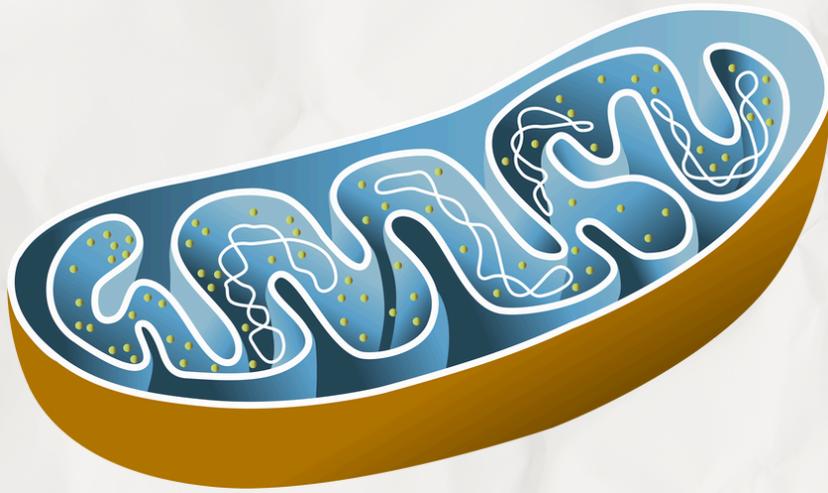


BIOLOGY ARCHIVE

FINAL EXAM



1. in which phase is a karyotype usually prepared:

- A. prophase
- B. Metaphase
- C. Anaphase
- D. telophase

Ans: B

2. Which plasma membrane of the following substances can pass rapidly through the

- A. $O_2 + CO_2$
- B. glucose
- C. Na^+
- D. K^+

Ans .A

3. what differentiates Mitosis from Meiosis II

- A. Both separate sister chromatids
- B. cell plodding
- C. number of chromosomes
- D . B+ C

Ans: D

4. During alcoholic fermentation , NAD^+ is regenerated at which step ?

- A. during glycolysis
- B. conversion of pyruvate to acetaldehyde
- C. conversion of acetaldehyde to ethanol

ANS. C

5. what happens to the heat generated by a cell when performing mechanical, chemical, or transport work?

- A. Stored as ATP
- B. Released to the surroundings
- C. Used in active transport

Ans. B

6. DNA synthesis occurs during which phase of

- A. Prophase
- B. Metaphase
- C. S phase
- D. G₂ phase

Ans. C

7. Which of the following statements describes the second law of thermodynamics

- A. Energy cannot be created or destroyed
- B. Every energy transfer increases entropy
- C. Energy conservation are 100% efficient
- D. Heat decreases molecular disorder

Ans. B

8. Which reaction decreases entropy

- A. Polymerisation of glucose to glycogen
- B. Cellular respiration
- C. Fermentation
- D. Protein breakdown

Ans. A

9. Building glucose from monomers results in

- A. Decreases in free energy ($G < 0$)
- B. Increases in entropy ($S > 0$)
- C. Increases in total energy (enthalpy)
- D. Exergonic reaction

Ans. C

10. Which type of RNA polymerase are found in eukaryotic cells

- A. RNA I (rRNA)
- B. RNA Polymerase II (mRNA)
- C. RNA Polymerase III. (tRNA)
- D. All of the above

Ans. D

11. in prokaryotic cells, when does translation begin

- A. after mRNA synthesis is fully complete
- B. During transcription
- C. after mRNA processing
- D. In the nucleus

ANS. B

12. A mutation in which part of mRNA would have the greatest effects

- A. Coding sequence
- B. introns
- C. poly _A tail

Ans .A

13. which structure stabilizes the mRNA molecule?

- A. Poly -A tail
- B. Introns
- C. Exons

Ans. A

14. introns are important in biological evolution because they:

- A. Carry genetic information
- B. Allow alternative splicing
- C. Increases mutation rates
- D. increases coding efficiency

Ans. B

15. the energy from the electron transport chain pumps H^+ ions into

- A. Mitochondrial matrix
- B. intermembran space
- C. cytosol
- D. Nucleus

Ans. B

16. what happens during Anaphase I of meiosis

- A. Separation of sister chromatid
- B. Cytokinesis
- C. Separation of homologous
- D. Crossing over

Ans.C

17.cell number produced from

Ans::

Mitosis>> Male 2 ,,,, female 2

Meiosis.....>> Male 4,,,,,,Female 1

18.which structure are involved in cell to cell communication via extra cellular matrix

- A. Desmosomes
- B. Tight junction
- C. Gap junction

Ans . C

19.which organelle detoxifies substances and is abundant in liver cells

- A. Lysosomes
- B. SER

Ans. B

20.Which stem cells can differentiate into all cell types, including extra-embryonic tissues?

