Cell Biology Exam 1

SECTION A. MULTIPLE CHOICE QUESTIONS. 20 MARKS

1. Which organelle is considered the powerhouse of the cell?
A. Rough endoplasmic reticulum
B. Smooth endoplasmic reticulum
C. Golgi apparatus
D. Mitochondria

2. The following cells is considered to be a unicellular glandular:
A. Cuboidal cell
B. Goblet cell
C. Ovum
D. Squamous cell

3. What is the term for the general process that cells us to expunge material from the cell?
A. Endocytosis
B. Exocytosis
C. Pinocytosis
D. Phagocytosis
E. Active transport

4. Basophils that have logged into tissues are called
A. Kupffer cells
B. Mast cells
C. Langhans cell
D. Macrophages

5. Which of the following statements describes a chromosome as it goes through mitosis, from beginning to end?
A. Sister chromatids thicken and shorten, then line up along the middle of the cell, and split apart at their centromeres, and one chromatid goes into each of the two new cells
B. Two chromosomes join together at a centromere to form sister chromatids, they line up along the middle of the cell, and one chromosome goes into each new cell
C. Two identical chromosomes fuse together at the middle of the cell, and one chromosome goes into each of the two new cells
D. The organelles of a cell replicate, the cell slowly splits in two, and chromosomes move from one cell into one of the new cells through the endoplasmic reticulum

6. The property of anastomosis of fibres is characteristic of which basic tissue type:
A. Muscle
B. Cartilage
C. Bone
D. Cardiac

7. Squamous metaplasia refers to:
A. Change of one cell shape to the other
B. Malignant transformation of normal cells
C. Change of glandular cells to squamous cell
D. Change of squamous cells to connective tissue cells

8.Of the following statements about the cell cycle is least accurate?
A. Mitosis results in organisms producing reproductive cells
B. Young organisms grow larger and develop specialized structures
C. Cells that are likely to be damaged or injured can be replaced frequently
D. Repairs to the organism can occur as new cells are produced

9. Glandular formation of epithelial cells may result in what type of secretions?
A. Endocrine and exocrine
B. Merocrine and endocrine
C. Holocrine and apocrine
D. Salivar aand mammary

10. Which of the following would not affect the rate of mitosis in your body?
A. Sitting in a seat on the bus that always has sunlight shining through the same window in the morning
B. Taking cytostatic drugs to fight a cancer
C. Taking bacteriostatic drugs to fight an infection
D. Moving to Calgary, which is at a much higher altitude

11. The difference between a totipotential stem cell and pleuripotential is:
A. The former has fewer fates than the later
B. The later always develops into several blood cells
C. The later has fewr fates than the former
D. Both are selfess daughter cells committed to differentiation

12. What term is used to describe the death and removal of a cell that is no longer useful to an organism?
A. Epidermis
B. Apoptosis
C. Regeneration
D. Cytokinesis

13. Which of the following groups represent the basal domains of epithelial cells
A. Tight junctions, hemidesmosomes, and cilia
B. Flagella, cilia , and keratinization
C. Microvilli, cilia, conification
D. Junction complexes in general

14. A cell mutates when exposed to cigarette smoke. It does not stop dividing, does not stick to normal cells around it, and can move from one location of the body to another. What kind of cell is this?
A. Replicating cell
B. Cancer cell

C. Normal cell
D. Apoptotic cell

15. The cell theory is attributed tyo which of the following cell biologists
A. Robert Hooke
B. Martha Chase
C. Theodore Schwann
D. Gregory Mendel

16. Which of the following cells, with nuclear lobes in spectacle arrangement, plays an important role in parasitic reaction and allergic reactions
A. Neutrophil
B. Basophil
C. Eosinophil
D. Monocyte

17. Which of the following statements best describes human chromosomes?
A. Humans have 12 chromosomes, which can be arranged into 6 pairs
B. Humans have 46 chromosomes, which can be arranged into 23 pairs
C. Humans have 254 chromosomes, which can be arranged into 127 pairs
D. Humans have 64 chromosomes, which can be arranged into 32 pairs

The following table provides information about the cell cycle. Use the information to answer question 18 to 20.
The Cell Cycle
I. G1 phase
II. S phase
III. G2 phase
IV. prophase
V. metaphase
VI. anaphase
VII. telophase
VIII. cytokinesis

18. In which phases of the cell cycle does the cell grow normally, without any division or replication occurring?
A. I, III, and VIII
B. IV, V, VI, and VII
C. I, II, and III
D. I and III

19. In which phase of the cell cycle do the sister chromatids get pulled apart, with one chromatid eventually ending up in each of the two daughter cells?
A. IV
B. V
C. VI
D. VII

20. What is the M-phase of cell division?

A. Mitosis, which consists of IV, V, VI, and VII
B. Mitosis and cell growth, which consists of I, IV, V, VI, and VII
C. Mitosis and cytokinesis, which consists of IV, V, VI, VII, and VIII
D. Metaphase, which consists of V

SECTION B . SHORT ANSWER QUESTIONS. 40 MARKS

1. Outline the contributions the following scientists made to the development of cell biology: (8 marks)
2. Describe glandular formation of epithelial cell and their secretions (8 marks)
3. Give an audit major classes of proteins involved in DNA replication. [8 Marks]
4. Using illustrations, describe the morphology of the different types of epithelium (8marks)
5. With aid of a diagram, describe the ultra structure and function of the typical nucleus (8 marks)

SECTION C. LONG ANSWER QUESTIONS. 4O MARKS.

1. Citing appropriate examples for each, describe the common cellular adaptations to changing environments (20marks)

2. Stem cells are described in terms of their potential. Differentiate a pleuripotential from totipotential stem cell and discuss the development and functions of each of the 7 mature blood cells from pleuripotent haematopietic stem cell (20 marks)