DE-2927

B. Sc. (Microbiology) (Sem. I) Examination

March/April – 2016

MB-02 : Cell Structure & Function in Bacteria

Time : 2 Hours] [Total Marks : 50

Súñchna/Instructions :

(1) Fill up strictly the details of signs on your answer book.

Name of the Examination : B. Sc. (Microbiology) (Sem. I)

Name of the Subject : MB-02 : Cell Structure & Function in Bacteria

Subject Code No. : 2 9 2 7 Section No. (1, 2,.....) : Nil

Seat No. : 

Student’s Signature

(2) There are 50 questions each question carries (1) mark and all are compulsory.

(3) Read the question carefully before selecting the correct option.

O.M.R. Sheet भरवा अंगेनी अंगतनी सुविधाओ आपेक्षिक O.M.R. Sheet-ली पाक्षिक आपेक्षिक भरवे.

Important instructions to fillup O.M.R. Sheet is given on back side of the provided O.M.R. Sheet.
1. State the diameter of largest prokaryotic bacteria.
   (A) 800 μm, Cyanobacteria  (B) 500 μm, Thiothrix
   (C) 750 μm, Thiobacillus  (D) 600 μm, Epulopiscium

2. The membrane that separates the cytoplasm of cell from its environment is:
   (A) Cytoplasmic membrane  (B) Golgi body
   (C) Nuclear membrane  (D) Mitochondrial membrane

3. Peptidoglycan is a characteristic constituent of the cell wall of:
   (A) Archaeabacteria and Eukaryotes
   (B) None of above
   (C) Bacteria and Cyanobacteria
   (D) Bacteria and Unicellular eukaryotes

4. Where is MS ring present in flagella?
   (A) Cytoplasm  (B) Outer membrane
   (C) Cytoplasmic membrane  (D) Periplasm

5. What do you mean by peritrichous arrangement of flagella?
   (A) Flagella present on both the poles of cell
   (B) Single flagella present at a single pole
   (C) Flagella present at a single pole
   (D) Flagella present all over bacterial surface

6. State the synonym of protoplast:
   (A) Neoplast  (B) Schizoplast
   (C) Spheroplast  (D) Mesoplast

7. Archeal and bacterial cell wall lacks:
   (A) N-acetylglucosamine and DAP
   (B) N-acetylglucosamine and lysine
   (C) N-acetylmuramic acid and DAP
   (D) N-acetylmuramic acid and lysine

8. Mutation in bacteria act as:
   (A) Raw material of reproduction
   (B) Raw material of germination
   (C) Raw material of evolution
   (D) Raw material of sporulation

9. Endospores are highly resistant to:
   (A) Radiations  (B) All of these
   (C) Heat  (D) Harsh chemicals

10. Some bacteria lack flagella but are still able to move across solid surfaces. This process is called:
    (A) Rotation  (B) Glistening
     (C) Swimming  (D) Gliding

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11 Name the hapanoids present in the membrane of prokaryotes:
   (A) $C_{30}$ hapanoidmonoploptene
   (B) $C_{21}$ hapanoiddiploptene
   (C) $C_{30}$ hapanoiddiploptene
   (D) $C_{21}$ hapanoidmonoploptene

12 When cocci divide in random or multiple planes, it generates an irregular shape which occurs in organisms belonging to the genus:
   (A) Streptobacilli
   (B) Sarcina
   (C) Streptococcus
   (D) Staphylococcus

13 Sugars present in the cell wall are linked by:
   (A) $\alpha$-1,6 glycosidic linkage
   (B) $\beta$-1,6 glycosidic linkage
   (C) $\alpha$-1,4 glycosidic linkage
   (D) $\beta$-1,4 glycosidic linkage

14 The enzyme that is responsible for destroying the cell wall of Gram positive bacteria is:
   (A) Lysozyme
   (B) Chitinase
   (C) Pectinase
   (D) Protease

15 The nature of cytoplasmic membrane that remains exposed to the external environment is:
   (A) Hydrostatic
   (B) Both Hydrophilic and Hydrostatic
   (C) Hydrophobic
   (D) Hydrophilic

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16. Proteins function as a motor switch, reversing the direction of rotation of the flagella in response to intracellular signals:
   (A) flagellin
   (B) Cap
   (C) Mot
   (D) Fli

17. Full form of PHB:
   (A) Para hydroxyl butyrate
   (B) Poly hydroxyl butyrate
   (C) Poly beta hydroxyl butyrate
   (D) Poly beta hydroxyl butyrate

18. What is the outer membrane in Gram negative bacteria known as?
   (A) Technic acid
   (B) Polysaccharides
   (C) Peptidoglycan
   (D) Lipopolysaccharide

19. What is shape of Magnetosomes?
   (A) Rectangle
   (B) All of these
   (C) Spike
   (D) Square

20. Which protein is present for the formation of filament of flagella?
   (A) keratin
   (B) Collagen
   (C) flagellin
   (D) flilin
21 Name the spiral shape bacteria found in nature:
(A) Spirochetes  (B) Bacillus
(C) Streptococcus  (D) Staphylococcus

22 Membrane proteins function as:
(A) Permeases
(B) All of these
(C) Transport proteins
(D) Carrier molecules

23 Where are fagellin molecules synthesized?
(A) Cell wall  (B) Cell membrane
(C) Periplasm  (D) Cytoplasm

24 Which of the following chemical is thought to be responsible for resistance of endospores?
(A) Dipicolinic acid
(B) Both Calcium and Dipicolinic acid
(C) Dipicrie acid
(D) Calcium

