NSEB 11th 2026

DPP-01

Cell: The Unit of Life

1. Which statement correctly distinguishes prokaryotic cells from eukaryotic cells?
(A) Presence of membrane-bound organelles and linear DNA
(B) Absence of histone proteins and presence of circular DNA
(C) Presence of 80S ribosomes and nuclear membrane
(D) DNA enclosed within nuclear envelope

2. In prokaryotes, the nucleoid differs from a eukaryotic nucleus because:
(A) It contains RNA instead of DNA
(B) It is bounded by a single membrane
(C) It lacks a surrounding membrane and has supercoiled DNA
(D) It contains multiple chromosomes

3. Which of the following statements about prokaryotic ribosomes is correct?
(A) They are 80S and found attached to ER
(B) They are 70S and composed of 50S and 30S subunits
(C) They are absent in archaea
(D) They synthesize only membrane proteins

4. Which of the following statements regarding mesosomes is most accurate?
(A) They are double membrane-bound organelles
(B) They are artifacts of chemical fixation in electron microscopy
(C) They function as mitochondria in bacteria
(D) They store genetic material

5. Which component is responsible for Gram staining differences?
(A) Plasma membrane composition
(B) Thickness and composition of peptidoglycan layer
(C) Presence of capsule
(D) Type of ribosomes

6. Which statement about the bacterial cell wall is correct?
(A) It is composed mainly of cellulose
(B) It contains peptidoglycan made of NAG and NAM
(C) It is absent in all bacteria
(D) It is identical in Gram-positive and Gram-negative bacteria

7. Which of the following statement of a bacterial cell is/ are correct?
(i) Mesosome is formed by the extensions of plasma membrane into the cell.
(ii) The pili are elongated tubular structures made up of a protein.
(iii) Flagellum is composed of filament, hook and basal body.
(iv) Ribosomes are about 30 nm by 50 nm in size.
(A) (i), (ii) and (iii)
(B) All of the above
(C) (ii) and (iv)
(D) None of the above

8. In prokaryotes, chromatophores are
(A) specialized granules responsible for colouration of cells.
(B) structures responsible for organizing the shape of the organism.
(C) inclusion bodies lying free inside the cells for carrying out various metabolic activities.
(D) internal membrane system which becomes extensive and complex in photosynthetic bacteria.

9. Select the incorrect statement about prokaryotic ribosomes.

(A) 50S and 30S subunits unit to form 70S ribosomes.

(B) Polysome/polyribosome consists of many ribosomes only.

(C) Ribosome is the site of protein synthesis.

(D) Polysome indicate the synthesis of identical polypeptide in multiple copies.

10. Choose the wrong statements regarding bacterial cell

(i) Glycocalyx is the outermost envelope in bacteria

(ii) The glycocalyx could be a loose sheath called capsule.

(iii) The glycocalyx may be thick and tough called slime layer.

(iv) A special structure formed by the plasma membrane is called mesosome.

(v) Small bristle like fibres sprouting out of the cell are called fimbriae.

(A) (i) and (iii) (B) (i) and (ii)

(C) (ii) and (iii) (D) (i) and (iv)

Answer Key

1.	(B)	**6.**	(B)
2.	(C)	**7.**	(A)
3.	(B)	**8.**	(D)
4.	(B)	**9.**	(B)
5.	(B)	**10.**	(C)