- A) Totipotent
- B) Pluripotent
- C) Multipotent
- D) Induced pluripotent stem cells (iPSC)

Ans.A

21.Which stem cells have the highest potency ?

- A) Totipotent
- B) Pluripotent
- C) Multipotent
- D) Oligopotent

Ans. A

22. Which cells are involved in reprogramming into an embryonic-like pluripotent state?

- A) Induced pluripotent stem cells (iPSC)
- B) Totipotent cells
- C) Somatic cells used for iPSC generation
- D) A+ C

Ans D

23. Which is a source of pluripotent stem cells?

- A) Embryonic stem cells
- B) Adult bone marrow stem cells
- C) Zygote

Ans. A

24. Which statements are true regarding integral proteins?

- A) Span the lipid bilayer
- B) Easily removed without disrupting membrane
- C) Amphipathic
- D) Sit on the surface of the membrane

Ans. A+C

25. Cholesterol in animal cell membranes:

- A) decrease fluidity at low temperatures
- B) increase fluidity at high temperatures
- C) Completely rigidifies the membrane
- D) Is absent in prokaryotes

Ans. D

26. A reaction with $\Delta G > 0$ is called:

- A) Endergonic
- B) Exergonic
- C) Spontaneous

Ans. A

27. What are polyribosomes?

- A) A single ribosome on mRNA
- B) Multiple ribosomes attached to one mRNA strand
- C) Ribosomes in the nucleus
- D) Only found in prokaryotes

Ans. B

28. Effect of nonsense mutation:

- A) No effect
- B) Early stop codon
- C) Silent mutation

Ans. B

29. Which is an example of a liver cell?

- A) Hepatocyte
- B) Neuron
- C) Osteocyte
- D) Myocyte

Ans A

30. When a cell exits the cell cycle, it enters:

- A) G1
- B) G2
- C) G0
- D) M phase

Ans C

31. Which statements are correct regarding $\Delta G = \Delta H - T\Delta S$?

- A) If ΔH is negative and ΔS is positive, reaction is non spontaneous
- B) Negative ΔG means exergonic
- C) Negative ΔG means endergonic
- D) Entropy has no role

Ans B

32. Enzyme activity is affected by:

- A) Temperature
- B) pH
- C) Substrate concentration
- D) all of the above

Ans. D

33. Exothermic reactions:

- A) Release heat
- B) Have positive ΔH
- C) Are always spontaneous
- D) Require energy input

Ans . A

34.Total NADH + FADH₂ from glycolysis + citric acid cycle (per glucose):

10 NADH (2 from glycolysis, 2 from pyruvate oxidation, 6 from TCA) • 2 FADH₂ (from TCA)

35.An amino acid acts as an acid due to:

- A) Carboxyl group (-COOH)
- B) Amino group (-NH₂)
- C) R-group
- D) Hydroxyl group

Ans. A

36.Carbohydrates and fats have high energy because:

- A) few of C-H bonds
- B) High oxygen content
- C) More polar bonds
- D) Store electrons in nonpolar bonds

Ans D

37.Regarding the 5' end of DNA:

- A) Has a free phosphate group
- B) Direction for synthesis (3'→ 5')
- C) Attached to 3' OH
- D) Unimportant in replication

Ans. A

38.RNA polymerase moves on DNA:

- A) 5'→ 3' direction on template
- B) Synthesizes RNA 5' → 3'
- C) Moves 5' → 3' on template strand
- D) Doesn't require direction

Ans. B

39.Chromosome segregation checkpoint occurs at:

- A) Anaphase
- B) Metaphase
- C) Telophase
- D) G1

Ans.A

40.G1 checkpoint function:

- A) Check for DNA damage
- B) Check spindle attachment
- C) Check cell volume
- D) Check for chromosome alignment

Ans. A

41. A high number of ribosomes benefits cells that produce:

- A) DNA
- B) Lipids
- C) Protein
- D) Carbohydrates

Ans. C

42.Spindle fibers attach to:

- A) Nuclear envelope
- B) Centrosome
- C) Telomere
- D) Centromere via kinetochore

Ans. D

43. Function of APC/C (Anaphase Promoting Complex):

- A) Trigger separation of sister chromatids
- B) Activate spindle fibers
- C) Repair DNA
- D) Inhibit metaphase

Ans. A

44.The longest phase in the cell cycle is:

- A) Interphase
- B) Metaphase
- C) Anaphase
- D) Telophase

Ans. A

45.Which contribute to genetic variety?

- A) Crossing over
- B) Independent assortment
- C) Random fertilization
- D) all of the above

Ans D

رَبِّ اشْرَحْ لِي
صَدْرِي
وَيَسِّرْ لِي
أَمْرِي