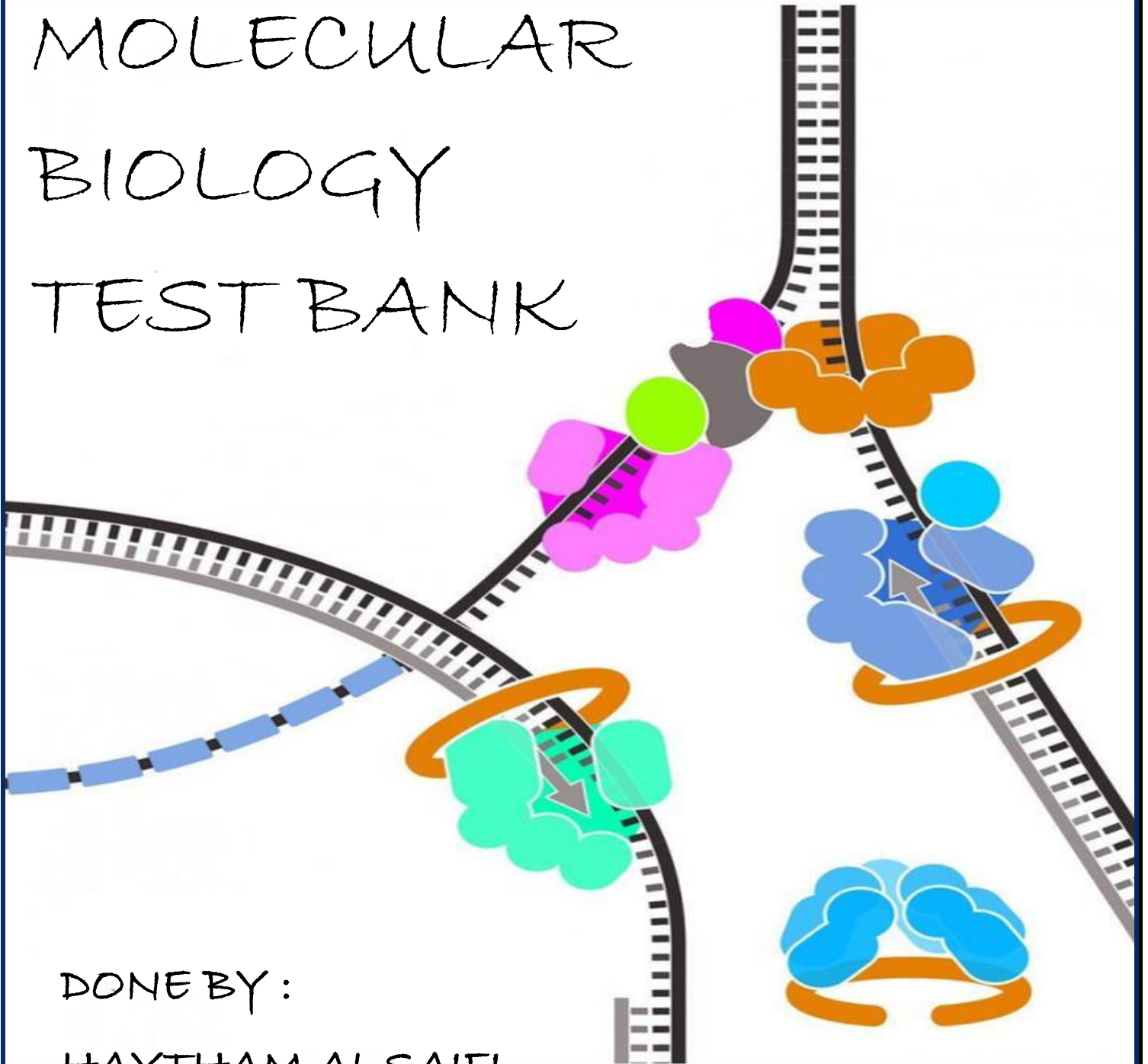


MOLECULAR BIOLOGY TEST BANK



DONE BY:

HAYTHAM ALSAIFI

Sheet 1

1. What is the maximum number of phosphate groups that can be attached to pentose sugars in nucleotides?

- A) 1
- B) 2
- C) 3
- D) 4
- E) there is no specific max number.

