Bio 101 final 2021

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1. Which of the following is not associated with microfilaments?
    A. muscle movement
    B. cytoplasmic streaming
    C. pseudopodia
    D. centriole
    E. maintenance of cell shape

2. Which of the following processes includes all the others?
    A. osmosis
    B. diffusion of a solute across a membrane
    C. passive
    D. transport of an ion down its electrochemical gradient
    E. diffusion of oxygen across cell membrane

3. By which transport mechanism glucose diffuses down its gradient?
    A. simple diffusion
    B. phagocytosis
    C. active transport pumps
    D. exocytosis
    E. facilitated diffusion

4. The active site of an enzyme is not…….
    A. the region where the substrate bind
    B. the region where the competitive inhibitor bind
    C. a specific site
    D. composed of polysaccharide
    E. a catalytic site

5. A cell may control its metabolism through:
    A. allosteric regulation
    B. cooperativity
    C. feed-back inhibition
    D. controlling gene expression
    E. all of the above

6. Most of aerobic cellular respiration stages in eukaryotic cells is completed in the……
    A. nucleus
    B. mitochondrion
    C. plasma membrane
    D. cytoplasm
    E. endoplasmic reticulum

7. During the stage of oxidative phosphorylation, the following event(s) happen:
    A. ATP, NADH, $FADH_2$, CO_2, and water are formed
    B. glucose is split into two pyruvates
    C. NAD^+ regenerated, two ATP net
    D. H^+ flows through ATP synthases
    E. NAD^+ is reduced to NADH

8. In lactic acid fermentation,_____ is the final acceptor of electrons stripped from glucose
    A. oxygen
    B. pyruvate
    C. acetaldehyde
    D. sulfate
    E. NAD^+

9. Which of the following is/are used in the reduction phase of the Calvin cycle?
    A. CO_2
    B. RuBP
    C. ATP
    D. NADPH
    E. ATP and NADPH

10. What catalyses' the carbon fixation phase of the Calvin cycle?
    A. P700
    B. kinase
    C. rubisco
    D. ATP synthase
    E. regenerase

11. Which of the following is the ultimate source of the carbon in the sugar produced during Calvin cycle?
    A. CO_2
    B. water
    C. ATP
    D. NADPH
    E. all of the above

12. Which of the following does not occur during the Calvin cycle?
    A. Carbon fixation
    B. oxidation of NADPH
    C. release of oxygen
    D. regeneration of the CO_2 acceptor
    E. consumption of ATP

13. Hershey and chase made use of which of the following facts in their experiment?
    A. DNA contains nitrogen, whereas protein does not contain nitrogen.
    B. DNA contains phosphorus, whereas protein contains sulfur.
    C. DNA contains sulfur, whereas protein does not contain sulfur.
    D. DNA contains purines, whereas protein contains pyrimidines.
    E. DNA contains pyrimidines, whereas protein contains purines.

14. Griffith experiments on R and S types of *streptococcus pneumonia* emphasized the concept of:
    A. Transformation
    B. translation
    C. transcription
    D. replication
    E. regeneration

15. DNA polymerase I …
    A. joins Okazaki fragments
    B. synthesizes primers
    C. synthesizes tRNA
    D. removes primers and replaces them with DNA
    E. all of the above

16. Which of the following statement is correct about DNA replication?
    A. DNA replication proceeds in both directions of the origin of replication
    B. DNA replication is dispersive
    C. topoisomerase unwinds the double helix at the replication fork

17. Which DNA strand is synthesized continuously towards the replication fork?
    A. lagging strand
    B. leading strand
    C. Okazaki strands
    D. template strand
    E. 30nm fiber

18. How many base pairs exist in one full turn of the DNA double helix?

A. 10
B. 5
C. 8
D. 12
E. 14

19. What determines the nucleotide sequence of the newly synthesized strand strand during DNA replication?
    A. the type of DNA polymerase catalyzing the reaction
    B. the relative amounts of the four nucleoside triphosphates in the cell
    C. the nucleotide sequence of the template strand
    D. the type of primase used in the reaction
    E. the arrangement of histones in the sugar phosphate backbone

20. Which of the following synthesizes short segments of RNA needed for the synthesis of DNA strands?
    A. Helicase
    B. DNA polymerase III
    C. Ligase
    D. DNA polymerase I
    E. primase

21. In a nucleosome, the DNA is wrapped around :
    A. polymerase molecules
    B. ribosomes.
    C. histones
    D. a thymine dimer
    E. spliceosome

22. Which of the following help to hold the DNA strands apart while they are being replicated?
    A. primase
    B. ligase
    C. DNA polymerase
    D. single-strand binding proteins
    E. exonuclease

23. What are the coding segments of a stretch of eukaryotic DNA called?
    A. Introns
    B. exons
    C. start codons
    D. replicons
    E. poly A tail

