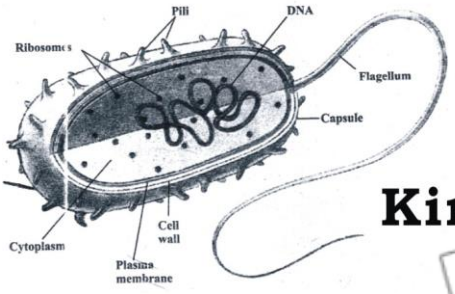

Chapter 6

Kingdom Prokaryotae (Monera)

TOPIC WISE MULTIPLE CHOICE QUESTIONS

DISCOVERY OF BACTERIA

KIPS MCQs

(1) All bacteria are:
(a) Heterotrophic **(b)** Autotrophic
(c) Parasitic **(d)** Prokaryotic

(2) Antone van Leeuwenhoek used _____ to discover Microorganisms:
(a) Simple microscope **(b)** Compound microscope
(c) Electron microscope **(d)** Both 'a' and 'b'

(3) Who discovered the bacteria which cause tuberculosis?
(a) Antone van Leeuwenhoek **(b)** Louis Pasteur
(c) Robert Koch **(d)** Christian Gram

(4) All of the following are germs except:
(a) Viruses **(b)** Toxins
(c) Bacteria **(d)** Protozoans

(5) The word animalcules was used for:
(a) Viruses **(b)** Biological molecules
(c) Bacteria **(d)** Small creatures

(6) Germ theory of disease was formulated by:
(a) Robert Koch **(b)** Louis Pasteur
(c) Antone van Leeuwenhoek **(d)** Christian Gram

SIZE & SHAPE OF BACTERIA

KIPS MCQs

(7) Bacteria range in size from about:
(a) 0.1 to 600 µm **(b)** 1.0 to 500µm
(c) 1.0 to 600 µm **(d)** None of these

(8) The smallest bacteria belong to:
(a) Spirochete **(b)** Mycoplasma
(c) Staphylococci **(d)** Streptococci

(9) Pseudomonas is a:
(a) Coccus **(b)** Bacillus
(c) Vibrio **(d)** Spirillum

(10) A bacterial arrangement in packets of eight cells is called a:
(a) Tetrad **(b)** Sarcina
(c) Staphylococcus **(d)** Streptococcus

(11) The length of closed circle chromosome of Escherichia coli is:
(a) 500 µ m **(b)** 600 µ m
(c) 14000 µ m **(d)** 140000 µm

(12) Mycoplasmas have been included in bacteria because, they:
(a) Lack cell wall **(b)** Are heterotrophic
(c) Lack membrane bounded organelles **(d)** Reproduce by binary fission

(13) In which of the following cell wall is not present:
(a) Bacilli **(b)** Cocci
(c) Mycoplasmas **(d)** Spirilla

PAST PAPERS MCQs

(14) Oval Shaped Bacteria are: (BWP 2017)
(a) Spirilla **(b)** Vibrio
(c) Cocci **(d)** Bacilli

(15) These are smallest and without cell wall; (RWP 2017)
(a) Mycoplasma **(b)** Pseudomonas
(c) Spirochete **(d)** E. coli

(16) When cocci occur in pairs, their arrangement is: (LHR 2018)
(a) Tetrad **(b)** Diplococcus
(c) Sarcina **(d)** Streptococci

(17) When cocci divide in three planes and form cube of '8' then they are called: (SRG 2019)
(a) Sarcina **(b)** Tetrad
(c) Diplococci **(d)** Streptococci

(18) Which one of the following is an example of spiral shaped bacteria? (GRW 2021)
(a) Escherichia coli **(b)** Bacillus subtilis
(c) Pseudomonas **(d)** Hyphomicrobium

(19) In bacteria when the division is in three planes it will produce which arrangement: (LHR 2021)
(a) Streptococcus **(b)** Tetrad
(c) Sarcina **(d)** Diplococcus

(20) The smallest bacteria is (DGK 2021)
(a) Mycoplasma **(b)** E. Coli
(c) Protozoan **(d)** Fungi

(21) Curved of comma shaped bacteria are called: (RWP 2021)
(a) Vibrio **(b)** Spirillum
(c) Spirochetes **(d)** Bacilli

(22) A cube of eight cocci is called: (MTN 2017, LHR 2022)
(a) Diplococci **(b)** Streptococci
(c) Tetrad **(d)** Sarcina

