Studybeesofficial
EDUCATIONAL PLATFORM
www.studybeesofficial.com

HSSC-I NATIONAL BOOK FOUNDATION FBISE

BIOLOGY TEST - CHAPTER 1: CELL AND SUB-CELLULAR ORGANELLES

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. The basic unit of structure and function of living organisms is the:	organelle	tissue	cell	organ	○ ○ ● ○
2. Which of the following is a single-celled organism?	Frog	Horse	Amoeba	Mango tree	○ ○ ● ○
3. Which property of life is the removal of waste products?	Movement	Growth	Excretion	Nutrition	○ ○ ● ○
4. Which property of life means maintaining a stable internal environment?	Homeostasis	Reproduction	Respiration	Movement	● ○ ○ ○
5. The English scientist who named "cells" while viewing cork in 1665 was:	Robert Hooke	Virchow	Schwann	Schleiden	● ○ ○ ○
6. Schleiden concluded that cells are the ultimate units of all:	viruses	bacteria	plant tissue	animal tissue	○ ○ ● ○
7. The German zoologist who studied animal cells was:	Schleiden	Hooke	Schwann	Redi	○ ○ ● ○
8. Who observed that new cells develop by division of pre-existing cells?	Rudolf Virchow	Schwann	Schleiden	Robert Hooke	● ○ ○ ○
9. Which is a principle of the cell theory?	Cells arise from non-living matter	Viruses are the units of life	Only plants have cells	Cells arise from pre-existing cells	○ ○ ○ ●
10. Experiments by Redi and Pasteur showed that cells cannot grow in:	sealed and sterile conditions	open air only	sunlight only	cold water only	● ○ ○ ○
11. Viruses are called acellular because they have no:	genetic material	protein	cell machinery	shape	○ ○ ● ○
12. Which cells lack a nucleus and so cannot divide?	Muscle cells	Liver cells	Nerve cells	RBCs and sieve tube cells	○ ○ ○ ●

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
13. Coenocytic hyphae of Rhizopus are:	uninucleate only	anucleate	prokaryotic	multinucleate	○ ○ ○ ●
14. A light microscope is also called a compound microscope because it uses:	two stages	two light sources	two lenses	two mirrors	○ ○ ● ○
15. The maximum magnification of a light microscope is:	1500 X	15000 X	150 X	1500000 X	● ○ ○ ○
16. Total magnification is calculated by:	adding objective and ocular values	multiplying objective by ocular value	dividing objective by ocular value	subtracting the lens values	○ ● ○ ○
17. The resolving power of an electron microscope is about:	250 nm	10 µm	0.2 nm	0.1 mm	○ ○ ● ○
18. The resolving power of a light microscope is about:	0.2 nm	250 nm	1 nm	0.1 mm	○ ● ○ ○
19. The resolution of the naked eye is:	0.2 nm	1 nm	250 nm	0.1 mm	○ ○ ○ ●
20. Which microscope can show only dead and dried specimens?	Compound microscope	Dissecting microscope	Light microscope	Electron microscope	○ ○ ○ ●
21. Which microscope forms a black and white image?	Simple microscope	Compound microscope	Electron microscope	Light microscope	○ ○ ● ○
22. The fine structure of a cell seen with the electron microscope is called:	protoplasm	ultrastructure	histology	cytoplasm	○ ● ○ ○
23. The Svedberg unit measures the:	sedimentation rate of a particle	thickness of a membrane	speed of electrons	magnification of a lens	● ○ ○ ○
24. SEM forms its image by detecting:	secondary or backscattered electrons	visible light	transmitted electrons	X-rays	● ○ ○ ○
25. The plant cell wall is made mainly of:	peptidoglycan	lignin only	cellulose	chitin	○ ○ ● ○
26. The fungal cell wall is made of:	cellulose	chitin	pectin	peptidoglycan	○ ● ○ ○
27. The bacterial cell wall is made of:	cellulose	peptidoglycan	chitin	starch	○ ● ○ ○
28. Which wall layer lies between the primary walls of adjacent cells?	Plasma membrane	Secondary wall	Middle lamella	Tonoplast	○ ○ ● ○
29. The secondary cell wall is found in:	animal cells	red blood cells	sclerenchyma cells	all young cells	○ ○ ● ○
30. Which substance mainly makes the secondary cell wall rigid?	Lignin	Glycogen	Chitin	Pectin	● ○ ○ ○

