2023.06

SET A

B.Sc. BOTANY
SECOND SEMESTER (REPEAT)
INSTRUMENTATION & LABORATORY TECHNIQUES
BSB-202

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. Full Marks: 70

Objective

Time: 30 mins. Marks: 20

Choose the correct answer from the following: *1×20=20*

1. Hot air oven is used for sterilization of all except_____?
   a. Glassware b. Rubber tubes
   c. Sharp instrument d. Liquid paraffin
2. Efficiency of H EPA filter is:
   a. 99.97% b. 90.97%
   c. 88.87% d. 97.97%
3. Chromatography is a physical method that is used to separate and analyse_____
   a. Simple mixtures b. Complex mixtures
   c. Viscous mixtures d. Metals
4. In a chromatographic separation, which of the following is most appropriate for the qualitative analysis of a substance?
   a. Taking factor B. C. D. b. Capacity factor
   c. Retention time d. Resolution
5. The process of passing a mobile phase through a chromatography column is called which one of the following?
   a. Flushing b. Washing
   c. Partitioning d. Elution
6. Calculate the molarity of a solution of NaOH in which 0.40g NaOH dissolved in 500 ml solution.
   a. 0.2 b. 0.02
   c. 0.002 d. 0.1
7. Which is used as a general stain for plant tissues?
   a. Leishman's Stain b. Safranin
   c. Acetocarmine d. Methylene blue
8. The greatest herbarium of the world is at the Royal Botanic Gardens, is in:
   a. Kew, England b. America
   c. Italy d. None of the above
9. The Central National Herbarium (CAL) is situated in:
   a. Howrah b. Bombay
   c. Assam d. None of the above

10. In which plant salt is used in the surfaces for quick drying?
    a. Succulent plants
    b. Lichens
    c. Algae
    d. Canes

11. Resolving power of a microscope is a function of_____.
    a. Wavelength of light used
    b. Refractive index
    c. Numerical aperture of lens system
    d. Wavelength of light used and numerical aperture of lens system

12. pH scale ranges from:
    a. From 0 to 14
    b. From 1 to 14
    c. From ±1 to 14
    d. From -1 to 14

13. Which of the following is the formula for pH calculation?
    a. $\log 10[H^+]$
    b. $-\log 2[H^+]$
    c. $\log 2[H+]$
    d. $-\log 10[H+]$

14. In chromatography, which of the following can the mobile phase be made of?
    a. Solid or liquid
    b. Liquid or gas
    c. Gas only
    d. Liquid only

15. The basis of the technique of chromatography for separating components of a mixture is?
    a. The differing movement of particles of different mass in an electrical field B C D
    b. The interaction of the components with a stationary and a mobile phases
    c. The absorption of infrared radiation by the components
    d. The deflection of charged particles in a magnetic field.

16. Convert the 2.5 M HCl Molarity to Normality.
    a. 0.25
    b. 25
    c. 2.5
    d. 0.025

17. In an aqueous solution where the H^+ concentration is 1×10^{-6} M, the OH^- concentration must be:
    a. 14×10^{-6} M
    b. 1×10^{-6} M
    c. 1×10^{-7} M
    d. 1×10^{-8} M

18. The number of milligrams of solute per kg of solution is:
    a. 1ppm
    b. 1 mg
    c. 10^{-3}g
    d. 10^{3}g

19. The word "Herbarium" was derived from:
    a. Plants Specimens
    b. Artificial place
    c. Library
    d. a and b

20. For the preservation of collected specimens:
    a. Ethyl alcohol
    b. Naphthalene
    c. Mercuric chloride
    d. None of the above

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Descriptive

Time : 2 hr. 30 mins. Marks : 50

[Answer question no.1 & any four (4) from the rest]

1.	What is sterilization? Describe the different types of sterilization.	2+8=10
2.	Define herbarium. Discuss the herbarium technique in details.	2+8=10
3.	Write short notes on: a) Hot air oven b) Incubator	10
4.	Discuss the different methods followed by botanists for dry and wet preparation of large plant materials to preserve and study for reference purpose.	10
5.	Explain in detail with suitable diagram the theory, working principle and uses of hot air oven.	3+4+3=10
6.	Write any five preservation techniques of: a) Succulent plant b) Canes and Bamboos	5+5=10
7.	With suitable diagram write about the working principle and instrumentation of compound microscope.	5+5=10
8.	Write short notes on: a) Laminar air flow chamber b) Centrifuge	5+5=10

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