


RAN-2403001303044001
B.Sc. Biotechnology (NCF-NEP) (Sem.-III) Examination March - 2026
Biophysics (MDC 301)
Time: 2 Hours]
[Total Marks: 50

સૂચના : / Instructions (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fill up strictly the above details on your answer book	Seat No.: <table border="1" style="width: 100%;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> Student's Signature						

Q.1. Answer in short (any 10 out of 12) 10

- a. Write Units of Radioactivity
- b. Radioactive decay in which the neutron gets converted into proton is known as ?
- c. Define atomic number.
- d. State True or False:- Electron is an elementary particle.
- e. State True or False:- The quarks present in neutrons are “DDU”
- f. What is Snell's law ?
- g. What is exposure time ?
- h. Speed of light in vacuum is _____ ?
- i. Give equation for Stokes law
- j. State True or False:- Water is Newtonian fluid
- k. If the total magnification of microscope is 1000X, and the objective used is 50x, find the magnification of eyepiece.
- l. State True or False:- 3D image of specimen can be observed in eyepiece of confocal microscope.

Q.2. Answer in brief (any 2 out of 3) 10

- a. Which instrument is used to visualize radioactive particles. Explain its construction and working.
- b. Explain construction and working of Geiger Muller counter.
- c. Compare and contrast:- UV-A, UV-B and UV-C Radiation. How does UV light kills bacteria ?

Q.3. Answer in brief (any 2 out of 3) 10

- a. what is optical rotation ? How will you study optically active compounds ?
- b. Explain with diagram i) Myopia ii) Hyperopia iii) Astigmatism. How will you solve them ?
- c. Explain dispersion of light and chromatic aberration. Write difference between Achromatic and Apochromatic objective (lens)

Q.4. Answer in brief (any 2 out of 3) 10

- a. Elaborate construction and working of CCD (charged couple device)
- b. Discuss how drawbacks of one microscopy technique, led to the development of new advanced microscopy techniques.
- c. Explain the following terms with respect to digital camera:- i) Exposure time, ii) Gain factor, iii) why is monochrome camera better than colour camera, in terms of resolution.

Q.5. Answer in brief (any 2 out of 3) 10

- a. Explain function of viscometer. What information is obtained from the graph of Shear stress Vs Shear rate ?
 - b. Explain terminal velocity. How will you apply concept of terminal velocity in biology?
 - c. Write a short note on Haemodynamics of blood.
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