Questions	A	B	C	D	A B C D
31. The plasma membrane is about how thick?	7 µm	700 nm	7 nm	70 nm	○ ○ ● ○
32. Plasma membrane consists of proteins and lipids in the approximate ratio of:	60-80% proteins, 20-40% lipids	20-40% proteins, 60-80% lipids	90% proteins, 10% lipids	50% each	● ○ ○ ○
33. The model describing the plasma membrane is the:	helical model	fluid mosaic model	sandwich model	lock and key model	○ ● ○ ○
34. Which molecule stabilizes the lipid bilayer of the membrane?	Starch	Chitin	Cholesterol	Pectin	○ ○ ● ○
35. Signaling molecules are also known as:	enzymes	receptors	ligands	vesicles	○ ○ ● ○
36. The proteins that respond to ligands are called:	receptors	antibodies	histones	carriers	● ○ ○ ○
37. Which is the correct order of signal events?	Response, reception, transduction	Transduction, response, reception	Reception, response, transduction	Reception, transduction, response	○ ○ ○ ●
38. cAMP acts as a:	first messenger	steroid	second messenger	hormone receptor	○ ○ ● ○
39. Which hormone passes directly through the plasma membrane?	Protein hormone	Peptide hormone	Testosterone	Water-soluble hormone	○ ○ ● ○
40. Which type of transport needs ATP?	Active transport	Facilitated diffusion	Simple diffusion	Osmosis	● ○ ○ ○
41. Which of these is NOT a passive transport mechanism?	Osmosis	Active transport	Simple diffusion	Facilitated diffusion	○ ● ○ ○
42. In the Na-K pump, potassium ions are moved:	from outside to inside the cell	out of the vesicle	from inside to outside the cell	into the nucleus	● ○ ○ ○
43. Cytosol is the:	liquid matrix of cytoplasm	plasma membrane	vacuolar sap	nuclear sap	● ○ ○ ○
44. The cytoplasm is about what percent water?	90%	20%	50%	10%	● ○ ○ ○
45. The ER sacs and tubules are called:	cristae	grana	thylakoids	cisternae	○ ○ ○ ●
46. The smooth ER of muscle cells is called:	cisterna	sarcoplasmic reticulum	nucleoplasm	transitional ER	○ ● ○ ○
47. Eukaryotic ribosomes are:	30S	60S	70S	80S	○ ○ ○ ●
48. Ribosomes are formed in the:	vacuole	Golgi complex	nucleolus	lysosome	○ ○ ● ○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
49. The Golgi complex was discovered in 1898 by:	Schleiden	Rudolf Virchow	Robert Hooke	Camillo Golgi	○ ○ ○ ●
50. The "suicidal bags" of the cell are the:	ribosomes	centrioles	lysosomes	peroxisomes	○ ○ ● ○
51. The enzyme that breaks hydrogen peroxide into water and oxygen is:	lipase	amylase	peroxidase	catalase	○ ○ ○ ●
52. Glyoxysomes are found in the seedlings of:	oil seed plants	mushrooms	all animals	bacteria	● ○ ○ ○
53. The membrane that surrounds the central vacuole is called the:	cristae	envelope	lamella	tonoplast	○ ○ ○ ●
54. The folds of the inner mitochondrial membrane are called:	cristae	cisternae	stroma	grana	● ○ ○ ○
55. The mitochondrial matrix contains ribosomes of the type:	40S	70S	60S	80S	○ ● ○ ○
56. Colourless plastids found in roots, stems and seeds are:	chromoplasts	chloroplasts	leucoplasts	proplastids	○ ○ ● ○
57. A stack of smaller thylakoids is called a:	granum	cisterna	stroma	cristae	● ○ ○ ○
58. Light dependent reactions of photosynthesis occur in the:	grana	cytosol	stroma	matrix	● ○ ○ ○
59. Each centriole is made of how many triplets of microtubules?	Three	Two	Nine	Six	○ ○ ● ○
60. Which structure is present in prokaryotic and eukaryotic cells alike?	Golgi complex	Mitochondria	Nucleus	Ribosomes	○ ○ ○ ●
61. Which cell type divides by binary fission?	Animal cell	Plant cell	Prokaryotic	Eukaryotic	○ ○ ● ○
62. Which stem cells are present in the early zygote divisions?	Multipotent	Oligopotent	Unipotent	Totipotent	○ ○ ○ ●
63. Adult muscle stem cells are:	pluripotent	totipotent	multipotent only	unipotent	○ ○ ○ ●
64. iPSCs were first described in 2006 by:	Shinya Yamanaka	Camillo Golgi	Robert Hooke	Louis Pasteur	● ○ ○ ○
65. The process of cell drinking is called:	pinocytosis	phagocytosis	osmosis	exocytosis	● ○ ○ ○
66. The vesicle formed during pinocytosis is called a:	lysosome	peroxisome	phagosome	pinosome	○ ○ ○ ●
67. Release of neurotransmitters at synapses occurs by:	osmosis	endocytosis	simple diffusion	exocytosis	○ ○ ○ ●