Answer: C

2. Nitrogenous bases are attached to each other by:

- A) hydrogen bonds
- B) ionic bonds
- C) glycosidic linkages
- D) phosphodiester bonds
- E) disulfide bridges

Answer: A

3. Each nucleotide is attached to the other nucleotide by:

- A) ionic bonds
- B) phosphodiester bonds
- C) hydrogen bonds
- D) glycosidic linkages
- E) disulfide bridges

Answer: B

4. Nitrogenous bases are attached to sugar molecules by:

- A) hydrogen bonds
- B) ionic bonds
- C) glycosidic linkage
- D) disulfide bridges
- E) phosphodiester bonds

Answer: C

5. The lowest level of DNA packaging:

- A) 30 nm fiber
- B) naked DNA molecule
- C) chromosomes
- D) nucleosomes
- E) more than one of the above

Answer: D

6. RNA molecules contain an additional oxygen atom compared to DNA molecules located on which carbon atom of the pentose sugar:

- A) 1
- B) 2
- C) 3
- D) 4
- E) 5

Answer: B

7. The glycosidic bond that exists in nucleosides is between:

- A) 3' carbon of sugar and N9 of adenine
- B) 1' carbon of sugar and N1 of guanine
- C) 5' carbon of sugar and N1 of cytosine
- D) 1' carbon of sugar and N9 of guanine
- E) 5' carbon of sugar and N1 of thymine

Answer: D

8. Which one of these statements about nitrogenous bases is TRUE

- A) Adenine and thymine are purines.
- B) cytosine and guanine are pyrimidines.
- C) guanine is a purine and Adenine is a pyrimidine.
- D) Adenine is a purine and uracil is a pyrimidine.

Answer: D

SHEET 2

9. Denaturation of DNA molecules is a necessity in southern blotting in order to allow binding between the probs and the separated DNA strands, which of the following pH values allow this to occur and specifically in southern blotting:

- A) 6.5
- B) 7
- C) 13
- D) A&C
- E) none of the above

Answer: C

10. Calculate the the concentration of double stranded DNA molecules if a **concentrated** solution of which (by a factor of 5) absorbed 2 units of light with a length of 260 nm :

- A) 10
- B) 20
- C) 500
- D) 100
- E) 50

Answer: B

To solve this type of questions: 1 unit of light $\longrightarrow$ 50 $\mu\text{g/ml}$

2 units of light $\longrightarrow$ X

X=100 NOW, if the question gives you **diluted solution**, then you should **multiply** by 5 and you get 500, but here he gave you the **concentrated solution** so you should **divide** the answer by 5

11.melting temperature of DNA is:

- A) The temperature at which the DNA strands are denatured completely.
- B) The temperature at which the DNA strands are half denatured.
- C) The temperature at which the DNA strands renatured.
- D) None of the above.

Answer: B

12.All of the following regarding gel electrophoresis are true EXCEPT:

- A) Agarose gel is used
- B) Smaller molecules move faster than larger ones
- C) Molecules move towards the positive electrode
- D) The higher the density of the gel, the higher the resolution

Answer: D

13. When using gel electrophoresis, 1000 bp fragment size indicates :

- A) A total of 1000 bases each DNA molecule.
- B) A total of 1000 base pairs each DNA molecule.
- C) A total of 2000 bases each DNA molecule.
- D) A total of 1000 bases each DNA strand.
- E) B, C&D.
- F) B&C only.

