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HSSC-I NATIONAL BOOK FOUNDATION FBISE

BIOLOGY TEST - CHAPTER 6: PROKARYOTES

Name:		Roll No.		Section:

Total Time: 2:30 Hour
Time Allowed: 150 Minutes

Total Marks: 150

PAPER OBJECTIVE
SECTION-A (MARKS 150)

NOTE: Section-A is compulsory. All parts of this section are to be answered on these pages and handed over to the center superintendent. Deleting / overwriting is not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark.

Questions	A	B	C	D	A B C D
1. Prokaryotes lack a:	genetic material	cell membrane	membrane-bound nucleus	ribosomes	○○●○
2. Unlike eukaryotes, prokaryotes lack membrane-bound organelles, microtubules and have:	complex flagella	simpler flagella	chloroplasts	mitochondria	○●○○
3. In 1969, the five-kingdom system was introduced by:	Carl Woese	Robert H. Whittaker	Linnaeus	Lynn Margulis	○●○○
4. The five-kingdom system was revised in 1988 by:	Lynn Margulis and Karlene Schwartz	Pasteur and Koch	Hooke and Leeuwenhoek	Carl Woese and Whittaker	●○○○
5. The study of evolutionary relatedness among various groups of organisms is called:	taxonomy	ecology	genetics	phylogenetics	○○○●
6. The origin and evolution of a set of organisms is known as:	morphology	histology	phylogeny	physiology	○○●○
7. Prokaryotic life consists of two distinct domains, Bacteria and:	Protista	Eukarya	Fungi	Archaea	○○○●
8. The three-domain system includes Bacteria, Archaea and:	Protista	Eukarya	Monera	Plantae	○●○○
9. The ancestors of contemporary bacteria emerged on Earth about:	400 million years ago	4 million years ago	4 billion years ago	40 thousand years ago	○○●○
10. For roughly 3 billion years, all life forms remained:	microscopic	terrestrial only	macroscopic	multicellular	●○○○
11. Peptidoglycan is present in the cell wall of:	eubacteria	both of them	archaea	neither	●○○○
12. Peptidoglycan is absent in the cell wall of:	all prokaryotes	cyanobacteria	eubacteria	archaea	○○○●
13. The RNA polymerase of archaea is complex and similar to that of:	prions	eukaryotes	viruses	eubacteria	○●○○
14. Most archaea inhabit:	cold regions only	moderate environments only	polar seas only	extreme environments	○○○●

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Questions	A	B	C	D	A B C D
15. The three groups of archaea are methanogens, halophiles and:	thermoacidophiles	actinomycetes	cyanobacteria	spirochetes	●○○○
16. Methanogens are:	salt lovers	nitrogen fixers	heat lovers	methane producers	○○○●
17. An example of a methanogen present in the human intestine is:	Thermoplasma acidophilum	Methanobacterium smithii	Thermus aquaticus	Halobacterium halobium	○●○○
18. Halophiles are archaea that live in:	salty environments	acidic soil	marshes	hot springs	●○○○
19. An example of a halophile is:	Nostoc	Halobacterium halobium	Thermoplasma acidophilum	Methanobacterium smithii	○●○○
20. Thermoacidophiles thrive in:	hot and acidic conditions	marshes	salty conditions	cold and alkaline conditions	●○○○
21. The kingdom Prokaryotae is made up of organisms commonly known as:	algae	fungi	protozoa	bacteria	○○○●
22. The study of bacteria is called:	phycology	mycology	bacteriology	virology	○○●○
23. Bacteria having flagella can:	form biofilms only	synthesise glucose	move toward favourable places	produce spores only	○○●○
24. Hair-like structures on the bacterial surface that help in adhesion are called:	pili	flagella	capsules	plasmids	●○○○
25. The distinctive survival structure formed by eubacteria is the:	capsule	endospore	pilus	plasmid	○●○○
26. The mass of branching cell chains or filaments unique to actinomycetes helps them to:	bridge dry gaps between soil particles	fix nitrogen in water	photosynthesise	live inside cells only	●○○○
27. Actinomycetes are very common in soil where they:	fix carbon	cause blights	produce light	break down organic substances	○○○●
28. Bacteria have historically been subdivided into groups based on cell wall types (Gram-positive or Gram-negative), endospore, metabolism and:	length only	colour only	habitat only	growth and nutritional characteristics	○○○●
29. The word cyanobacteria literally means:	blue bacteria	round bacteria	green bacteria	red rod	●○○○
30. Cyanobacteria are a type of:	eukaryotes	Gram-negative bacteria	Gram-positive bacteria	archaea	○●○○
31. Cyanobacteria can live in hot springs with temperatures up to:	85 °C	25 °C	120 °C	45 °C	●○○○