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
68. Chromosomes are duplicated during which phase?	G1 phase	G2 phase	S phase	M phase	○ ○ ● ○
69. The division of cytoplasm is called:	synapsis	mitosis	interphase	cytokinesis	○ ○ ○ ●
70. The longest stage of mitosis is:	anaphase	metaphase	prophase	telophase	○ ● ○ ○
71. The shortest stage of mitosis is:	metaphase	prophase	anaphase	telophase	○ ○ ● ○
72. The pairing of homologous chromosomes is called:	crossing over	replication	synapsis	cytokinesis	○ ○ ● ○
73. The X-shaped point of crossing between homologues is the:	centriole	chiasma	kinetochore	centromere	○ ● ○ ○
74. Meiosis produces cells that are:	triploid	identical to parent	diploid	haploid	○ ○ ○ ●
75. A student sees a cell with a nucleus, mitochondria and a cell wall made of cellulose. The cell is most likely from a:	virus	bacterium	animal	plant	○ ○ ○ ●
76. A biologist finds a particle that shows life only inside a host cell. This exception to the cell theory is a:	alga	bacterium	virus	Amoeba	○ ○ ● ○
77. A student observes red blood cells under a microscope and notes no nucleus. This is an exception to the cell theory because they:	have a cell wall	contain chloroplasts	cannot divide to form new cells	are very large	○ ○ ● ○
78. Hooke saw empty walled spaces in thin cork slices. What was he really observing?	Thick walls of once-living cork cells	Nuclei of cork cells	Living animal cells	Bacterial colonies	● ○ ○ ○
79. A flask of sterile broth stays sealed and no cells grow in it. This supports which cell theory principle?	Cells have nuclei	Cells arise only from pre-existing cells	Cells have walls	Cells are made of lipids	○ ● ○ ○
80. A student wants to watch live yeast cells moving. Which instrument should she use?	Transmission electron microscope	Scanning electron microscope	Light microscope	Any electron microscope	○ ○ ● ○
81. A researcher needs to resolve structures smaller than 1 nm. The best choice is the:	hand lens	light microscope	compound microscope	electron microscope	○ ○ ○ ●
82. A lens of 10X ocular and 40X objective is used. The total magnification is:	4 X	400 X	4000 X	50 X	○ ● ○ ○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
83. Two points 0.1 mm apart can just be distinguished by the naked eye. This shows the eye's:	magnification	resolution	focus	contrast	○●○○
84. A student says "higher magnification always gives better resolution." This is wrong because resolution:	is zero in light microscopes	cannot be increased by magnification alone	is the same as magnification	depends only on the lens colour	○●○○
85. A TEM image is made by electrons that passed through a thin section. The section thickness is about:	20-100 nm	1-5 mm	1 cm	2 µm	●○○○
86. A microscope needs a vacuum for working and gives black and white images. It is a(n):	dissecting microscope	electron microscope	light microscope	compound microscope	○●○○
87. A student wants to see the 3-D surface of a specimen by detecting backscattered electrons. She should use a:	transmission electron microscope	light microscope	simple lens	scanning electron microscope	○○○●
88. A cell wall layer develops only after the cell has stopped growing. This layer is the:	plasma membrane	middle lamella	secondary wall	primary wall	○○●○
89. A newly dividing plant cell forms a thin, flexible wall that stretches during growth. It is the:	secondary cell wall	primary cell wall	tonoplast	middle lamella	○●○○
90. A sclerenchyma fibre is dead at maturity and gives rigid support. Its wall is rigid mainly due to:	lignin	pectin	cholesterol	glycogen	●○○○
91. A tissue is peeled apart and the cells separate easily when the sticky layer dissolves. The layer is the:	secondary wall	primary wall	middle lamella	cytoskeleton	○○●○
92. A scientist adds more unsaturated fatty acids to a membrane. The bilayer becomes:	more rigid	thicker than 70 nm	impermeable	more fluid and flexible	○○○●
93. A cell biologist observes the two surfaces of a membrane have different proteins. This shows the membrane is:	asymmetrical	a single layer	a cell wall	symmetrical	●○○○
94. A student wants to measure pore size in a porous membrane. Which technique helps?	Chromatography	Osmosis	Simple diffusion	Scanning electron microscopy	○○○●
95. Glycoproteins on the outer side of a cell help it to:	make ribosomes	store DNA	make ATP	recognize other cells	○○○●