ENTRY TEST BASED MCQs

(23) In which of the following shapes, gut living symbiont *Escherichia coli* is found? (MDCAT 2017)
(a) Round **(b)** Spiral
(c) Oval **(d)** Rod

(24) Arrangement of coccus bacteria in chain is called: (MDCAT 2017)
(a) Streptococci **(b)** Tetrad
(c) Staphylococci **(d)** Sarcina

(25) Rod-shaped bacteria are known as _____. (MDCAT 2018)
(a) Bacilli **(b)** *Vibrio*
(c) Cocci **(d)** Sarcina

(26) Which of the following is a prokaryote? (UHS 2022)
(a) Protista **(b)** *E. coli*
(c) Amoeba **(d)** Fungi

BACTERIAL CELL STRUCTURE
(Flagella, Pili,)

KIPS MCQs

(27) Bacteria surrounded by flagella are:
(a) Atrichous **(b)** Amphitrichous
(c) Lophotrichous **(d)** Peritrichous

(28) Pilli are not involved in:
(a) Motility **(b)** Attachment
(c) Conjugation **(d)** All of these

(29) Which of the following are motile?
(a) Most cocci & bacilli **(b)** Most of the bacilli & spirilla
(c) Most cocci and spirilla **(d)** All of the above

(30) The flagella of bacteria originate from:
(a) Cell membrane **(b)** Cell wall
(c) Cytoplasm **(d)** Basal body

(31) The type of behaviour called chemotaxis is not shown by:
(a) Atrichous bacteria **(b)** Monotrichous bacteria
(c) Lophotrichous bacteria **(d)** Amphitrichous bacteria

(32) Chemotaxis in bacteria is associated with:
(a) Flagella **(b)** Pili
(c) Cilia **(d)** Capsule

(33) A bacterium with single polar flagellum is:
(a) Atrichous **(b)** Lophotrichous
(c) Amphitrichous **(d)** Monotrichous

PAST PAPER MCQs

(34) Bacterial flagella originate from (SGD 2017)
(a) Cell wall **(b)** Basal body
(c) Capsule **(d)** Slime

(35) The bacteria in which tuft of flagella is present at each of two poles are called: (DGK 2017)
(a) Monotrichous **(b)** Lophotrichous
(c) Amphitrichous **(d)** Peritrichous

(36) Bacteria without any flagella are: (LHR 2017, GRW 2017)
(a) Monotrichus **(b)** Atrichus
(c) Lophotrichus **(d)** Amphitrichus

(37) Pili are made up of special protein called: (SWL 2017)
(a) Flagellin **(b)** Pilin
(c) Tubulin **(d)** Myosin

(38) A bacterium with a tuft of flagella at one pole is: (MTN 2017)
(a) Peritrichous **(b)** Amphitrichous
(c) Atrichous **(d)** Lophotrichous

(39) Conjugation in bacteria is promoted by (GRW 2018)
(a) Flagella **(b)** Pili
(c) Cilia **(d)** Gametes

(40) Bacteria without any flagella are called: (FSD 2021, 2019)
(a) Peritrichoun **(b)** Monotrichous
(c) Cophotrichous **(d)** Artichous

(41) Pill are made of special protein called: (FSD 2019)
(a) Flagellia **(b)** Tubulin
(c) Fibrinogen **(d)** Pilin

(42) Pilli are primarily involve in: (MUN 2019)
(a) Movement **(b)** Conjugation
(c) Nutrition **(d)** Excretion

(43) When flagella surround the whole cell of bacterium, such condition is called _____ (GRW 2021)
(a) Atrichous **(b)** Lophotrichous
(c) Amphitrichous **(d)** Peritrichous

(44) When flagella surround the whole cell of bacteria, it is termed as: (MLT 2021)
(a) Atrocious **(b)** Lophotrichous
(c) Amphibrachs **(d)** Perirchous

ENTRY TEST BASED MCQs

(45) The division of cocci in three planes form sarcina, which is a cube of _____ cocci. (UHS 2022)
(a) 02 **(b)** 04
(c) 08 **(d)** 16

(46) Which of the following statement is correct?
(a) Tuberculosis and pneumonia are caused by Gram positive bacteria
(b) Tuberculosis and pneumonia are caused by Gram negative bacteria
(c) Pneumonia is a lung disease caused by Gram negative bacteria
(d) Tuberculosis is a lung disease caused by Gram negative bacteria