25 State the major lipids of Archaea:
(A) Diplopanoids  (B) Chaparons
(C) Glycerol diethers  (D) Plopanoids

26 Glycoprotein containing glutamic acid as a sole source of amino acid is found in which organism?
(A) Methanococcus  (B) Natronococcus
(C) Methanogens  (D) Methanosarcina

27 Most proteins are present in which area of Gram positive cell?
(A) Peptidoglycan layer
(B) Outer layer
(C) Cytoplasmic membrane
(D) Cytoplasm

28 The time taken for sporulation in Bacillus subtilis is:
(A) 6 hours  (B) 5 hours
(C) 8 hours  (D) 10 hours

29 Flagellar revolution per second is:
(A) 200  (B) 600
(C) 400  (D) 300

30 Prokaryotes show motility by:
(A) Sex pilus  (B) Flagella
(C) Pili  (D) Fimbriae
31 What is/are the unusual shapes of bacteria?
   (A) Filamentous bacteria
   (B) All of these
   (C) Tightly coiled shaped
   (D) Appendaged bacteria

32 Bacteria can easily adopt to new environment because of their:
   (A) Moderate size
   (B) Mega size
   (C) Small size
   (D) Large size

33 Membrane is stabilized with ions like _____ and _____ forming ionic bonds with negative charge on the phospholipids.
   (A) $\text{Mg}^{2+}$, $\text{Cl}^{-}$
   (B) $\text{Mn}^{2+}$, $\text{Cu}^{2+}$
   (C) $\text{Mg}^{2+}$, $\text{Ca}^{2+}$
   (D) $\text{Co}^{2+}$, $\text{Mn}^{2+}$

34 Carbon storage polymers are:
   (A) Both PHB and Glycogen
   (B) None of these
   (C) PHB
   (D) Glycogen

35 Which layer of spore contains peptidoglycan in its composition?
   (A) Exosporium
   (B) Core wall
   (C) Spore wall
   (D) Cortex

36 What is the average diameter of bacterial flagellum?
   (A) 300 μm
   (B) 30 μm
   (C) 20 μm
   (D) 200 μm

37 Which generic term is commonly used to describe polymers made up of $\text{C}_4$-$\text{C}_{18}$ carbons?
   (A) Polyhydroxyacetates
   (B) Polyhydroxyalkanoates
   (C) Polytrihydroxyalkalies
   (D) Polydihydroxyalkanoates
38 Molecules which freely penetrates the membrane:
   (A) Sugars
   (B) None of these
   (C) NaCl
   (D) H₂O

39 Name two sugar derivatives used in formation of peptidoglycan layer:
   (A) N-acetylg glucosamine & N-acetylgalactosamine
   (B) N-acetylg glucosamine & N-acetylmuramic acid
   (C) N-acetylgalactosamine & N-acetylmuramic acid
   (D) N-acetylgalactosamine & N-acetylmuramic acid

40 Habitat of Epulospiriciumfishelsoni is found in:
   (A) Surgoen fish
   (B) All of these
   (C) Shark fish
   (D) Whales

41 How do bacteria sense presence of Attractant or Repellent?
   (A) Chemoreceptors present on cell surface.
   (B) Chemosignals present on capsule.
   (C) Photoreceptors present on flagella.
   (D) Chemolipids on the cell wall.

42 Which kind of unusual taxis is observed in some gliding Cyanobacteria?
   (A) Phototaxis
   (B) Magnetotaxis
   (C) Hydrotaxis
   (D) Chemotaxis

43 What is the function of Calcium dipicolinic acid complex?
   (A) Both (C) and (D)
   (B) Formation of four layers of spores.
   (C) Reduces water availability within spores.
   (D) Intercalates with DNA and stabilizes it.

44 Microorganism accumulate inorganic phosphate in form of:
   (A) Organic phosphate
   (B) None of these
   (C) Metaphosphate
   (D) Polymetaphosphate
45  Which of the following are the examples of coma, spiral, cocci and rod shaped bacteria respectively?
   (A) Vibrio, Spirochete, Streptococcus, Bacillus
   (B) Vibrio, Bacillus, Streptococcus, Staphylococcus
   (C) Vibrio, Bacillus, Streptococcus, Spirochete
   (D) Bacillus, Vibrio, Streptococcus, Spirochete

46  The metabolic rate of cell is:
   (A) Directly proportional to cube of its size
   (B) Inversely proportional to the size of cell
   (C) Inversely proportional to the square of its size
   (D) Directly proportional to its size

47  Which one is not an Endospore forming bacteria?
   (A) Bacillus
   (B) Staphylococcus
   (C) Clostridium
   (D) Corynebacterium

48  Which organelle is responsible for providing buoyancy to cells floating in water ecosystem?
   (A) Gas vesicles
   (B) Carboxysomes
   (C) PHB granules
   (D) Magnetosomes

49  Gas vesicles are intracellular gas filled structures composed of:
   (A) Proteins
   (B) Mineral
   (C) Carbohydrates
   (D) Lipids

50  Which material is produced by Cyanobacteria to exhibit gliding motility?
   (A) Lipoidal slime
   (B) Amino acid slime
   (C) Protein slime
   (D) Polysaccharide slime