RAN-25030013020460005

RAN-2503001302046005 / 2403001302030004

B.Sc. Biotechnology (NEP-NCF) (Sem. II) Examination April - 2025

BT - MDC-204 - Bioinstrumentation

Time: 2 Hours] **[Total Marks: 50**

સૂચના : / Instructions

(૧) નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of ☛ signs on your answer book

Name of the Examination:

☛ **B.Sc. Biotechnology (NEP-NCF) (Sem. II)**

Name of the Subject :

☛ **BT - MDC-204 - Bioinstrumentation**

Subject Code No.: **2503001302046005 / 2403001302030004**

Seat No.:

Student's Signature

Q-1. Short Question/One-Word Answer (Any 10 out of 12) 10 Marks

a) What is dye?
b) What is the mathematical formula for numerical aperture?
c) Write Full form of DIC.
d) Which type of light is used in fluorescence microscopy?
e) Give function of emission filter.
f) Write one application of confocal microscopy.
g) What is the principle of liquid chromatography?
h) Give examples of non-polar solvent
i) How is the Rf value calculated?
j) How does particle size influence sedimentation?
k) How does temperature affect centrifugation?
1) Name one common medium used in density gradient centrifugation.

Q-2. Short Note/Brief Answer (Any 2 out of 3) 10 Marks

a) Explain different staining techniques used to study bacteria.
b) Discuss About working principle &Applications of Bright Field Microscopy.
c) Define numerical aperture and explain its significance in microscopy.

Q-3. Short Note/Brief Answer (Any 2 out of 3) 10 Marks

a) A researcher wants to study cell organelles at a high resolution. Which microscopy technique would you recommend and why?

b) Compare the preparation techniques for SEM and TEM samples.

c) Explain working principle of fluorescence microscope.

Q-4. Short Note/Brief Answer (Any 2 out of 3) 10 Marks

a) Write a note on gas chromatography.

b) List the different types of chromatography and explain the principle of paper chromatography?

c) Justify the use of HPLC over traditional column chromatography in research.

Q-5. Short Note/Brief Answer (Any 2 out of 3) 10 Marks

a) Write a note on major components of a centrifuge.

b) Elaborate what care must be taken while using centrifuges.

c) Derive formula for relative centrifugal force (RCF).

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