BACTERIAL CELL STRUCTURE
(Cell Envelop)

KIPS MCQs

(47) Gram positive bacteria are always stained _____ by Gram's staining:
(a) Crystal violet **(b)** Brown
(c) Pink **(d)** Purple

(48) Peptidoglycan is not present in:
(a) Gram positive bacteria **(b)** Gram negative bacteria
(c) Eubacteria **(d)** Archaeobacteria

(49) The one which is not found in all bacteria:
(a) Cell membrane **(b)** Cell wall
(c) Nucleoid **(d)** Ribosomes

PAST PAPERS MCQs

(50) Cell wall is only absent in: (LHR 2019)
(a) E.Coli **(b)** Diplococcus pneumonia
(c) Hyphomicrobium **(d) Mycoplasma**

(51) Cell wall of gram positive bacteria are stained: (GRW 2019)
(a) Pink **(b)** Red
(c) Green **(d)** Purple

ENTRY TEST BASED MCQs

(52) Cell wall structure of a cell of unknown origin was studied and was found to contain polysaccharide chain linked with short chains of amino acid. What do you think it can be? (MDCAT 2017)
(a) Bacteria **(b)** Algae
(c) Fungi Cell **(d)** Cortex cells

(53) Find the characteristic true for Gram positive bacteria. (MDCAT 2017)
(a) Periplasmic space present in all **(b)** Two major layers
(c) Less lipids than Gram-ve **(d)** Outer membrane present

(54) If lipopolysaccharides did not appear in the wall of bacteria on staining, then it will be known as _____. (MDCAT 2018)
(a) Gram positive **(b)** Gram negative
(c) Gram positive & gram negative **(d)** Capsule

(55) Cell wall may be absent in which of the following? (UHS 2022)
(a) Plant and algae **(b)** Algae and fungi
(c) Fungi and archaea **(d)** Bacteria and archaea

(56) Number of layers present in Gram negative bacterial cell wall: (UHS 2022)
(a) One **(b)** Two
(c) Three **(d)** Four

BACTERIAL CELL STRUCTURE
(Cell Memnrane, Cytoplasmic Matric, Nucleoid, Plasmid)

KIPS MCQs

(57) The other name for nucleoid:
(a) Nuclear body **(b)** Chromatin body
(c) Nuclear region **(d)** All of these

(58) Cyst and spore differ from one another in bacteria? Because spores:
(a) Are desiccation resistant **(b)** Are dormant
(c) Are heat resistant **(d)** All of these

(59) Nucleoid in bacteria can be made visible with:
(a) Acidic stain **(b)** Basic stain
(c) Gram stain **(d)** Feulgen stain

(60) The cell membranes of bacteria and cell membranes of eukaryotic cells differ from one another, cell membrane of bacteria:
(a) Lack sterols **(b)** Permeable
(c) Made of cellulose **(d)** None of these

(61) Which of the following is not found in all bacteria?
(a) Cell membrane **(b)** Ribosomes
(c) A nucleoid **(d)** Capsule

PAST PAPERS MCQs

(62) Mesosomes are internal extensions of: (LHR 2018, LHR 2021)
(a) Cell wall **(b)** Cell membrane
(c) Golgi complex **(d)** Endoplasmic reticulum

(63) Which is composed of double stranded DNA molecules? (SWL 2021)
(a) Mesosomes **(b)** Ribosomes
(c) Plasmids **(d)** Granules

ENTERY TEST BASED MCQs

(64) Nucleoid is a structure not found in: (MDCAT 2017)
(a) *Campylobacter* **(b)** Spirochete
(c) Cyanobacteria **(d)** Goblet cells

(65) Students were asked to give a guess about a unicellular organism with darkly stained nucleus. Which of the following can be straight away excluded from the list? (MDCAT 2017)
(a) Paramecium **(b)** Plasmodium
(c) Amoeba **(d)** Lactobacillus

(66) DNA of bacteria is present in: (MDCAT 2017)

(a) Nucleoid **(b)** Mitochondria
(c) Nucleus **(d)** Mesosome

BACTERIAL CELL STRUCTURE
(Mesosome, Granules & Storage Bodies, Spores, Cyst)

KIPS MCQs

(67) Structure having resistant gene for antibiotics and used as vector in genetic engineering is:

(a) Nucleoid **(b)** Plasmid
(c) Mesosome **(d)** Chromosome

(68) Which of the following is waste produced in body of bacteria?

