Mock Exam Chapters 8-10 12-13

Mock exam answers will not be posted. Feel free to post them in your groups. If you cannot attend, email me with questions. I won’t tell you the answer, but I will let you know if you are wrong why it isn’t correct. Good luck! You got this.

1. Assuming the following statements is true, which would not follow the laws or thermodynamics?

a) When hydrogen and oxygen come together to create water, the entropy decreases

b) A ball traveling down a hill changes speeds up as it goes down the hill

c) Plants capture energy from the sun and make glucose

d) When using ATP, it splits to ADP and Pi and releases energy as heat.

e) In a hydroelectric plant, water pressure spins turbines and generates electricity.

2. Which of the following is true about cellular respiration?

a) Glucose is reduced

b) Water is the final electron acceptor.

c) NADH is oxidized

d) The reaction is exergonic

e) ATP is only made in the electron transport chain

3. Fermentation:

a) Oxidizes pyruvate

b) Reduces NADH

c) Forms ATP

d) Is aerobic

e) Releases electrons

4. To form 9 G3P:

a) The Calvin cycle would turn 9 times

b) 9 total CO2 would be used in the cycle

c) Reduce 54 NADPH

d) A and B

e) B and C

5. Immediately following telophase you notice a cell still has a pair of sister chromatids. Where did something go wrong?

a)prophase

b)anaphase

c)metaphase

d)prometaphase

e) Cells have sister chromatids after telophase

6. Which of the following is false?

a) Calvin cycle takes place in the stroma

b) Ribulose bisphosphate fixes carbon dioxide in the Calvin cycle

c) NADP+ ­is reduced in the membrane of the mitochondria

d) Fatty acid tails enter metabolism as acetyl-CoA

e) Photosynthesis is an endergonic process

7. Enzymes can be regulated in many ways. Which of the following is not an example of allosteric enzyme regulation?

a) A molecule binds to enzyme and stabilizes a certain form

b) It takes one oxygen molecule to bind to hemoglobin to increase its affinity of oxygen

c) In an excess of ATP, ATP binds to enzymes in the citric acid cycle and cause the shape of the active site to change.

d) A vitamin binds to an enzyme and activates it.

e) A molecule that is not the substrate binds to the active site of the enzyme.

8. Your body needs to metabolize a triglyceride with fatty acids tails 20 carbons in length. How many FADH2 will be produced?

a) 30

b) 31

c) 15

d) 90

e) 91

9. Oxygen during photosynthesis is produced:

a) When light strikes photosystem 2

b) When light strikes photosystem 1

c) When NADP+ is reduced to NADPH

d) During the reduction phase of the Calvin cycle

e) During the regeneration phase of the Calvin cycle

10. CO2 is produced from

a) The conversion of pyruvate to acetyl-coA

b) The oxidation of the intermediates of the citric acid cycle

c) The conversion of glucose to pyruvate

d) A and B

e) A and C

11. Which of the following is true?

a) DNA is replicated in the M phase of the cell cycle

b) The G2 phase does not have a checkpoint

c) Mitosis results in haploid cells

d) The cell spends most of its time in the M phase

e) Cytokinesis is the division of the nucleus

The following picture corresponds to questions 12 and 13

 

12. The green arrow (top-most arrow) corresponds to what phase of the cell cycle?

a) Prophase

b) Prometaphase

c) Metaphase

d) Anaphase

e) Telophase

13. In the cell at which the red arrow (bottom-most arrow) is pointed, what is the next phase of the complete cell cycle?

a) Prophase

b) Anaphase

c) Telophase

d) Cytokinesis

e) Interphase

14. During oogenesis

a) 1 polar body is produced in meiosis 2

b) 1 polar body is produced in meiosis 1

c) 2 polar bodies are produced in meiosis 2

d) A and B

e) B and C

15. After birth, a child undergoes genetic analysis and is discovered to have 3 copies of chromosome 21 (Down’s syndrome). In which of the following could the mistake have occurred during meiosis?

a) Prophase 1

b) Anaphase 1

c) Metaphase 2

d) Anaphase 2

e) Metaphase 1

16. Glycine enters cellular respiration as pyruvate. How many NAD+ will be reduced?

a) 2

b) 4

c) 7

d) 8

e) 10

17. \_\_\_\_\_\_ NAD+ are oxidized from the catabolism of 5 glucose molecules

a) 10

b) 25

c) 30

d) 50

e) None of the above

18. The following conditions would occur without the presence of oxygen except

a) Formation of ethanol from pyruvate

b) The reduction of pyruvate

c) The oxidation of pyruvate

d) The generation of 2 net ATP

e) The generation of 4 total ATP

19. Which is the correct pairing

a) Anaphase 2🡪 separation of sister chromatids

b) Anaphase 1🡪 separation of sister chromatids

c) prophase 2🡪 crossing over

d) A and C

e) B and C

20. Which is true of the following reaction?

Cu2+  + Zn0🡪 Cu0 + Zn2+

a) Cu is oxidized

b) Cu is reduced

c) Zn is oxidized

d) A and C

e) None of the above

21. Which of the following examples would be representative of a free energy decrease?

a) The oxidation of glucose during cellular respiration

b) The formation of glucose via photosynthesis.