Questions	A	B	C	D	A B C D
96. Hormones circulate in blood but only affect target cells because those cells have specific:	centrioles	receptors	cell walls	nuclei	○ ● ○ ○
97. A protein hormone cannot cross the lipid bilayer. It must bind to a:	gene in the cytoplasm	ribosome in the matrix	receptor on the cell surface	receptor in the nucleus	○ ○ ● ○
98. After a hormone binds its receptor, the cell makes cAMP. This step is:	exocytosis	DNA replication	osmosis	second messenger formation	○ ○ ○ ●
99. Estrogen enters a target cell, binds a receptor and the complex binds DNA. The complex acts as a:	second messenger	transcription factor	ribosome	carrier protein	○ ● ○ ○
100. A signal finally causes activation of a gene in the nucleus. This is the cell's:	receptor	ligand	reception	response	○ ○ ○ ●
101. Oxygen moves from the lungs into the blood. This movement occurs by:	phagocytosis	simple diffusion	active transport	exocytosis	○ ● ○ ○
102. Glucose enters a cell with the help of carrier proteins and no ATP. This is:	endocytosis	active transport	osmosis	facilitated diffusion	○ ○ ○ ●
103. A researcher finds that a transport rate falls when a membrane protein inhibitor is added. The transport is likely:	cell division	osmosis through the bilayer	simple diffusion	facilitated diffusion	○ ○ ○ ●
104. Carrier-mediated transport stops increasing when all carrier proteins are busy. This is called:	saturation	exocytosis	diffusion	osmosis	● ○ ○ ○
105. A person feels thirsty after eating salty food. This is an example of:	osmosis	mitosis	exocytosis	active transport	● ○ ○ ○
106. Root cells absorb mineral ions against a concentration gradient using ATP. This is:	osmosis	simple diffusion	facilitated diffusion	active transport	○ ○ ○ ●
107. A poison stops respiration in root cells. Mineral uptake by active transport will:	stay the same	become osmosis	increase	stop	○ ○ ○ ●
108. A liver cell detoxifies drugs and makes steroids. It has abundant:	centrioles	smooth ER	rough ER only	chloroplasts	○ ● ○ ○
109. A pancreatic cell secretes large amounts of protein. Which organelle will be most prominent?	Chloroplast	Rough ER	Centriole	Cell wall	○ ● ○ ○
110. Ribosomes are attached to the sides facing the cytoplasm of an organelle. It is the:	lysosome	Golgi complex	smooth ER	rough ER	○ ○ ○ ●