(a) Proteins **(b)** Lactic acid
(c) Phosphate **(d)** Glycogen

(69) Bacteria produce _____ as waste:

(a) Alcohol **(b)** Lactic acid
(c) Acetic acid **(d)** All of these

PAST PAPER MCQs

(70) Which one is present in all bacteria? (DGK-2019)

(a) Cell wall **(b)** Mesosome
(c) Ribosomes **(d)** Plasmid

ENTERY TEST BASED MCQs

(71) Structure formed by invagination of plasma membrane and involved in cell division and DNA replication of prokaryotic cell: (UHS 2022)

(a) Lysosome **(b)** Mesosome
(c) Golgi bodies **(d)** Phragmoplast

NUTRITION
RESPIRATION & GROWTH OF BACTERIA

KIPS MCQs

(72) Which of the following bacteria are always harmful?

(a) Saprophytic **(b)** Parasitic
(c) Photosynthetic **(d)** Chemosynthetic

(73) Chemosynthetic bacteria oxidize inorganic compounds such as _____ to trap energy.

(a) Glycogen **(b)** Glucose
(c) Ammonia **(d)** All of these

(74) Spirochete is an example of:

(a) Aerobe **(b)** Anaerobe
(c) Facultative **(d)** Microaerophilic

(75) Example of microaerophilic bacterium is:

(a) Pseudomonas **(b)** Spirocheta
(c) E coli **(d)** Campylobacter

(76) Phase of no bacterial growth is:

(a) Lag phase **(b)** Log phase
(c) Stationary phase **(d)** Decline phase

(77) E. coli are:

(a) Aerobic **(b)** Microaerophilic
(c) Anaerobic **(d)** Facultative anaerobic

(78) Bacteria reproduce asexually by:
(a) Mitosis **(b)** Meiosis
(c) Binary fission **(d)** Conjugation.

(79) Which of the following is anaerobic bacterium?
(a) Pseudomonas **(b)** Escherchia coli
(c) Spirochete **(d)** Campylobacter

(80) It is phase of rapid bacterial growth:
(a) Lag phase **(b)** Log phase
(c) Stationary phase **(d)** Decline phase

(81) Bacteria increase in number by an asexual means of reproduction called:
(a) Binary fission **(b)** Regeneration
(c) Budding **(d)** All of these

PAST PAPER MCQs

(82) The phase of rapid growth in bacteria is: (DGK 2017)
(a) Lag phase **(b)** Log phase
(c) Stationary phase **(d)** Decline phase

(83) Bacteria divide at exponential rate during: (FSD 2017)
(a) Stationary phase **(b)** Decline phase
(c) Log phase **(d)** Lag phase

(84) Which one of the following is aerobic bacteria? (LHR 2019)
(a) Compylobactor **(b)** E.Coli
(c) Pseudomonas **(d)** Spirochaete

(85) Spirochete is a bacterium: (SWL 2019)
(a) Aerobic **(b)** Anaerobic
(c) Facultative **(d)** Microaerophilic

(86) An example of aerobic bacterium is (DGK 2019)
(a) Campylobacter **(b)** E. coli
(c) Spirochete **(d)** Pseudomonas

(87) Which is anaerobic bacterium: (BWL 2019)
(a) E. Coli **(b)** Spirochete
(c) Pseudomonas **(d)** Compylobacter

(88) The bacterial growth is rapid in: (BWP 2021)
(a) Log phase **(b)** Lag phase
(c) Stationary phase **(d)** Death phase

(89) The example of micro aerophilic bacterium: (DGK 2022)
(a) Pseudomonas **(b)** Spirochete
(c) E. Coli **(d)** Campylobacter

(90) Aerobic bacterium is: (BWP 2022)
(a) Campylobacter **(b)** E.coli
(c) Pseudomonas **(d)** Spirochete

ENTRY TEST BASED MCQs:

(91) Nitrifying bacteria are the examples of: (UHS 2022)
(a) Heterotrophic bacteria **(b)** Chemosynthetic bacteria
(c) Saprophytic bacteria **(d)** Parasitic bacteria

IMPORTANCE & CONTROL OF BACTERIA

KIPS MCQs

(92) Pasteur developed vaccines for which of the following diseases:
(a) Anthrax **(b)** Fowl cholera
(c) Rabies **(d)** All of these

(93) Which chemical is the antiseptic?
(a) Phenol **(b)** H_2O_2 (Hydrogen peroxide)
(c) Potassium permanganate **(d)** None of theses