24. Transcription in eukaryotes requires which of the following in addition to RNA polymerase?

A. the protein product of the promoter
B. start and stop codons
C. ribosomes and tRNA
D. transcription factors
E. aminoacyl synthetase

25. The template DNA that gives the following RNA strand 5’ AAA AUG AGU AAG 3’ is
    A. 3’ TTT ATG TGC TTC 5’
    B. 3’ TTT TAC TCA TTC 5’
    C. 3’ UUU TAC UCA UUC 5’
    D. 3’ AAA ATG AGT AAG 5’
    E. 5’ TTT TAC TCA TTC 3’

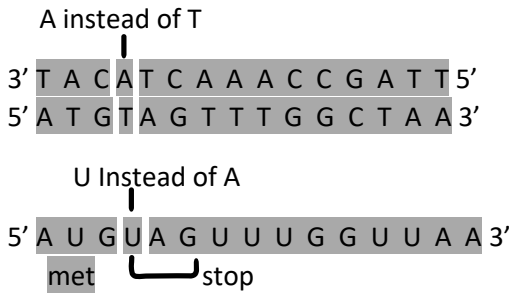
26. During splicing of pre mRNA, which molecular component of the spliceosome catalyzes the excision reaction?
    A. protein
    B. DNA
    C. RNA
    D. lipid
    E. sugar

27. Which statement is INCORRECT?
    A. missense mutation is the substitution that change one amino acid to another one
    B. base-pair substitution can cause a major change in a protein
    C. nucleotide analogs pair incorrectly during DNA replication
    D. point mutation can change a codon for an amino acid into a stop codon
    E. a frameshift mutation occurs whenever the number of nucleotide inserted or deleted is a multiple of three

28. In a gene, the change in a base pair that does not cause a change in the sequence of the produced polypeptide is known as a
    A. frameshift mutation
    B. silent mutation
    C. missense mutation
    D. nonsense mutation
    E. none of the above

29. Polyribosomes are
    A. groups of ribosomes reading a single mRNA simultaneously
    B. ribosomes containing more than two subunits
    C. multiple copies of ribosomes associated with giant chromosomes
    D. aggregations of vesicle containing ribosomal RNA
    E. ribosomes associated with more than one tRNA

30. What type of mutation is shown in the figure below?



A. silent mutation
B. nonsense mutation
C. Missense mutation
D. frameshift mutation
E. none of the above

31. Functional ribosomes are directed to the ER membrane by
A. a specific characteristic of the large ribosomal subunit
B. a signal-recognition particle
C. a channel in the nucleus
D. a chemical signal given off by the ER
E. the sequence of bases on the 5' UTR of the mRNA

32. All of the following are <u>directly</u> involved in translation EXCEPT
A. ribosomes
B. tRNA
C. amino acids
D. DNA
E. mRNA

33. A promoter is a
A. binding site for DNA polymerase
B. binding site for RNA polymerase
C. start signal for replication
D. stop signal for transcription
E. a translation initiation factor

34. During translation which ribosomal subunit is the first to attach to the mRNA strand?
A. Top
B. bottom
C. small
D. large
E. snRNPs

35. After mRNA (5' -AUGUAUACAGCACAUCGAUGACAA- 3') translation is completed, what will be the first amino acid and the total number of amino acids in the synthesized polypeptide?
A. Methionine. 9 amino acids
B. Methionine, 7 amino acids
C. arginine, 8 amino acids

D. methionine, 6 amino acids
E. methionine, 8 amino acids

36. What is the property of water that help in transport of water against gravity from the roots in plant?
    A. cohesion alone
    B. adhesion alone
    C. specific heat
    D. adhesion and cohesion
    E. water expansion

37. Which of the following molecules contain beta glycosidic linkage?
    A. amylose
    B. glycogen
    C. amylopectin
    D. collagen
    E. cellulose

38. Which of the following does not apply to steroids?
    A. some are hormones
    B. composed of fatty acids
    C. have four rings structure
    D. water insoluble
    E. may be present In the plasma membrane

39. Starch and cellulose are alike in that both are:
    A. polysaccharides
    B. found only in animal cells
    C. composed of identical subunits
    D. contain non-polar, fatty acid side chains
    E. both are storage polysaccharide in plants

40. The cells synthesizing steroid hormones are rich in:
    A. rough ER
    B. smooth ER
    C. lysosome
    D. contractile vacuoles
    E. peroxisomes

41. One of the following is a function of Golgi apparatus……..
    A. synthesis of steroid hormones
    B. detoxification of many organic compounds, like barbiturates and ethanol
    C. release of glucose into the bloodstream
    D. sequestration of calcium Ca^{+2} ions
    E. sorting and packaging of secretory proteins

42. The formation of thymine dimmers results from which of the following?
    A. Exposure to infrared radiation
    B. Exposure to gamma radiation
    C. Exposure to ultraviolet radiation
    D. Exposure to visible light
    E. Exposure to both A and B