Answer: E

SHEET 3

14. Which of the following about ASO is incorrect?

- A) two types of probes are used.
- B) it's used in the detection of cystic fibrosis.
- C) when a signal is produced on both membranes after DNA hybridization this indicates heterozygous person where only the dominant allele is expressed
- D) the defection in cystic fibrosis is the deletion of 2 nucleotides in a specific gene.
- E) all of the above

Answer: D

SHEET 4

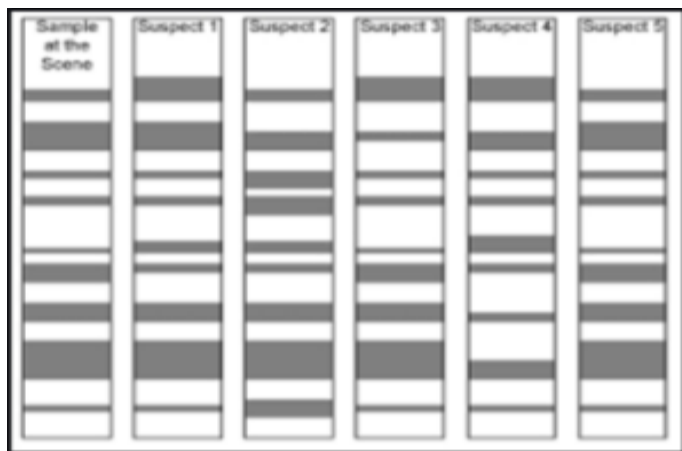
15. A group of labeled probes (GCATCG) are added to denatured DNA fragments after cleavage by restriction endonucleases, supposing that the DNA strands have a sequence of (CGTAGCGGCTATCATGCC). If the cleavage occurred in three positions along DNA strands distributed as the following (CGTAGC/GGCTATC/ATG/CC) and a mutation affected the seventh nucleotide inhibiting the first cleavage. Which of the following resulting fragments will be detected after the addition of the probes considering dealing with a heterozygous mixture of both types of DNA (with / without mutation)?

- A) CGTAGC only
- B) CGTAGCGGCTATC only
- C) C-ATG only
- D) A&B
- E) A&C

Answer: D

16. In order to know the killer in a crime, DNA fingerprint technique is used, according to the photo shown below, who's the killer?

- A) suspect 1
- B) suspect 2
- C) suspect 3
- D) suspect 4
- E) suspect 5



Answer: E

17. In order for a kid to be a son of a husband and a wife his DNA fingerprint must contain:

- A) At least fragments similar to the fragments represented in the DNA fingerprint of one of them
- B) fragments similar to the fragments represented in the DNA fingerprint for both

Answer: B

18. Supposing that 3 fragments resulted from the cleavage of DNA lengthened as following (1.6 kb, 0.75 kb, 2.1 kb), a mutation occurred and inhibited the second cleavage, then of the following represent the lengths of the fragments resulting from the cleavage of the mutated DNA?

- A) 2.35, 2.1
- B) 1.6, 2.85
- C) 1.6, 0.75, 1.2
- D) 1.6, 0.75
- E) none of the above

Answer: B

19. If there are 3 restriction sites, how many DNA fragments will be produced?

- A) 1
- B) 2
- C) 3
- D) 4

Answer: D

SHEET 5

20. The replication of DNA is?

- A) Conservative
- B) Semi-conservative
- C) Dispersive
- D) None of the above

Answer: B

21. Primase in eukaryotes that initiates DNA synthesis:

- A) Polymerase alpha
- B) Polymerase Beta
- C) Polymerase gamma
- D) Polymerase delta

Answer: A

22. Which of the following is true about the epsilon subunit in DNA polymerase III?

- A) Stimulates proofreading.
- B) Responsible for the 3'-5' exonuclease activity
- C) A+B

Answer: C

23. The polymerase enzyme responsible for mitochondrial DNA replication is:

- A) δ DNA polymerase
- B) DNA polymerase
- C) γ DNA polymerase
- D) β DNA polymerase
- E) DNA polymerase

Answer: C

24. Which of the following enzymes play a role in the condensation of DNA ?

- A) ligase
- B) DNA polymerase
- C) topoisomerase 1
- D) topoisomerase 2

Answer: D

25. Which of the following is true?

- A) Helicase requires GTP.
- B) Topoisomerase I is ATP independent
- C) Helicase requires ATP.
- D) There are 3 types of Topoisomerases.
- E) More than one of the above is true.

Answer: E

26. Which of the following is incorrect?

- A) Single-strand DNA binding proteins prevent the formation of hairpin structures.
- B) SSB proteins stabilize single strand DNA.
- C) SSB proteins cover the nitrogenous bases.
- D) All of the above are true.