(94) Heat sensitive compounds like antibiotics, hormones, seras can be sterilized by:
(a) Boiling up to 70^0C **(b)** Membrane filters
(c) Electromagnetic radiations **(d)** Moist heat

(95) Dry heat causes:
(a) Coagulation of proteins **(b)** Oxidation of chemicals of bacteria
(c) Inhibit microbial growth **(b)** All of these

(96) Mode of action of different chemical and physical agents of control of bacteria:
(a) Malfunction in cell wall **(b)** Malfunction in cell membrane
(c) Malfunction in enzymes **(d)** All of these

(97) Misuse of antibiotic streptomycin, may cause:
(a) Allergy **(b)** Deafness
(c) Discoloration of teeth **(d)** All of these

(98) Which of the following radiation type is used against spoilage of food?
(a) X-rays **(b)** UV-rays
(c) Gamma rays **(d)** All of these

(99) Electromagnetic rays below _____ nm are effective in killing of microorganisms.
(a) 200 **(b)** 300
(c) 350 **(d)** 600

PAST PAPER MCQs

(100) Antibiotics are produced by fungi and certain of group: (SWL-2022)
(a) Oomycetes **(b)** Basidiomycetes
(c) Ascomycets **(d)** Actinomycetes

(101) Certain electromagnetic rays below 300 mm are effective in killing _____. (RWP-2022)
(a) Virus **(b)** Algae
(c) Microorganisms **(d)** Germs

ENTERY TEST BASED MCQs

(102) Select the method which causes the oxidation of chemical constituents of a bacterial cell: (PMC 2020)
(a) Steam **(b)** Filtration
(c) Dry heat **(d)** Radiation

CYANOBACTERIA

KIPS MCQs

(103) Cyanobacteria have chlorophyll and_____.
(a) Xanthophyll **(b)** Carotenes
(c) Phycobilin **(d)** All of these

(104) The one used as pollution indicator:
(a) Lichens **(b)** Oscillatoria
(c) Nostoc **(d)** Both a & b

(105) Nostoc is:
(a) Terrestrial and sub aerial **(b)** Terrestrial
(c) Sub aerial **(d)** Aquatic

(106) The photosynthetic system of cyanobacteria resembles that of eukaryotes because these have:
(a) Chlorophyll a **(b)** Chlorophyll b
(c) Photosystem II **(d)** Both a and c

(107) The simplest O_2 producing photosynthetic organisms are:
(a) Photosynthetic bacteria **(b)** Chemosynthetic bacteria
(c) Cyanobacteria **(d)** Both a & b

(108) Cyanobacteria lack all, except:
(a) Pilli **(b)** Gram negative cell wall
(c) Flagella **(d)** Chloroplasts

(109) Super blue green algae are:
(a) Unicellular **(b)** Multicellular
(c) Colonial **(d)** All of these

(110) Most Lichens have photosynthetic partner which is/are:
(a) Green algae **(b)** Blue green algae
(c) Brown algae **(d)** Red algae

(111) Thick-walled, enlarged vegetative cells in Nostoc that accumulate food and become resting cells:
(a) Vegetative cells **(b)** Heterocyst
(c) Harmogonia **(d)** Akinete

(112) Which of the following is characteristic of cyanobacteria?
(a) Asexual reproduction **(b)** Sexual reproduction
(c) Flagella **(d)** Both 'a' & 'b'

(113) Which photosystem is absent in cyanobacteria?
(a) Photosystem I **(b)** Photosystem II
(c) Both present **(d)** Both absent

(114) The reserve food material of cyanobacteria or blue green algae is:
(a) Starch **(b)** Glycogen
(c) Fat droplet **(d)** All of these

PAST PAPER MCQs

(115) Reserve food material in cyanobacteria is: (RWP 2019, SRG 2021)
(a) Starch **(b)** Glucose
(c) Glycogen **(d)** Cellulose

(116) Many species of cyanobacteria form: (SRG 2022)
(a) Water Blooms **(b)** Algal blooms
(c) Blooms **(d)** Fungal blooms

ANSWER KEY

(Topic-Wise Multiple Choice Questions)

