34/50

68%

LUSAKA APEX MEDICAL UNIVERSITY

FACULTY OF PRE-MEDICAL SCIENCES/ DEPARTMENT OF BIOLOGY

BS1001 CELLS AND BIOMOLECULES

TEST 1

MARCH 2024

Duration: 1hr 15minutes

Examiner: Ms. K. Malisa and Dr. G. Chakolwa

SECTION A : Mark the correct answer with an X in the provided answer sheet at the back of this paper.

1. Which of the following statements is not true about mitosis?

A Mitosis is the division of the nucleus **B.** Mitosis takes place in somatic cells

C. Mitosis occurs in germ cells **D.** Mitosis is equational cell division

2.In the cell cycle……

A. The M-phase is the non-dividing phase **B.** Chromosomes are replicated in G2

C. Interphase is the organization phase **D.** Interphase is the dividing phase

3.Binary fission?

A. Is a type of sexual reproduction in prokaryotic cells **B.** Involves the division of 46 chromosomes **C.** Involves the division of one chromosome **D.** Is a form of reproduction for some unicellular eukaryotes

4.In the cell cycle, the replicated DNA is checked for errors?

A. Between G2 and the M-phase **B.** Between prophase and Metaphase **C.** Between metaphase and anaphase **D.** Between Anaphase and telophase

5.During the mitosis practical at Lusaka Apex Medical University, a student observed a cell which had two nuclei. At which stage of the M- phase was that cell?

A. Interphase **B.** Telophase **C.** Prophase **D.** Anaphase

6. Which of the following statements is false about interphase?

A. Chromosomes replicate **B.** The proteins are replicated **C.** The cell grows and develops

D. The nucleolus disintegrates

7. At G0.....

A. The cell is dead **B.** The cell is paused to check the and correct the errors in the DNA

C. The cell undergoes apoptosis **D.** The cell is resting

8. Based on your knowledge of the phases in mitosis, when do you think karyotypes are made?

A. At anaphase **B.** At prophase **C.** At metaphase **D.** At telophase

9. How is the spindle formed in plant cells?

A. From the centrioles **B.** From the polar fibers **C.** From the kinetochore fibers

D. From the centrosome area located exterior to the nuclear envelope

10. Which of the following is true about the chromosomes found in prokaryotic cells?

A. They are linear in shape **B.** They are coiled on proteins called histones **C.** They are enclosed in the nucleus **D.** They are circular in shape

11. Which of the following shows the correct order of events in the cell cycle?

A. G1- G2- S- M-phase **B.** M- Phase – G1- S- G2 **C.** G1-S- G2- M-phase

D. G1- M- phase – S- G2

12. How does a sex cell differ from a body cell?

A. A sex cell does not contain chromosomes. **B.** A sex cell contains homologous chromosomes. **C.** A sex cell has the same number of chromosomes as a body cell. **D.** A sex cell has half the amount of genetic material as a body cell.

G1 G2 S Md
G0

13.Which of the following statements correctly describes the function of cell division in unicellular organisms?

A. Cell division allows the organism to grow. **B.** Cell division allows the organism to reproduce. **C.** Cell division allows the organism to produce sex cells. **D.** Cell division allows the organism to repair damage to the cell.

14. What meiotic event results in genetic variability of daughter cells?

A. Synapsis **B.** Crossing Over **C.** Apoptosis **D.** Cytokinesis

15. During oogenesis, one pause occurs……

A. At Prophase II **B.** At Metaphase II

C. At Anaphase I. **D.** At Telophase II

16.Interphase is the longest stage of what process?

A. Mitosis **B.** cell cycle **C.** cytokinesis **D.** Reproduction

17.Cells contain a variety of structures called ?

A. Protoplasm **B.** Cytoplasm **C.** Organelles **D.** Microtubules

18.Cells of plants, fish, mammals, humans and insects are different from those of E.coli in that ?

A. They are smaller **B.** They have single circular chromosome **C.** They contain cell wall

D. They do not divide by binary fission

19.Which of the following would be found within an autotrophic eukaryotic cell and not within a heterotrophic eukaryotic cell?

A. Mitochondria **B.** Ribosomes **C.** Rough endoplasmic reticulum **D.** Chlorophyll

20. Which scientist in 1665 concluded that a thin slice of cork consisted of many tiny boxes called cells?

A. Anton Von Leuwenhoek **B.** Robert Hooke **C.** Matthias Schleiden **D.** Theodor Schwann

21.Which of the following would be found in an animal cell undergoing mitosis but not in a plant cell undergoing mitosis?

A. chromosome **B.** centriole **C.** spindle **D.** chromatid

22.Which of the following best summarizes why the technological invention of microscopes was important to biology?

A. It allowed for development of the cell theory. **B.** It created a means of funding for cell research. **C.** It created public interest and support for research. **D.** It proved that cells could form spontaneously.

23.Which of the following characteristics defines a cell as a eukaryote?

A. Being able to move **B.** Being able to reproduce **C.** Having a nucleus **D.** Having ribosomes

24.Which of the following organisms is different in terms of cellular organization?

A. Plants **B.** Bacteria **C.** Animals **D.** Fungi

25.Which of the following structures is NOT found in BOTH plant and animal cells?

A. Nucleus **B.** Mitochondria **C.** Centrioles **D.** Golgi apparatus

26. Prokaryotic cells contain the following organelles except

A. Nucleus **B.** Plasmids **C.** Ribosomes **D.** Mesosomes

27.What is the function of the nucleoli?

