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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(A) Bacillus, Vibrio, Streptococcus, Spirochete

(B) Vibrio, Spirochete, Streptococcus, Bacillus

(C) Vibrio, Bacillus, Streptococcus, Staphylococcus

(D) Vibrio, Bacillus, Streptococcus, Spirochete

26 The metabolic rate of cell is :

(A) Directly proportional to its size

(B) Directly proportional to cube of its size

(C) Inversely proportional to the size of cell

(D) Inversely proportional to the square of its size

27 Which one is not an Endospore forming bacteria ?

(A) Corynebacterium

(B) Bacillus

(C) Staphylococcus

(D) Clostridium

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

(A) Magnetosomes

(B) Gas vesicles

(C) Carboxysomes

(D) PHB granules

29 Gas vesicles are intracellular gas filled structures composed of :

(A) Lipids

(B) Proteins

(C) Mineral

(D) Carbohydrates

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

(A) Polysaccharide slime

(B) Lipoidal slime

(C) Amino acid slime

(D) Protein slime

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

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

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

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

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

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

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

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

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

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

41 Name the hapanoids present in the membrane of prokaryotes :

(A) C_{21} hapanoidmonoploptene

(B) C_{30} hapanoidmonoploptene

(C) C_{21} hapanoiddiploptene

(D) C_{30} hapanoiddiploptene

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

(A) Staphylococcus

(B) Streptobacilli

(C) Sarcina

(D) Streptococcus

43 Sugars present in the cell wall are linked by :

(A) β-1,4 glycosidic linkage

(B) α-1,6 glycosidic linkage

(C) β-1,6 glycosidic linkage

(D) α-1,4 glycosidic linkage

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

(A) Protease

(B) Lysozyme

(C) Chitinase

(D) Pectinase

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

(A) Hydrophilic

(B) Hydrostatic

(C) Both Hydrophilic and Hydrostatic

(D) Hydrophobic

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

(A) Fli

(B) flagellin

(C) Cap

(D) Mot

47 Full form of PHB :

(A) Poly beta hydroxyl butyrate

(B) Para hydroxyl butyrate

(C) Poly hydroxyl butyrate

(D) Poly beta hydroxyl butyrate

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

(A) Lipopolysaccharide

(B) Technic acid

(C) Polysaccharides

(D) Peptidoglycan

49 What is shape of Magnetosomes ?

(A) Square

(B) Rectangle

(C) All of these

(D) Spike

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

(A) flillin

(B) keratin

(C) Collagen

(D) flagellin