1	d	21	a	41	d	61	d	81		101	c
2	a	22		42	b	62		82	b	102	
3	c	23		43	d	63		83	c	103	c
4	b	24		44	d	64		84	c	104	d
5	c	25		45	c	65		85	b	105	a
6	a	26		46	a	66		86	d	106	d
7	a	27	d	47	d	67	b	87	b	107	c
8	b	28	a	48	d	68	b	88	a	108	c
9	b	29	b	49	b	69	d	89	d	109	a
10	b	30	d	50	d	70	c	90		110	b
11	c	31	a	51	d	71	b	91	b	111	b
12	c	32	a	52	a	72	b	92	d	112	a
13	b	33	d	53	c	73	c	93	d	113	a
14		34	b	54	a	74	b	94	b	114	b
15		35	c	55	d	75	d	95	b	115	b
16		36		56	b	76	a	96	d	116	a
17	a	37	b	57	d	77	d	97	b	117	
18	d	38	d	58	c	78	c	98	c	118	
19	c	39	b	59	d	79		99	b	119	
20	a	40	d	60	a	80		100	d	120	

DISCOVERY OF BACTERIA

KIPS QUESTIONS

Q:1 In what habitats are bacteria found? Give some general means by which bacteria derive nutrients.

Ans: Bacteria are found everywhere in the air, land, lakes, oceans, oil deposits, ponds, ditches, streams, rivers, in food, humus, plant roots, body surface, body cavities and in the intestine of man and animals.

Q:2 Differentiate between Eubacteria and Archaeobacteria

Ans:

EUBACTERIA	ARCHAEOBACTERIA
The bacteria with typical cell wall (i.e. murein) are called eubacteria.	The bacteria without Murein cell wall are known as archaeo bacteria.
These are true bacteria.	These are ancient bacteria.

Q:3 What is the contribution of Robert Koch, in the field of biology?

Ans:

- He isolated rod-shaped bacteria with squarish ends (bacilli) from the blood of sheep that was died of anthrax.
- He also discovered bacteria that caused tuberculosis and cholera.
- He presented germ theory of disease.
- He invented many techniques concerning inoculation, isolation, and media preparation, maintenance of pure culture and preparation of specimens for microscopic examinations.

Q:4 What are four postulates of germ theory of disease?

Ans: These postulates are:

(i) A specific organism can always be found in association with a given disease.
(ii) The organism can be isolated and grown in pure culture in the laboratory.
(iii) The pure culture will produce the disease when inoculated into susceptible animal.
(iv) It is possible to recover the organism in pure culture from experimentally infected animal

Q:5 What for "Antone Van Leuwenhoek" is famous?

Ans: He firstly observed small creatures (bacteria & protozoans) in rain water, saliva, vinegar, infusions and other substances and called them animalcules.

Q:6 What are the main achievements of Louis Pasteur?

Ans:

- His main achievements are the development of vaccines for disease anthrax, fowl cholera and rabies.
- He also made significant contributions in development of pasteurization process and development of fermentation industries.
- He proved that micro-organisms could cause disease.

PAST PAPERS QUESTIONS

Q:7 Write down any two postulates of germ theory of disease. **(DGK 2017)**
Q:8 Write down two postulates of Germ Theory of disease. **(RWP 2017)**
Q:9 Write down four postulates of germ theory of diseases by Robert Koch. **(LHR 2018)**
Q:10 What is contribution of Louis Pasteur in microbiology? **(LHR 2019)**
Q:11 Give postulates of " Germ Theory of Disease" by Robert Koch **(DGK 2019)**

BACTERIAL CELL STRUCTURE (Flagella, Pili,)

BACTERIAL CELL STRUCTURE (Cell Envelop)

BACTERIAL CELL STRUCTURE (Cell Memnrane, Cytoplasmic Matric, Nucleoid, Plasmid)

KIPS QUESTIONS

Q:12 What are mesosomes and some of their possible functions?

Ans: Mesosome:

The cell membrane invaginates into the cytoplasm forming a structure called mesosome. Mesosomes are in the form of vesicles tubules or lamellae.

\Functions:

Mesosomes are involved in DNA replication and cell division and also involved in exocellular transport of enzymes.

Q:13 How does the cell membrane of bacteria differ from eukaryotic membranes?

Ans: Bacterial membranes differ from eukaryotic membranes in lacking sterols such as cholesterol.

Q:14 What are plasmids? What are their functions?

Ans: Plasmids: These are the circular, double stranded DNA molecules.

Functions:

(a) They contain drug, heavy metals, disease and insect resistant genes.

(b) In the modern genetic engineering techniques plasmids are important vectors.