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Questions	A	B	C	D	A B C D
32. Cyanobacteria in association with fungi form:	galls	mycorrhiza	lichens	nodules	○○●○
33. The cell wall of cyanobacteria contains:	muramic acid	chitin	cellulose	lignin	●○○○
34. The cell wall of cyanobacteria is often surrounded by a:	cell plate	cuticle	shell	mucilaginous sheath	○○○●
35. The genetic material of cyanobacteria is:	enclosed in a nucleus	circular DNA	RNA only	linear DNA	○●○○
36. Approximately what fraction of cyanobacteria can fix atmospheric nitrogen?	one-third	three-fourths	one-tenth	one-half	●○○○
37. In Pakistan, cyanobacteria cultivated to enhance soil fertility are Nostoc and:	Spirogyra	Chlorella	Volvox	Anabaena	○○○●
38. The principal pigment responsible for photosynthesis in cyanobacteria is:	chlorophyll d	chlorophyll a	chlorophyll c	bacteriochlorophyll	○●○○
39. The outermost component common to all bacteria is the:	flagellum	pilus	cell wall	capsule	○○●○
40. The cell wall is absent in species of:	Escherichia	Mycoplasma	Vibrio	Bacillus	○●○○
41. The synonyms of peptidoglycan are murein and:	mucilage	myosin	mucopeptide	muramic oil	○○●○
42. Peptidoglycan is composed of:	peptides and sugars (glycan)	nucleotides	fatty acids	lipids and proteins	●○○○
43. The gelatinous layer covering the entire bacterium is the:	capsule	mesosome	periplasm	cell wall	●○○○
44. The capsule is composed of polysaccharides and sometimes:	nucleic acids	lipids only	polypeptides	cellulose	○○●○
45. The enzymes in the periplasmic space that break down penicillin are:	amylases	β-lactamases	proteases only	lipases	○●○○
46. β-lactamases contribute to bacterial:	flagellar motion	conjugation	antibiotic resistance	photosynthesis	○○●○
47. Gram-positive bacteria have a ___ layer of peptidoglycan.	single-molecule	thick	very thin	no	○●○○
48. Gram-negative bacteria have an outer membrane containing:	teichoic acid only	lipopolysaccharide	cellulose	chitin	○●○○

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Questions	A	B	C	D	A B C D
49. The three main shapes of bacteria are spherical, rod-shaped and:	branched only	triangular	spiral	square	○○●○
50. A spherical bacterium is called a:	coccus	bacillus	vibrio	spirillum	●○○○
51. Cocci arranged in pairs are called:	tetrads	streptococci	staphylococci	diplococci	○○○●
52. Cocci arranged in long chains are called:	diplococci	streptococci	sarcina	staphylococci	○●○○
53. A packet of four cocci is called a:	sarcina	diplococcus	palisade	tetrad	○○○●
54. A packet of eight cocci is called a:	vibrio	sarcina (octad)	tetrad	coccobacillus	○●○○
55. An example of a coccus is:	Vibrio cholerae	Streptococcus pneumoniae	Pseudomonas	Escherichia coli	○●○○
56. Rod-shaped bacteria are called:	spirilla	vibrios	cocci	bacilli	○○○●
57. Very short and ovoid rods are called:	vibrios	coccobacilli	tetrads	spirochetes	○●○○
58. Rod-shaped bacteria curved like a comma are called:	vibrios	diplococci	sarcina	spirilla	●○○○
59. Bacilli arranged like a stack of coins are called:	sarcina	palisade	vibrio	diplobacilli	○●○○
60. Examples of rod-shaped bacteria are Escherichia coli and:	Streptococcus	Treponema	Pseudomonas	Staphylococcus	○○●○
61. Bacteria range in size from about 0.1 to:	6 mm	6 µm	600 µm	60 mm	○○●○
62. Endospore formation is also called:	sporulation	binary fission	conjugation	transduction	●○○○
63. In endospore formation, a single bacterium forms:	many spores	no spores	a single spore	four spores	○○●○
64. The spore contains bacterial DNA, a small amount of cytoplasm, ribosomes, peptidoglycan and:	very little water	mitochondria	chloroplasts	large amounts of water	●○○○
65. Bacteria that form endospores include Clostridium and:	Bacillus	Spirillum	Streptococcus	Vibrio	●○○○

