevention of Food Act
 - (b) Protection of Food Act
 - (c) Prevention of Food Adulteration
 - (d) Prevention Food Alteration
12. The best temperature for the preparation coffee is :
- (a) 75-80°C
 - (b) 85-95°C
 - (c) 95-105°C
 - (d) 105-115°C
13. What is the average percentage range of protein in wheat sample ?
- (a) 2-5%
 - (b) 10-15%
 - (c) 15-25%
 - (d) 25-35%
14. Which of the following component is highest percentage in yolk of egg ?
- (a) Cholesterol
 - (b) Water
 - (c) Carbohydrate
 - (d) Protein

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15. Methods for detection of common adulterants are :
- (a) Visual tests
 - (b) Chemical tests
 - (c) Physical tests
 - (d) All of the mentioned
16. Which one of the following chemicals is used to enhance the flavor during the preservation of meat ?
- (a) Magnesium gluconate
 - (b) Calcium glutamate
 - (c) Monosodium glutamate
 - (d) Calcium gluconate
17. Which of the following is the residual product in the formation of soap ?
- (a) Glyceraldehyde
 - (b) Glycerol
 - (c) Glycerine
 - (d) Acrylonitrile
18. The function of amylase is :
- (a) Synthesis starch from sugars
 - (b) Convert starch into sugars
 - (c) Synthesis lipids from fatty acids
 - (d) Convert lipids into fatty acids

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19. Which of the following technique is good for quantitative analysis of albumin present in egg sample is ?
- (a) Atomic absorption spectroscopy
 - (b) Paper chromatography
 - (c) GC
 - (d) HPLC
20. Which of the following elements can be determined by complexometric titration from clinical samples ?
- (a) Na
 - (b) P
 - (c) Ca
 - (d) Li

Section—B

2 each

(Very Short Answer Type Questions)

Note : Attempt all questions in 2-3 sentences.

1. Define ozone hole.
2. Give the name of instruments that can be used for monitoring of SO₂ from atmosphere.
3. What is the difference between contamination and pollution ?
4. What is sewage ? Write about the various constituents of sewage.
5. What is purpose of introduction of food additives in food ?
6. Give the name of preservatives that added to prevent the microbial growth in the food materials ?
7. What does the term “cosmetics” refer ?

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8. Write the names of analytical techniques used for determination of trace elements from biological samples.

Section—C

3 each

(Short Answer Type Questions)

Note : Attempt all questions. Write answer in < 75 words.

1. Write the different chemical reaction involved in the formation of acid rain.
2. What is scrubber technique used for controlling the air pollution ?
3. Give the chemical method for analysis of phosphate from soil samples.
4. What is the source of nitrate pollution in water and soil samples ?
5. Write the names of different types of adulterants that can found in foods.
6. Describe the physico-chemical properties of water and the significance of water activity to the stability of foods.
7. Give the chemical method for analysis of glucose in urine sample.
8. Write the composition of face cream and write the function of each component.

Section—D

5 each

(Long Answer Type Questions)

Note : Attempt all questions. Write answer in < 150 words.

1. Shortly describe the sampling and monitoring of different types of air pollutant.

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Or

Write short notes on the following :

- (i) Photochemical smog
 - (ii) Acid rain
2. What is chemical oxygen demand ? Briefly describe the principle, procedure for determination of COD in industrial waste water sample.

Or

Write short notes on the following :

- (i) Control devices for water pollutants
 - (ii) Fluoride pollution in India
3. Explain the importance and analysis of additives and preservatives in food samples.

Or

Briefly describe the composition and analysis of :

- (i) Soft drink
 - (ii) Ice-cream
4. What is the significance of cosmetic in the society ? Write the raw material and composition for preparation of Face powder and Perfumes.

Or

Write the principle and procedure for determination of blood nitrogen urea and cholesterol.

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