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DE-2927

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

March / April – 2016

MB-02 : Cell Structure & Function in Bacteria

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

સૂચના/Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup 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) પ્રશ્ન પત્રમાં કુલ ૫૦ પ્રશ્નો છે, બધાજ ફરજીયાત છે. દરેક પ્રશ્નનો (૧) એક ગુણ છે.
There are 50 questions each question carries (1) mark and all are compulsory.

(3) દરેક પ્રશ્નનો કાળજીપૂર્વક અભ્યાસ કરી સાચો વિકલ્પ પસંદ કરો.
Read the question carefully before selecting the correct option.

***O.M.R. Sheet* ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ *O.M.R. Sheet*ની પાછળ છાપેલ છે.**

Important instructions to fillup O.M.R. Sheet is given on back side of the provided O.M.R. Sheet.

1 Name the hapanoids present in the membrane of prokaryotes :

(A) C_{21} hapanoiddiploptene

(B) C_{30} hapanoiddiploptene

(C) C_{21} hapanoidmonoploptene

(D) C_{30} hapanoidmonoploptene

2 When cocci divide in random or multiple planes. It generates an irregular shape which occurs in organisms belonging to the genus :

(A) Sarcina

(B) Streptococcus

(C) Staphylococcus

(D) Streptobacilli

3 Sugars present in the cell wall are linked by :

(A) β-1,6 glycosidic linkage

(B) α-1,4 glycosidic linkage

(C) β-1,4 glycosidic linkage

(D) α-1,6 glycosidic linkage

4 The enzyme that is responsible for destroying the cell wall of Gram positive bacteria is :

(A) Chitinase

(B) Pectinase

(C) Protease

(D) Lysozyme

5 The nature of cytoplasmic membrane that remains exposed to the external environment is :

(A) Both Hydrophilic and Hydrostatic

(B) Hydrophobic

(C) Hydrophilic

(D) Hydrostatic

6 _____ Proteins function as a motor switch, reversing the direction of rotation of the flagella in response to intracellular signals :

(A) Cap

(B) Mot

(C) Fli

(D) flagellin

7 Full form of PHB :

(A) Poly hydroxyl butyrate

(B) Poly beta hydroxyl butyrate

(C) Poly beta hydroxyl butyrate

(D) Para hydroxyl butyrate

8 What is the outer membrane in Gram negative bacteria known as ?

(A) Polysaccharides

(B) Peptidoglycan

(C) Lipopolysaccharide

(D) Technic acid

9 What is shape of Magnetosomes ?

(A) All of these

(B) Spike

(C) Square

(D) Rectangle

10 Which protein is present for the formation of filament of flagella ?

(A) Collagen

(B) flagellin

(C) flillin

(D) keratin

11 Name the spiral shape bacteria found in nature :
(A) Bacillus (B) Streptococcus
(C) Staphylococcus (D) Spirochetes

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

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

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

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

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

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

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

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

20 Prokaryotes show motility by :
(A) Flagella (B) Pili
(C) Fimbriae (D) Sex pilus

21 What is/are the unusual shapes of bacteria ?
(A) All of these
(B) Tightly coiled shaped
(C) Appendaged bacteria
(D) Filamentous bacteria

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

23 Membrane is stabilized with ions like _____ and _____ forming ionic bonds with negative charge on the phospholipids.
(A) Mn^{2+}, Ca^{2+}
(B) Mg^{2+}, Ca^{2+}
(C) Co^{2+}, Mn^{2+}
(D) Mg^{2+}, $C1^{2-}$

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

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

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

27 Which generic term is commonly used to describe polymers made up of C_4- C_{18} carbons ?
(A) Polyhydroxyalkanoates
(B) Polytrihydroxyalkalies
(C) Polydihydroxyalkanoates
(D) Polyhydroxyacetates

28 Molecules which freely penetrates the membrane:
(A) None of these
(B) NaCI
(C) H_2O
(D) Sugars

29 Name two sugar derivatives used in formation of peptidoglycan layer :
(A) N-acetylglucosamine & N-acetylmuramic acid
(B) N-acetylgalactoseamine & N-acetylmuramic acid
(C) N-acetylgalactosamine & N-acetylmuramic acid
(D) N-acetylglucosamine & N-acetylgalactoseamine

30 Habitat of Epulospisciumfishelsoni is found in :
(A) All of these
(B) Shark fish
(C) Whales
(D) Surgeon fish

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

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

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

34 Microorganism accumulate inorganic phosphate in form of :
(A) None of these
(B) Metaphosphate
(C) Polymetaphosphate
(D) Organic phosphate

35 Which of the following are the examples of coma, spiral, cocci and rod shaped bacteria respectively ?

(A) Vibrio, Bacillus, Streptococcus, Staphylococcus

(B) Vibrio, Bacillus, Streptococcus, Spirochete

(C) Bacillus, Vibrio, Streptococcus, Spirochete

(D) Vibrio, Spirochete, Streptococcus, Bacillus

36 The metabolic rate of cell is :

(A) Inversely proportional to the size of cell

(B) Inversely proportional to the square of its size

(C) Directly proportional to its size

(D) Directly proportional to cube of its size

37 Which one is not an Endospore forming bacteria ?

(A) Staphylococcus

(B) Clostridium

(C) Corynebacterium

(D) Bacillus

38 Which organelle is responsible for providing buoyancy to cells floating in water ecosystem ?

(A) Carboxysomes

(B) PHB granules

(C) Magnetosomes

(D) Gas vesicles

39 Gas vesicles are intracellular gas filled structures composed of :

(A) Mineral

(B) Carbohydrates

(C) Lipids

(D) Proteins

40 Which material is produced by Cyanobacteria to exhibit gliding motility ?

(A) Amino acid slime

(B) Protein slime

(C) Polysaccharide slime

(D) Lipoidal slime

41 State the diameter of largest prokaryotic bacteria.
(A) 500 µm, Thiobacillus (B) 750 µm, Thiomargarita
(C) 600 µm, Epulopiscium (D) 800 µm, Cyanobacteria

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

43 Peptidoglycan is a characteristic constitute of the cell wall of :
(A) None of these
(B) Bacteria and Cyanobacteria
(C) Bacteria and Unicellular eukaryotes
(D) Archaebacteria and Eukaryotes

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

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

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

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

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

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

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