WEST BENGAL STATE UNIVERSITY

B.Sc. Honours/Programme 1st Semester Examination, 2021-22

MLBHGEC01T/MLBGCOR01T-MOLECULAR BIOLOGY (GE1/DSC1)

Time Allotted: 2 Hours   Full Marks: 40

The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.

1.   Answer any *eight* questions from the following: 1×8 = 8

(i) APOPTOSIS is defined as

(A) Programmed for cell death   (B) Programmed for cell division

(C) Programmed for cell sorting   (D) Programmed for photosynthesis

(ii) Which cell organelle has DNA?

(A) Nucleus   (B) Mitochondria   (C) Chloroplasts   (D) All of these

(iii) Examples of Epimers

(A) Glucose and Galactose   (B) Glucose and Ribose

(C) Ribose and Mannose   (D) All of these

(iv) The major functions of carbohydrates include

(A) Structural framework   (B) Storage

(C) Both (A) and (B)   (D) None of these

(v) Which of the following is a reducing sugar?

(A) Glucose   (B) Cholesterol   (C) Sucrose   (D) None of these

(vi) When the power of ocular lens is 10X and objective lens is 20X, the magnification will be

(A) 2000 times   (B) 200 times   (C) 100 times   (D) 30 times

(vii) Iodine value is used to determine

(A) Degree of rancidity   (B) Degree of unsaturation

(C) Degree of esterification   (D) Degree of saponification

(viii) Which of the following scientists is credited with the invention of the electron microscope and awarded the Nobel Prize for the same?

(A) J. J. Thompson   (B) Ernst Ruska

(C) Louis de Broglie   (D) Otto Van Borris

(ix) Which of the following is used in electron microscope?

(A) Electron beams   (B) Light waves

(C) Magnetic fields   (D) Electron beams and magnetic fields

(x) Minimum number of carbon required for a monosaccharide is

(A) 2   (B) 3   (C) 4   (D) 5

2.   Fill in the blanks (answer any *two* of the following):   1×2 = 2

   (a) _____ _____ is a gram positive bacteria.

   (b) Lipid is soluble in _____.

   (c) Starch is a _____.

   (d) On reaction with bromine water glucose gives _____.

3.   Answer any *ten* questions from the following: 2×10 = 20

   (a) What is Cell Theory?

   (b) One μm (micrometer) is equal to how much of nanometer?

   (c) What is the role of microtubule?

   (d) What is centriole?

   (e) Write the function of mitochondria.

   (f) What is biological buffer?

   (g) What is glycosidic linkage?

   (h) Describe the Chiral Carbon atom.

   (i) What is nucleoid?

   (j) What is mutarotation?

   (k) What is saponification number?

   (l) Write the Henderson-Hasselbalch Equation.

   (m) Give examples of isomers.

   (n) What is resolving power?

   (o) What are Essential fatty acids? Give two examples.

4.   Answer any *two* questions from the following: 5×2 = 10

   (a) Describe the Fluid Mosaic Model of biological membranes.   5

   (b) Describe the Gram staining of bacteria.   5

   (c) Write down the Haworth Projection formula of β-D-Glucopyranose and lactose. $2\frac{1}{2}+2\frac{1}{2}$

   (d) Define the chromatic aberration of optical system. Describe the Numerical   2+3
       Aperture.

   N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within* 1 *hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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