

(7 pages)

Reg. No. :

Code No. : 7258

Sub. Code : PMBE 16

M.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2019.

First Semester

Microbiology – Main

Elective — BIOCHEMICAL TECHNIQUES AND
INSTRUMENTATION

(For those who joined in July 2017 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The p^H of a solution is determined by
 - (a) Concentration of salt
 - (b) Relative concentration of acids and bases
 - (c) Dielectric constant of the medium
 - (d) Environmental effect

2. Which of the following indicates that the pK of an acid is numerically equal to the P^H of the solution when the molar concentration of the acid and its conjugate base are equal?
- (a) Michalis – Menten equation
 - (b) Haldanes equation
 - (c) Henderson – Hasselbalch equation
 - (d) Hardy windberg law
3. Which of the following relationships between absorbance and % transmittance is incorrect?
- (a) $A = \log_{10} 100 / \% T$
 - (b) $A = 2 - \log_{10} \% T$
 - (c) $A = \log_{10} 1/T$
 - (d) All are correct
4. Who discovered the ultracentrifuge
- (a) Beckman
 - (b) Theodor Svedberg
 - (c) Gupta
 - (d) None of these
5. Thin layer chromatography is
- (a) Partition chromatography
 - (b) Electrical mobility of ionic species
 - (c) Adsorption chromatography
 - (d) None of the above

6. In gas chromatography, the basis for separation of the components of the volatile material is the difference in
- (a) Partition coefficients
 - (b) Conductivity
 - (c) Molecular weight
 - (d) Molarity
7. In isoelectric focusing, Proteins are separated on the basis of their
- (a) Relative content of positively charged residue only
 - (b) Relative content of negatively charged residue only
 - (c) Size
 - (d) Relative content of positively and negatively charged residue
8. The submit molecular weight as well as the number of subunits in the quaternary structure can be determined by
- (a) SDS – PAGE electrophoresis
 - (b) Gel filtration chromatography
 - (c) Combining information from (a) and (b)
 - (d) Isoelectric focusing.

9. In NMR, when placed in a magnetic field, all the random spins of the nuclei
- (a) Stop
 - (b) Reverse direction
 - (c) Align with the magnetic field
 - (d) Rotate at 90°
10. Better understanding of the nuclei is possible in NMR
- (a) With the help of wavelength spectrum
 - (b) With the help of fourier transfer algorithm
 - (c) With the help of frequencies ranges
 - (d) None of the above

PART B — ($5 \times 5 = 25$ marks)

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

Each answer should not exceed 250 words

11. (a) Explain the principles and laws of absorptions of U.V spectro photometry.

Or

- (b) Explain the principle and structure of viscometry.

12. (a) Briefly explain the types of rotor of centrifuge.

Or

- (b) Briefly explain the density gradient centrifugation.

13. (a) Explain the general principles and application of thin layer chromatography.

Or

- (b) Explain the working steps of Ion exchange chromatography.

14. (a) Write note on the principles of AGE and its applications.

Or

- (b) Briefly explain the structure of gel electrophoresis.

15. (a) Explain the principle and structure of AAS.

Or

- (b) Explain the principle and application of IR spectroscopy.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words

16. (a) Briefly explain the principles of Flame photometry.

Or

- (b) Explain the principles and function of Mass spectroscopy.

17. (a) Explain the preparative and analytical methods of centrifuge.

Or

- (b) What is the principle of centrifugation? Explain the safety aspects in use of centrifuge.

18. (a) Differentiate the structure, principle and application of paper and Gas chromatography.

Or

- (b) Briefly explain the working principles and application of Gel filtration and Affinity chromatography.

19. (a) Outline analysis of bands on electrophoresis.

Or

(b) Briefly explain the application of Rocket immuno electrophoresis and also explain isoelectric focussing.

20. (a) Explain the structure and application of X-ray Spectroscopy.

Or

(b) Explain the structure, principle and application of NMR.