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Questions	A	B	C	D	A B C D
66. Endospore formation is not a means of reproduction because:	it needs a host	spores cannot germinate	spores are dead	there is no increase in cell number	○○○●
67. When conditions become favourable, endospores:	become capsules	die	form viruses	germinate into vegetative cells	○○○●
68. During sporulation, the bacterium divides asymmetrically into a mother cell and a:	plasmid	daughter cell	capsule	forespore	○○○●
69. Bacteria move by flagella, bacterial gliding, twitching motility or changes of:	size only	colour	buoyancy	shape only	○○●○
70. In twitching motility, bacteria use their:	pili as a grappling hook	capsule as a sail	flagella as propeller	cell wall as a foot	●○○○
71. Bacteria with a single flagellum are called:	peritrichous	monotrichous	lophotrichous	amphitrichous	○●○○
72. Bacteria with a flagellum at each end are called:	peritrichous	lophotrichous	amphitrichous	monotrichous	○○●○
73. Bacteria with flagella distributed over the entire surface are called:	lophotrichous	peritrichous	amphitrichous	monotrichous	○●○○
74. The two modes of movement in E. coli are forward movement (swimming) and:	gliding	tumbling	twitching	budding	○●○○
75. Movement towards or away from chemicals is called:	thigmotaxis	phototaxis	chemotaxis	magnetotaxis	○○●○
76. The bacterial flagellum is composed of a single protein called:	keratin	tubulin	pilin	flagellin	○○○●
77. The genetic material of E. coli consists of a single circular DNA molecule of about:	5×10^9 base pairs	5×10^6 base pairs	5×10^{12} base pairs	5×10^3 base pairs	○●○○
78. The DNA of E. coli can code for about how many proteins?	20 000	2000	20	200 000	○●○○
79. Spirochetes of the genus Borrelia contain a:	two circular chromosomes	no chromosome	single circular chromosome	single linear chromosome	○○○●
80. Accessory rings of DNA found in many bacteria are called:	plasmids	plastids	chromosomes	nucleosomes	●○○○
81. The two major groups of autotrophic bacteria are photosynthetic and:	chemoautotrophic	parasitic	saprotrophic	symbiotic	●○○○
82. Photosynthetic bacteria contain a unique chlorophyll called:	chlorophyll a	chlorophyll c	bacteriochlorophyll	chlorophyll b	○○●○