43. What are the components of a spliceosome?
    A.DNA and protein
    B. protein and small nuclear RNA
    C. Exons and introns
    D. proteins and mRNA
    E. coding and noncoding RNAs

44. Which of the following is a function of a signal peptide?
    A. to direct an mRNA molecule into Golgi apparatus
    B. to bind RNA polymerase to DNA and initiate transcription
    C. to terminate translation of the messenger RNA
    D. to target polypeptides to the endoplasmic reticulum
    E. to signal the initiation of transcription

45. Which of the following is mis-matched?
    A. splicing: Eukaryotic premRNA
    B. lagging strand : Okazaki fragments
    C. TATA box: DNA polymerase binding
    D. (G=C) and (A=T): chargaff's rules
    E. DNA: double helix

46. According to the following mRNA 5' -AUCUCAAAAAAGGAAUACCGGCCC- 3' , what is the first coded amino acid? And how many amino acids will be in the polypeptide?
    A. Methionine , 9 amino acids
    B. methionine, 6 amino acids
    C. methionine , 5 amino acids
    D. leucine, 9 amino acids
    E. methionine , 8 amino acids

47. An signal recognition particle (SRP) is targeting for what location?
    A. Cytosol
    B. nucleus
    C. nucleolus
    D. smooth ER
    E. rough ER

48. The steps involve in sequence of translation elongation circle include…….
    A. codon recognition, peptide bond formation, translocation
    B. initiation, elongation, termination
    C. initiation , peptide bond formation, termination
    D. codon recognition, termination , initiation
    E. peptide bond formation, translocation, termination

49. As a ribosome translocate along an mRNA molecule by one codon, which of the following occurs?
    A. The tRNA that was in the A site moves into the P site
    B. the tRNA that was in the P site moves into the A site
    C. the tRNA that was in the A site moves into the E site and is released
    D. the tRNA that was in the A site departs from the ribosome via a tunnel
    E. the polypeptide enters the E site

50. Which of the following is not an mRNA codon
    A. UUG
    B. UCU
    C. TAG
    D. UUU
    E. AUG

51. Which component is the last to join the initiation complex during the initiation of translation?
    A. the mRNA molecule
    B. the small ribosomal subunit
    C. the large ribosomal subunit
    D. the initiator tRNA
    E. both B and C

52. A nucleotide-pair substitution is
    A. insertion of nucleotide pair in a gene
    B. deletion of nucleotide pair in a gene
    C. replacement of nucleotide pair with another pair of nucleotides
    D. replacement of nucleotide pair with nucleotide analogs
    E. C and D are correct

53. As a molecule of mRNA is moved through a ribosome, _____ are_____into_____, one by one until the top codon is reached.
    A. codons, translated, amino acids
    B. codons, transcribed, amino acids
    C. codons, replicated , amino acids
    D. codons, translated , nucleotides
    E. codons, transcribed, nucleotides

54. The change in a nucleotide pair may transform one codon into another that is translated into the same amino acid is described as……
    A. silent mutation
    B. nonsense mutation
    C. missense mutation
    D. frameshift mutation
    E. all of the above

55. The high specific heat of water is responsible for the following, except:
    A. helps moderate earth's climate
    B. stabilizes ocean temperature
    C. enables organisms to resist changes in their own temperature
    D. large amount of heat is required to raise the temperature of water
    E. hydrogen bond formation between water molecules

56. Which of the following molecules is not normally found in a ribozyme?
    A. Uracil
    B. Thiamine
    C. guanine
    D. Cytosine
    E. none of the following

57. When a protein is boiled, it loses all levels of organization. When this happens, the protein is said to be :
    A. Hydrolyzed
    B. denatured
    C. dehydrated
    D. plasmolyzed

58. A phospholipid molecule has:
    A. two hydrophobic tails and one hydrophilic head
    B. two hydrophilic tails and one hydrophobic head
    C. one hydrophobic tail and one phosphate group
    D. three fatty acids and one phosphate group
    E. two phosphate groups and one fatty acid

59. What type of protein fibers make up the nuclear lamina?
    A. Microfilaments
    B. intermediate filaments
    C. actin filaments
    D. microtubules
    E. fibronectins

60. Which cytoskeletal element is responsibly for the movement of chromosomes during cell division?
    A. microfilaments
    B. intermediate filaments
    C. actin filaments
    D. microtubules
    E. fibronectins

1. d
2. c
3. e
4. d
5. e
6. b
7. d
8. b
9. e
10. c
11. a
12. c
13. b
14. a
15. d
16. a
17. b
18. a
19. c
20. e
21. c
22. d
23. b
24. d
25. b
26. c
27. e
28. b
29. a
30. b
31. b
32. d
33. b
34. c
35. d
36. d
37. e
38. b
39. a
40. b
41. e
42. c
43. b
44. d
45. c
46. e
47. e
48. a
49. a
50. c
51. e
52. e
53. a
54. a

WISH YOU ALL THE BEST.