BACTERIAL CELL STRUCTURE (Mesosome, Granules & Storage Bodies, Spores, Cyst)

NUTRITION

RESPIRATION & GROWTH OF BACTERIA

IMPORTANCE & CONTROL OF BACTERIA

CYANOBACTERIA

STUCTURE OF BACTERIA

KIPS QUESTIONS

Q:15 A gram stained discharge from an abscess shows cocci in irregular, grape-like clusters. What is the most likely genus of this bacterium?

Ans: Staphylococci

Q:16 What do you mean by pleomorphic bacteria?

Ans: Most of the bacteria have specific and definite shape while few have different shapes. Those bacteria which have variety of shapes are called pleomorphic.

Q:17 Write a short note on spiral shaped bacteria.

Ans: Definition:

These are least common bacteria. The cells of bacteria are wavy, spirally curved. These have three basic forms:

Types:

(i) Vibrios: Comma shaped bacteria.

(ii) Spirochete: Thin and flexible spirals.

(iii) Spirillium: Thick and rigid spirals.

Q:18 How can you differentiate between pili and flagella of bacteria?

Ans:

Pili	Flagella
These are hollow, non-helical, filamentous appendages.	These are extremely thin, hair-like appendages.
These are made of pilin protein.	These are made of flagellin protein.
These are involved in attachment.	These are involved in motility and chemotaxis.

Q:19 What is the name of the largest bacterium? What is its size? From where was it discovered?

Ans:

- Epulopiscium fishelsoni is the largest bacterium found in nature.
- Its size is 600 µm by 80 µm (a little smaller than a printed hyphen).
- It has been discovered in the intestine of the brown surgeonfish (Acanthurus nigrofuscus)

Q:20 Differentiate between Atrichous and monotrichous bacteria.

Ans:

- When bacteria are without any flagella then are called as **atrichous**.
- When single polar flagellum is present then are called as **monotrichous**.

Q:21 Differentiate between capsule and slime of bacteria.

Capsule	Slime
It is tightly bound to the cell.	It is a loose, soluble cover of macromolecules called as slime capsule.

Q:22 Write a note on "Granules and storage bodies" of bacteria.

Ans: Bacteria tend to store extra nutrients when possible. These may be glycogen, sulphur, fat and phosphate. In addition, cells contain waste materials that are subsequently excreted. For example, common waste materials are alcohol, lactic acid and acetic acid.

Q:23 Differentiate between spores and cysts of bacteria.

Ans:

Spore	Cyst
These are both heat and desiccation resistant.	These are only desiccation resistant.
They are formed at end stage of bacterial growth.	They are formed during bacterial cell differentiation.

PAST PAPERS QUESTIONS:

Q:24 Differentiate between tetrad and sarcina. **(LHR 2017)**
Q:25 Differentiate between lophotrichous and amphitrichous. **(LHR 2017)**
Q:26 Differentiate between gram-positive and gram-negative bacteria. **(FSD 2017)**
Q:27 What are mesosomes? Give their function. **(SGD 2017)**
Q:28 Define Chemotaxis. **(MTN 2017)**
Q:29 What are Mesosomes? What are their function? **(BWP 2017)**
Q:30 What are mesosomes? Write its one function. **(RWP 2017)**
Q:31 What are plasmids? **(GRW 2018)**
Q:32 Differentiate between Lophotrichous and Amphitrichous bacteria **(MLT 2019)**
Q:33 What is plasmid? Give its importance? **(MLT 2019)**
Q:34 Name different types of bacteria on the basis of flagella presence **(LHR 2019)**
Q:35 Write down about the structure of plasmid in bacteria. **(LHR 2021)**
Q:36 Write down about spiral shaped bacteria. Give all its three forms **(GRW 2021)**
Q:37 Define Cysts **(SWL 2021)**
Q:38 What are bacilli bacteria? Give one example. **(MLT 2021)**
Q:39 How capsule is different from slime? **(MLT 2021)**

Q:40 What are pill? Give their function **(RWP 2021)**
Q:41 What are mesosomes? Describe their function **(LHR 2022)**
Q:42 Differentiate between capsule and slime. **(DGK 2022)**
Q:43 What are plasmids? Write its functions. **(MLT 2022)**
Q:44 Write down few words on the capsule of bacteria **(SWL 2022)**
Q:45 Define plasmids. What is its use? **(FSD 2022)**
Q:46 Describe function of mesosomes and plasmid in bacteria. **(BWL 2022)**
Q:47 What are pili, written their function? **(SRG 2022)**

NUTRITION, RESPIRATION & GROWTH OF BACTERIA

KIPS QUESTIONS

Q:48 List various phases of bacterial growth curve. Explain any two of them.
Ans:

- Lag phase
- Log phase
- Stationary phase
- Death/decline phase

Lag Phase:
It is phase of no growth. Bacteria prepare themselves for divisions
Log Phase:
It is phase of rapid growth. Bacteria divide at exponential rate.

