

Cytology

Test tasks

1. Each of the following statements concerning the plasmalemma is true, EXCEPT:

A – includes elementary cell membrane; B – its supermembranous layer consists of glycolipids and glycoproteins; C – its submembranous layer contains filaments and microtubules; D – is a semi-permeable cell boundary; E – is not an obligatory cell component.

2. The plasma membrane functions are as follows, EXCEPT:

A – is a selectively permeable barrier; B – is the site for hormone receptors; C – provides cell-to-cell interaction; D – is the primary protein synthesis site; E – takes part in the active and passive transport.

3. Each of the following statements concerning the microvilli is true, EXCEPT:

A – are plasmalemma projections; B – contain microtubules; C – amplify cell surface area; D – form the brush border of intestinal epithelium; E – contain microfilaments.

4. Each of the following statements concerning the cilia is true, EXCEPT:

A – are plasmalemma projections; B – contain nine peripheral doublets and the central pair of microtubules; C – are not visible in light microscope; D – their basal bodies are similar to centrioles; E – are movable organelles.

5. The intercellular junction where ionic channels pierce the adjacent membranes is called:

A – desmosome; B – nexus; C – tight junction; D – synapse; E – lateral interdigitations.

6. The disk-shaped intercellular junction where a dense plaque with filaments is present on the cytoplasmic surface of each opposing plasma membrane is called:

A – desmosome; B – nexus; C – tight junction; D – synapse; E – lateral interdigitations.

7. The intercellular junction that blocks the substance access to the intercellular space is called:

A – desmosome; B – nexus; C – tight junction; D – synapse; E – lateral interdigitations.

8. Each of the following statements concerning the mitochondria is true, EXCEPT:

A – have a double-membrane structure; B – its inner membrane infolds to form cristae; C – its matrix contains enzymes of Krebs' cycle; D – its cristae contain enzymes of the electron-transport chain; E – are not able to produce ATP.

9. The cytoplasm basophilia is inherent in cells that:

A – have cilia; B – accumulate lipids; C – actively synthesize proteins; D – accumulate glycogen; E – synthesize mucus.

10. The microfilaments are composed of the following proteins:

A – actin; B – desmin; C – keratin; D – vimentin; E – integrin.

11. These filaments belong to the population of intermediate filaments, EXCEPT:

A – tonofilaments; B – neurofilaments; C – actin filaments; D – glial filaments; E – desmin filaments.

12. Each of the following statements concerning the nuclear envelope structure is true, EXCEPT:

A – consists of two membranes separated by the perinuclear space; B – contains nuclear pores providing communication between the nucleus and cytoplasm; C – its outer membrane is studded with ribosomes; D – its inner membrane has a fibrous lamina anchoring chromatin; E – its outer membrane is continuous with Golgi apparatus.

13. Each of the following statements concerning chromatin is true, EXCEPT:

A – euchromatin is a lightly stained and dispersed; B – heterochromatin is a densely stained and condensed; C – heterochromatin takes part in transcription; D – two types of chromatin may be transformed one into another; E – the abundance of euchromatin gives evidence of intense protein synthesis.

14. Each of the following statements concerning the nucleolus functions is true, EXCEPT:

A – the nucleolar organizer region contains genes encoding mRNA; B – rRNA is synthesized and assembled into ribosome subunits; C – ribosome subunits leave the nucleus through nuclear pores; D – in the cytoplasm, ribosomes either assemble into polysomes or bind to rER; E – the number and size of nucleoli give evidence of intense protein synthesis.

15. Each of the following statements concerning mitosis is true, EXCEPT:

A – results in the production of two identical daughter cells; B – is direct cell division; C – equally divides chromosomes between daughter cells; D – maintains the diploid number of chromosomes; E – consists of four phases.

16. Each of the following statements concerning the mitotic spindle is true, EXCEPT:

A – contains microtubules; B – its components are attached to a chromosome at the kinetochore; C – is responsible for chromosome movement in the anaphase; D – is formed before chromosome condensation; E – centrioles take part in its formation.

17. The following cytoplasmic components are inclusions, EXCEPT:

A – lipid droplets; B – glycogen clumps; C – lysosomes; D – mucous granules; E – protein granules.

18. The glycocalyx is composed of:

(1) glycoproteins (2) cholesterol (3) glycolipids (4) glycogen

19. The rER synthesizes:

(1) secretory proteins (2) cell membrane proteins (3) lysosome enzymes (4) cytosol proteins

20. The abundance of rER in the cytoplasm can be identified by:

(1) diffuse basophilia (2) acidophilia (3) absence of staining (4) local basophilia

21. The functions of sER are as follows:

(1) lipid metabolism (2) carbohydrate metabolism (3) detoxification (4) release and recapture of calcium ions in muscles

22. The following statements regarding the Golgi apparatus are true:

(1) consists of several disk-shaped saccules arranged in a stack (2) its *cis* (convex) face is associated with small vesicles from ER (3) its *trans* (concave) face is associated with vacuoles (4) it is abundant in secretory cells

23. The following statements regarding the Golgi apparatus functions are true:

(1) accumulates, modifies, and packs secretory products (2) forms primary lysosomes (3) takes part in the synthesis of lipoproteins, glycoproteins, and glycolipids (4) manufactures membrane proteins

24. The lysosome membranes and lysosome enzymes are formed in:

(1) rER (2) sER (3) Golgi apparatus (4) free ribosomes

25. The following statements regarding the lysosome functions are true:

(1) protect cells from waste products accumulation (2) degrade aged organelles (3) take part in phagocytosis (4) provide autolysis

26. The following statements regarding the peroxisome are true:

(1) is a spherical structure surrounded by unit membrane (2) its matrix contains the enzyme *catalase* (3) its catalase converts hydrogen peroxide to water and oxygen (4) is derived from rER

Draw in an album. Preparation No. 2 Liver cell.

Mark and label the structures, the coloring used.