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
111. Several ribosomes attached to one mRNA make several copies of a polypeptide quickly. This chain is a:	lysosome	polysome	nucleosome	chromosome	○ ● ○ ○
112. A bacterial cell is found to contain 70S ribosomes. These ribosomes have subunits of:	30S and 50S	40S and 60S	40S and 40S	20S and 60S	● ○ ○ ○
113. The two ribosomal subunits stay together during protein synthesis, helped by ions of:	magnesium	iodine	iron	chlorine	● ○ ○ ○
114. A glandular cell packages its secretions into vesicles. The organelle that processes and exports them is the:	Golgi complex	chloroplast	mitochondrion	nucleolus	● ○ ○ ○
115. During plant cytokinesis, Golgi vesicles gather at the cell equator and fuse. They form the:	spindle	phragmoplast	cristae	centromere	○ ● ○ ○
116. In a tadpole, tail tissue is digested during metamorphosis. The organelle increasing in tail cells is the:	nucleolus	lysosome	centriole	ribosome	○ ● ○ ○
117. A starving cell digests its own organelles to get energy. This process is:	osmosis	endocytosis	autophagy	autolysis	○ ○ ● ○
118. After exercise stops, extra mitochondria are removed in muscle cells by:	mitosis	exocytosis	autophagy	osmosis	○ ○ ● ○
119. A cell in which lysosomes burst and the cell disintegrates shows:	pinocytosis	synapsis	autolysis	osmosis	○ ○ ● ○
120. A person drinks alcohol. The liver detoxifies it mainly in the:	centrioles	peroxisomes	nucleoli	chloroplasts	○ ● ○ ○
121. A step of photorespiration converts glycolate to glycine in the:	centriole	lysosome	peroxisome	ribosome	○ ○ ● ○
122. An oil seed germinates and converts stored fatty acids to carbohydrates. This happens through the:	cell cycle	nitrogen cycle	Krebs cycle	glyoxylate cycle	○ ○ ○ ●
123. A freshwater protist pumps excess water out of the cell using:	contractile vacuoles	lysosomes	food vacuoles	central vacuole	● ○ ○ ○
124. A plant cell wilts when its central vacuole loses water. The vacuole normally gives the cell:	photosynthesis	turgor and support	DNA	ATP	○ ● ○ ○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
125. Muscle cells that contract a lot are found to have many more mitochondria than other cells. This is because they have:	more nuclei only	high metabolic activity	many chloroplasts	thick walls	○ ● ○ ○
126. A scientist finds an organelle with circular DNA, 70S ribosomes, cristae and a double membrane. It is a:	vacuole	mitochondrion	lysosome	Golgi body	○ ● ○ ○
127. At fertilization, all the mitochondria of the zygote come from the egg because sperm heads:	lack mitochondria	have chloroplasts	have 80S ribosomes	have a cell wall	● ○ ○ ○
128. Mitochondria and chloroplasts are thought to have come from engulfed bacteria. This idea is called:	mitosis	endosymbiosis	autophagy	osmosis	○ ● ○ ○
129. ATP synthase particles are found on the:	inner mitochondrial membrane	nuclear pore	outer mitochondrial membrane	plasma membrane	● ○ ○ ○
130. The citric acid (Krebs) cycle enzymes in a mitochondrion are located in the:	cristae surface	intermembrane space	outer membrane	matrix	○ ○ ○ ●
131. A red tomato fruit gets its colour from:	chromoplasts	proplastids	leucoplasts	chloroplasts	● ○ ○ ○
132. Dark reactions of photosynthesis convert CO2 to carbohydrates in the chloroplast's:	envelope	stroma	thylakoid	granum	○ ● ○ ○
133. A cell shows spindle fibres forming from a pair of organelles at right angles to each other. These are:	peroxisomes	centrioles	lysosomes	ribosomes	○ ● ○ ○
134. Cilia and flagella arise from basal bodies that are formed by:	nucleoli	centrioles	Golgi vesicles	ribosomes	○ ● ○ ○
135. Ribosomal subunits are constructed in the nucleus's:	nucleoplasm	chromatin	nuclear pore	nucleolus	○ ○ ○ ●
136. A specimen has no nuclear membrane and its DNA lies in the cytoplasm. It is a:	animal cell	plant cell	fungal cell	prokaryote	○ ○ ○ ●
137. Flagella of a bacterium are composed of flagellin, while those of eukaryotes are composed of:	peptidoglycan	dynein and plasma membrane	flagellin only	cellulose	○ ● ○ ○
138. A researcher grows new heart cells from a patient's own reprogrammed cells, lowering rejection risk. These are:	adult unipotent cells	oligopotent cells	iPSCs	totipotent cells	○ ○ ● ○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio

Questions	A	B	C	D	A B C D
139. A stem cell that can become red cells, white cells or platelets is:	pluripotent	multipotent	totipotent	unipotent	○ ● ○ ○
140. One major risk of using retroviruses to make iPSCs is:	cancer	osmosis	low ATP	loss of nucleus	● ○ ○ ○
141. An Amoeba engulfs a food particle with pseudopodia. This process is:	phagocytosis	pinocytosis	osmosis	exocytosis	● ○ ○ ○
142. Cholesterol enters cells through coated pits. This is:	osmosis	exocytosis	simple diffusion	receptor-mediated endocytosis	○ ○ ○ ●
143. A sweat gland cell releases secretions by fusing vesicles with the membrane. This is:	phagocytosis	pinocytosis	endocytosis	exocytosis	○ ○ ○ ●
144. A student sees a cell with condensed chromosomes lined up on the equator. The cell is in:	prophase	metaphase	anaphase	telophase	○ ● ○ ○
145. Sister chromatids are pulled apart and move to opposite poles. The cell is in:	metaphase	anaphase	prophase	interphase	○ ● ○ ○
146. A cell has a cleavage furrow pinching its middle. The process underway is:	crossing over	cytokinesis	replication	synapsis	○ ● ○ ○
147. A cell shows chromatin condensing into chromosomes while the nucleoli disappear. The phase is:	telophase	interphase	prophase	anaphase	○ ○ ● ○
148. Chromosome segments are exchanged at chiasmata during:	prophase I	telophase II	metaphase II	anaphase II	● ○ ○ ○
149. Meiosis II is like mitosis because it separates:	sister chromatids	nucleoli	ribosomes	homologous chromosomes	● ○ ○ ○
150. A skin wound heals by a process that gives genetically identical cells. This is:	mitosis	synapsis	meiosis	binary fission	● ○ ○ ○

Follow Studybeesofficial on Instagram, YouTube Channel & WhatsApp Channel — Link in Bio