PAST PAPERS QUESTIONS

Q:49 How respiration occurs in bacteria? **(SWL 2019)**
Q:50 Differentiate between Lag and Log phase. **(SRG 2019)**
Q:51 What are microaerophic bacteria? Give example. **(LHR 2021)**
Q:52 How conjugation occurs in bacteria? **(GRW 2021)**
Q:53 Name four phase of bacterial growth **(DGK 2021)**
Q:54 Differentiate between Facultative Bacteria and Microaerophilic bacteria. **(RWP 2021)**
Q:55 Differentiate between Lag and Log phase. **(FSD 2021)**

IMPORTANCE & CONTROL OF BACTERIA

KIPS QUESTIONS

Q:56 Define antibiotics Give examples.
Ans: Antibiotic is a Greek word (Anti-against and Bios-life).
Definition:
Antibiotics are chemotherapeutic chemical substances, which are used in treatment of infections disease.
Examples:
Penicillin, streptomycin, tetramycin etc.

Q:57 Differentiate between microbicidal and microbistatic effects.
Ans:

- **Microbicidal effect** is one that kills the microbes immediately.
- **Microbistatic effect** inhibits the reproductive capacities of the cells and maintains the microbial population at constant size.

Saprophytic bacteria	Parasitic bacteria
The bacteria which get their food from dead organic matter is called saprophytic bacteria	The bacteria depend on their living hosts for their nutrition is called parasitic bacteria

Q:58 Write a note on bacterial nucleoid.

Ans: The nuclear or DNA of bacteria aggregates to form irregular shaped dense body called nucleoid. Nucleoid is also called nuclear body chromatin body or nuclear region.

Q:59 Differentiate between antiseptics and disinfectants.

Ans:

Antiseptics	Disinfectants
The chemicals which are used to kill microorganism on living substance is called antiseptics.	The chemicals which are used to kill microorganism on non-living substance is called disinfectants.

Q:60 Define water blooms. What is their effect on animals?

Ans: Many species of Cyanobacteria form water blooms where they often impart unpleasant smell and due to large amount of suspended organic matter, water becomes unfit for consumption.

Effect on animals:

Some species produce toxins that kill livestock and other animals that drink the water.

PAST PAPERS QUESTIONS

Q:61 Differentiate between "microbicidal effect" and "microbistatic effect. **(GRW 2017, GRW 2019)**

Q:62 What is ecological importance of bacteria? **(FSD 2019)**

Q:63 Write down main physical methods to control bacteria. **(RWP 2019, SRG 2021)**

Q:64 What are misuse of antibiotic? Give example. **(DGK 2021)**

CYANOBACTERIA

KIPS QUESTIONS

Q:65 Do any other microbial groups besides bacteria have prokaryotic cells?

Ans: Yes, Cyanobacteria.

Q:66 What do you mean by super blue green algae? What is their significance?

Ans: Super Blue Green Algae:

It is the expensive pond scum, in which cyanobacterium a single celled organism is that produces its own food through photosynthesis.

Significance:

It serves as "complete whole food" which contains 60% protein with all essential amino acids.

Q:67 What is the ecological importance of Bacteria?

Ans: Bacteria are ecologically very important. They show many adaptations. So they are present everywhere. They decompose organic matter and play an important role in the completion of cycles of nitrogen, phosphorus, sulphur and carbon.

Q:68 What is a trichome in Nostoc?

Ans: The chains of cells in Nostoc is called trichome.

Trichomes are unbranched and appear beaded in Nostoc

Q:69 Write the difference between saprophytic and parasitic bacteria.

Ans:

PAST PAPERS QUESTIONS

Q:70 Differentiate between hormogonia and akinetes. **(SWL 2017)**

Q:71 What is heterocyst? Give its importance. **(DGK 2017)**

Q:72 What is Hormogonia? **(BWL 2019)**

Q:73 What are water blooms? **(GRW 2022, RWP 2022)**