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Questions	A	B	C	D	A B C D
83. Examples of photosynthetic bacteria include green sulphur bacteria and:	purple sulphur bacteria	Rhizobium	Nitrosomonas	Salmonella	●○○○
84. Bacteria that depend on external organic sources for carbon and energy are:	autotrophic	photoautotrophic	heterotrophic	chemoautotrophic	○○●○
85. Saprotrophic bacteria obtain nutrition from:	inorganic chemicals	sunlight	living hosts	dead organic matter	○○○●
86. Saprotrophic bacteria secrete extracellular enzymes that:	form spores	break down complex substances	produce toxins only	fix nitrogen	○●○○
87. Examples of saprotrophic bacteria are Pseudomonas and:	Salmonella	Mycobacterium	Azotobacter	Rickettsia	○○●○
88. Bacteria that depend completely on the host to complete their life cycle are:	obligate parasites	facultative parasites	saprotrophs	autotrophs	●○○○
89. Photosynthesis in cyanobacteria occurs in:	vacuoles	thylakoids	mitochondria	chromatophores	○●○○
90. Cyanobacteria perform photosynthesis that produces:	methane	oxygen	hydrogen	sulphur	○●○○
91. In purple and green bacteria, photosynthetic pigments are embedded in infoldings of the cell membrane called:	thylakoids	grana	cristae	chromatophores	○○○●
92. Most photosynthetic bacteria other than cyanobacteria:	produce oxygen	use water as the electron donor	have chlorophyll a only	do not produce oxygen	○○○●
93. Bacteria reproduce asexually by:	binary fission	budding only	fragmentation only	spore formation	●○○○
94. One bacterium will produce how many bacteria after four generations?	8	4	16	32	○○●○
95. Bacterial population growth is:	constant	linear	exponential (logarithmic)	decreasing	○○●○
96. The doubling time of E. coli can be as little as:	2 days	20 hours	20 minutes	2 hours	○○●○
97. In binary fission, DNA replication begins at the:	telomere	origin of replication	nucleolus	centromere	○●○○
98. In the first step of binary fission, the bacterial cell:	replicates its DNA	forms a spore	forms a pilus	forms a capsule	●○○○
99. Sexual reproduction in bacteria is by:	budding	spore formation	genetic recombination	binary fission	○○●○

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Questions	A	B	C	D	A B C D
100. Genetic recombination in bacteria occurs by conjugation, transduction and:	transcription	transformation	translocation	translation	○●○○
101. Lederberg and Tatum worked on:	E. coli	Salmonella	Vibrio	Bacillus	●○○○
102. Lederberg and Tatum irradiated the wild type E. coli with:	visible light	UV only	gamma rays	X-rays	○○○●
103. The bacteria receiving the DNA are called the:	vector	host virus	recipient	donor	○○●○
104. The bacterium that gives the DNA is called the:	recipient	vector	donor	prophage	○○●○
105. Transduction is the transfer of genetic material by:	plasmids	bacteriophages	pili	flagella	○●○○
106. Mutation rates vary widely among different:	viruses only	human cells only	species of bacteria	plants only	○○●○
107. Bacteria that fix nitrogen in the root nodules of legumes belong to the genus:	Nitrosomonas	Nitrobacter	Pseudomonas	Rhizobium	○○○●
108. Chemosynthetic bacteria that convert ammonia into nitrates are Nitrosomonas and:	Clostridium	Azotobacter	Nitrobacter	Rhizobium	○○●○
109. Bacteria and fungi serve as nature's:	consumers	decomposers	pollinators	producers	○●○○
110. The product of decomposition that enriches the soil is:	peat	humus	silt	coal	○●○○
111. Bacteria in the intestines help in digestion by emulsifying:	fats	minerals	vitamins	proteins	●○○○
112. Bacteria synthesise vitamin K and:	vitamin B_{12}	vitamin C	vitamin D	vitamin A	●○○○
113. Yogurt, cheese and butter are produced with the help of:	bacteria	viruses	algae	prions	●○○○
114. Hershey and Chase used T2 bacteriophage and bacteria in 1952 to prove that:	RNA is the hereditary material	lipids are hereditary	protein is the hereditary material	DNA is the hereditary material	○○○●
115. Free-living organisms having a foreign gene inserted are called:	clones only	hybrid organisms	mutants	transgenic organisms	○○○●
116. Bacteria are used to produce human insulin and:	growth hormone	glucose	adrenaline	testosterone	●○○○