c) The formation of ATP from ADP and Pi

d) A and B

e) B and C

22. Of the following, which is not paired correctly?

a) Separation of sister chromatids🡪 anaphase 2 of meiosis

b) Crossing over🡪 prophase 1 of mitosis

c) homologous chromosome separation🡪 anaphase 1 of mitosis

d) all of the above

e) B and C

23. The mitotic spindle

a) does not separate sister chromatids

b) forms during G2

c) Attaches to the kinetochore during anaphase

d) Is attached to the kinetochore during telophase

e) none of the above

24. Which of the following is false about ATP synthase?

a) It lowers the activation energy of ATP synthesis

b) It lowers the change in free energy of the formation of ATP

c) It makes an endergonic reaction exergonic

d) B and C

e) all of the above

25. An enzyme is said to be saturated, the speed up the reaction you would:

a) add more enzyme

b) add more substrate

c) remove substrate

d) decrease the pH

e) decrease the temperature

26. All of the following are examples of genetic variation among offspring due to sexual reproduction except

a) One sperm out of millions fertilizing an egg.

b) Non-identical siblings from the same parents

c) A hydra plant reproducing by budding.

d) Individuals in the same family having different hair colors.

e) None of the above

27. All of the following are examples of reproduction except

a) Binary fission in bacteria

b) Cloning a sheep

c) Sperm and ova coming together to form a zygote

d) A moss that exists in a haploid state that then fertilizes and undergoes mitosis and the meiosis to produce a new haploid moss

e) B and D

28. All of the following are reduced except

a) NADP+

b) NAD+

c) FAD+

d) Pyruvate🡪 acetyl-CoA

e) pyruvate🡪 lactic acid

29. Which of the following are not forms of meiosis?

a) Oogenesis

b) Production of new liver cells

c) Spermatogenesis

d) Stem cells that give rise to new tissues

e) B and D

30. Starting with 12 molecules of pyruvate, you would produce (not accounting for oxidative phosphorylation)

a) 72 NADH, 144 ATP, 144 FADH2

b) 12 NADH, 12 ATP, 12 FADH2

c) 144 NADH, 12 ATP, 144 FADH2

d) 72 NADH, 12 ATP, 12 FADH2

e) 84 NADH, 12 ATP, 12 FADH2

31. All of the following are endergonic reactions except

a) The splitting of water in photosynthesis

b) The making of G3P from CO2 and RuBP

c) The making of RuBP from G3P

d) ATP🡪 ADP + Pi

e) A and B

32. Where does CO2  come from when you breathe out

a) pyruvate🡪 acetyl-coA

b) Citric acid cycle

c) glucose🡪 pyruvate

d) all of the above

e)A and B

33. Why do people say plants breathe in CO2 and breathe out oxygen?

a) Water is split at photosystem 1

b) Water is split at photosystem 2

c) CO2 is produced from the Calvin cycle

d) CO­2 is needed for the light-dependent reactions to occur

e) Oxygen comes out of the Calvin cycle

34. To make glucose:

a) Water needs to be split

b) Aerobic organisms need to exhale

c) External energy source is needed

d) All of the above

e) None of the above

35. If sister chromatids do not separate correctly,

a) One could have offspring missing a copy of a chromosome

b) Trisomy 21 could occur

c) An individual could be born XXY

d) An individual could be born XO

e) All of the above

36. The following are all examples of increasing potential energy except

a) The excitation of electrons to a higher energy level in photosystem 2

b) The excitation of electron to a higher energy level in photosystem 1

c) The conversion of ADP to AMP

d) The formation of ATP from ADP and Pi

e) The synthesis of G3P from CO­2 and RuBP

37. All of the following would cause an enzyme to quit functioning except

a) Saturation

b) No presence of substrate

c) Extremely low pH

d) Extremely high temperatures

e) Another molecule binding to the active site

38. Enzymes do not

a) Raise the change in free energy

b) Lower the change in free energy

c) Raise the activation energy

d) catalyze chemical reactions

e) A, B and C

39. The following is true of photosynthesis except

a) It is an endergonic process

b) Water is a reactant

c) O2 is consumed

d) G3P is produced

e) All of the following are true

40. The following is true of glycolysis except

a) NAD+ is reduced

b) 4 ATP are produced

c) It is an exergonic process

d) It can occur in the presence of oxygen

e) It is anaerobic

41. Which is not true in regards to cancer cells?

a) Growth is inhibited when reaches maximum density

b) They exhibit continuous cell replication

c) They can occur when a checkpoint is missed

d) They do not need an anchor to grow

e) They can move to other tissues

42. How many functional gametes are produced in oogenesis? How many in spermatogenesis?

a) 4, 4

b) 1, 4

c) 4, 1

d) 1, 4

e) 1, 1

43. Muscle cells do not experience

a) cytokinesis

b) mitosis

c) meiosis

d) A and C

e) B and C

44. The following pairings are wrong in regards to cellular respiration

a) fatty acids🡪 acetyl-coA

b) glycerol🡪 citric acid cycle

c) amino acids🡪 pyruvate

d) sugars🡪 glycolysis

e) amino acids🡪 acetyl-coA

45. Which of the following pairings is incorrect?

a) mitosis🡪cloning

b) kinetochores🡪 attachment of spindle

c) meiosis🡪 diploid cells

d) glycolysis🡪aerobic

e) chiasmata🡪prophase 1

46. All of the following release energy except

a) An electron falling from a higher energy level to a lower energy level

b) Formation of G3P from RuBP and CO2

c) Formation of RuBP from G3P

d) ATP🡪 ADP + Pi

e) All of the above release energy

47. True or false: FADH2­ generates less ATP than NADH

a) True

b) False

48. Which of the following is false? CO2 is

a) Released from cellular respiration

b) Released during the reduction of pyruvate

c) A reactant of photosynthesis

d) The source of carbons in glucose

e) used in the Calvin cycle

49. Which of the following is true?

a) Plants are not autotrophs

b) All plants only undergo one type of photosynthesis

c) Plants are heterotrophs

d) The ATP produced during the light-dependent reactions is used in the Calvin cycle

e) Water is released from the light-independent reactions

50. Cytokinesis always occurs

a) True

b) False