A. Formation and breakdown of the nuclear envelope

B. Formation of centromeres and centrioles

C. Formation of the spindle during nuclear division

D. Formation of ribosomal subunits

28.The cytoskeleton is a characteristic of……..

A. Plant cells **B.** Animal cells **C.** Plant and animal cells **D.** Plant and bacteria cells

29. **Which structure is NOT correctly paired with its primary function**

A. Ribosome-protein synthesis **B.** Vacuole-nutrient synthesis **C.** Mitochondria-ATP generation

D. Nucleus-DNA storage

30. **Which of the following best describes a characteristic that distinguishes Fungi from other Kingdoms?**

A. Fungi are able to reproduce both sexually and asexually.

B. Fungi are eukaryotes with complex organ systems.

C. Fungi are multicellular and break down dead plant and animal matter.

D. Fungi have cell walls and specialized tissues.

31. **Which of the following best describes the characteristics that differentiate animals from the organisms of other kingdoms**

A. Animals have complex organ systems and reproduce sexually.

B. Animals have prokaryotic cells and are multicellular.

C. Animals have external digestion and are vertebrates.

D. Animals have rigid cell walls and specialized tissues.

32. **The cell theory is one of the unifying themes of biology. Which of the following statements is part of the modern cell theory**?

A. All life is made of cells. **B.** Cells are the smallest units of life.

C. Both of the statements **D.** None of the statements

33. **Which of the following is the largest cell in the human body?**

A. Sperm cell **B.** Ovum **C.** Eye **D.** Ovary

34. **Unicellular non-nucleated microorganisms are known as……**

A. Fungi **B.** Viruses **C.** Prions **D.** Bacteria

35. **Infectious agents that possess no genome are known as .....**

A. Fungi **B.** Viruses **C.** Prions **D.** Bacteria

36. **Microorganisms incapable of possessing both RNA and DNA at the same time are known as**

A. Fungi **B.** Viruses **C.** Prions **D.** Bacteria

37. **Which of these are non-photosynthetic disease causing cell walled eukaryotic organisms?**

A. Fungi **B.** Viruses **C.** Prions **D.** Bacteria

38. **Which Kingdom was used as a catchall for all organisms that could not fit in kingdom Animalia and Plantae?**

A. Protista **B.** Archaebacteria **C.** Monera **D.** Fungi

39. **Arrangement of organisms into groups based on common properties is known as.....**

A. Taxonomy **B.** Nomenclature **C.** Identification **D.** Phylogenetics

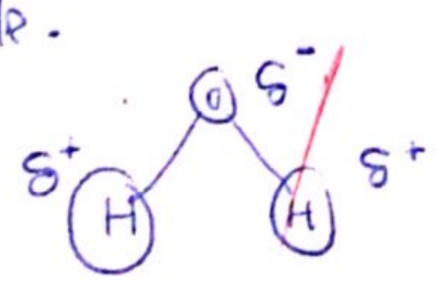
40. **Organisms that are both autotrophic and heterotrophic are known as**

A. Eubacteria **B.** Plants **C.** Animals **D.** Protozoa

SECTION B- Answer in the spaces provided

B1. Why is water a V-shaped molecule and not a linear one? [2 Marks]

It is V shaped because it posses 2 hydrogen positive ~~items~~ molecules that all share electrons with one oxygen ~~item~~ molecules. Thus mades it a polar ~~item~~ molecule.



B2. Define specific heat capacity of water and give the numerical value. [2 Marks]

- This is the amount of heat energy that is required to increase the temperature of 1kg of water by 1°C.
- 4.19 kJ/kg °C

B3. How does the surface tension possessed by water bodies come about and what is the biological importance of this unique property of water? . [2 Marks]

- Water ~~rely~~ relies on hydrogen bond in itself, and acts as a molecular magnet, that allows water to form drops.
- It is important as animals like water strider ~~ties on~~ rests ~~water~~, are able to land on the water.

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B4. Give a brief explanation as to why solid water is able to float on liquid water and what the biological importance of this property of water is . [4 Marks]

- hydren ~~in~~ fewer & feather ~~apart~~
- ~~hydrogen weak~~ & cummilative
- The hydrogen molecules ~~in~~ ice (solid water) are more ~~far~~ further away and few compered to them in liquid water
- ~~They~~ hydrogen are very weak, however cummulative. This cummulativeness allows ~~hydrogen~~ water to be ~~essenti~~ a life property.
- It is important because the fishes in the rivers / streams need fresh water during winter
- It is also important for the polar bears - as they rely on the ice to hunt for prey, but global warming is an issue, leading to the ice melting rapidly due to harmful CFCs, etc.

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BS1001 TEST 1 MARCH 2024 MCQ ANSWER SHEET

Mark the correct answer with an X using a pen.

	A.	B.	C.	D.		A.	B.	C.	D.
1.			X		26.	X			
2.			X	X	27.				X
3.	X		X		28.			X	X
4.	X				29.		X		
5.	X	X			30.			X	X
6.				X	31.	X			
7.				X	32.				X
8.			X		33.	X	X		
9.				X	34.				X
10.				X	35.	X		X	
11	X		X		36.		X		
12.				X	37.	X			
13.		X			38.	X		X	
14.		X		X	39.	X			
15.	X	X			40.				X
16.		X							
17.			X						
18.				X					
19.				X					
20.		X							
21.		X		X					
22.	X			X					
23.			X						
24		X							
25.			X						

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