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Questions	A	B	C	D	A B C D
117. Oil-eating bacteria are used in:	tanning only	bioremediation	vinegar production	food preservation	○●○○
118. Genetically engineered bacteria can extract copper, uranium and gold from:	rocks only	rich ores only	low-grade sources	sea water only	○○●○
119. The bacterium Salmonella typhi causes:	tuberculosis	pneumonia	cholera	typhoid fever	○○○●
120. The "rosy spots" on the abdomen are associated with:	cholera	typhoid fever	tuberculosis	tetanus	○●○○
121. Tuberculosis is caused by:	Vibrio cholerae	Clostridium tetani	Salmonella typhi	Mycobacterium tuberculosis	○○○●
122. Pulmonary TB in its secondary stage shows a dry hacking cough with:	watery sputum	no sputum	blood-stained sputum	clear sputum	○○●○
123. The treatment of tuberculosis uses:	only vaccines	only surgery	multiple-drug therapy	a single antibiotic	○○●○
124. Leaf lesions in plants caused by bacterial toxins are called:	wilts	blights	galls	spots	○○○●
125. A bacterial plant disease causing rapid necrosis of whole plant organs is called:	blight	rot	spot	gall	●○○○
126. Xanthomonas oryzae causes blight in:	tomato	rice	olive	potato	○●○○
127. Erwinia amylovora causes fire blight in:	wheat	rice	maize	apple and pear	○○○●
128. The disease in which tissues become wet, soft and macerated is called:	gall	wilt	soft rot	blight	○○●○
129. Small root nodules in legumes are caused by:	Agrobacterium tumefaciens	Pseudomonas savastanoi	Xanthomonas campestris	Rhizobium leguminosarum	○○○●
130. Large galls in many plants are caused by:	Agrobacterium tumefaciens	Rhizobium	Pseudomonas syringae	Erwinia	●○○○
131. Olive knot is caused by:	Pseudomonas savastanoi	Xanthomonas oryzae	Erwinia	Rhizobium	●○○○
132. There are approximately how many times more bacterial cells than human cells in the human body?	100	2	1000	10	○○○●
133. Normal flora protects humans by:	causing disease	producing toxins	competitive exclusion of harmful bacteria	killing all bacteria	○○●○

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Questions	A	B	C	D	A B C D
134. Gut bacteria produce short-chain fatty acids such as:	butyrate	insulin	glucose	urea	●○○○
135. Lactobacilli in the vagina maintain:	a sterile environment	an alkaline environment	a dry environment	an acidic environment	○○○●
136. Escherichia coli is a part of the normal flora in the:	nose only	skin only	mouth only	colon	○○○●
137. Chemicals applied to inanimate objects to kill microbes are:	preservatives	antibiotics	antiseptics	disinfectants	○○○●
138. Chemicals used on living tissues to prevent infection are:	preservatives	sterilants	disinfectants	antiseptics	○○○●
139. Sodium benzoate and potassium sorbate are:	antiseptics	chemical preservatives	disinfectants	antibiotics	○●○○
140. Chlorine and chloramine are used in water treatment to:	add minerals	soften water	colour water	disinfect drinking water	○○○●
141. Sterilisation is destructive to:	only fungi	only bacteria	only viruses	all life forms	○○○●
142. Moist heat kills microbes by:	protein coagulation	dehydration	oxidation of constituents	freezing	●○○○
143. Dry heat kills microbes by:	dissolving cell walls	protein coagulation	oxidation of microbial constituents	freezing	○○●○
144. Electromagnetic radiations effective against microorganisms are those below:	700 nm	1 mm	300 nm	1000 nm	○○●○
145. Heat-sensitive compounds like antibiotics and sera are sterilised by:	boiling	membrane filtration	dry heat	autoclaving	○●○○
146. Tetanus bacteria are resistant to heating because they form:	heat-resistant spores	extra flagella	pili	thick capsules	●○○○
147. Pili made of pilin are:	nucleic acid	lipid	protein	carbohydrate	○○●○
148. Peritrichous flagella are distributed:	at one pole	in a bundle at the centre	evenly over the entire cell surface	at both poles only	○○●○
149. During conjugation, the genetic material typically transferred is:	promoter	exon	intron	plasmid	○○○●
150. The main distinguishing feature of cyanobacteria compared with other bacteria is that they:	perform photosynthesis using chlorophyll and release oxygen	live only in the dark	depend on chemosynthesis	perform no photosynthesis	●○○○

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