Answer: C

27. The primosome consists of:

- A) topoisomerase + helicase
- B) Helicase + primase
- C) Primase + topoisomerase
- D) None of the above

Answer: B

28. In the case of a circular DNA synthesis how many replication forks are observed?

- A) 1
- B) 2
- C) 3
- D) 4

Answer: B

29. Replication fork is the junction between the two _____

- A) Newly separated DNA strands and the unreplicated DNA
- B) Newly synthesized DNA
- C) Newly separated DNA strands and newly synthesized DNA strands
- D) Unreplicated DNA

Answer: A

30. A select mutation is causing a cell lineage to be unable to replicate DNA successfully. When observed under a microscope, researchers observe that the DNA is able to be separated, but the template strands keep coming back together before the new strands can be replicated.

Based on this observation, which protein involved in DNA replication is most likely mutated?

- A) Single-stranded binding protein
- B) DNA primase
- C) DNA helicase
- D) DNA polymerase

Answer: A

SHEET 6

31. Which of the following types of RNA molecules is coding:

- A) rRNA
- B) mRNA
- C) tRNA
- D) ncRNA
- E) miRNA

Answer: B

32. VNTR alleles are hypervariable regions of human DNA that differ from each other in:

- A) location of internal sites recognized by restriction enzymes.
- B) variable number of point mutations
- C) number of copies of an internally repeated DNA sequence
- D) variable location on different chromosomes

Answer: C

33. Sections of the DNA sequences that are transcribed into RNA and translated into amino acid sequences (proteins) are called ____.

- A. Exons
- B. SNPs
- C. STR
- D. None of the above

Answer: A

34. Which of the following is incorrect?

- A) Alu is an example of a SINE.
- B) L1 is an example of a LINE.
- C) Tandem repeats are found more than interspersed elements in the human genome.
- D) 2% of the human genome is protein coding gene exons.
- E) All of the above are correct.

Answer: C

35. Which of the following are examples of Satellites?

- A) Centromeres
- B) Telomeres
- C) Alu
- D) A+B

Answer: D

36. Which of the following statements about genomes isn't correct?

- A) almost 20% of the human genome isn't relevant.
- B) greater number of nucleotides per genome indicates higher complexity.
- C) It's not a necessity to have variations of mini-satellite sequences between different.
- D) alleles of the same individual.
- E) B&C.

Answer: B

37. Which of the following statements about transposons is incorrect?

- A) RNA transposons amounts are fewer than DNA transposons within human genome.
- B) 99% of transposons within human genome lost their ability of movement.
- C) All the possible movements of transposons cause diseases.
- D) A&C

Answer: D

SHEET 7

38. Which of the following is considered, correct?

- A) RNA error rate is less than DNA error rate.
- B) NTP nucleotides are added during synthesis of mRNA using the energy gained by hydrolysing of all of the phosphate groups.
- C) A mutation in a certain gene on the homologous chromosome might cause a decrease in the number of proteins synthesized from the cell

Answer: C

39. In bacteria, which of the following RNA polymerase enzyme subunits is responsible for promoter recognition?

- A) The beta (13) subunit.
- B) The gamma (γ) subunit.
- C) The delta (δ) subunit.
- D) The sigma (σ) subunit.
- E) The epsilon (ε) subunit.

Answer: D

40. What happens to the sigma subunit in RNA polymerase (in prokaryotes) after it attaches the RNA polymerase to the DNA?

- A) It stays on the DNA until transcription ends.
- B) It leaves the RNA polymerase after about 10 base pairs then it is recycled.
- C) It is degraded after it attaches the RNA polymerase.
- D) None of the above

Answer: B

41. Which of the following is correct?

- A) Two phosphate groups are removed from nucleoside triphosphate that are added to the growing RNA sequence because they are too long.
- B) Transcription requires a primer.
- C) DNA replication is more accurate than RNA transcription.
- D) All of the above are correct.

Answer: C

SHEET 8

42. Which of the following steps is NOT correct about producing mature RNA (mRNA)?

- A) A poly-A tail is added to the 3'-end of the RNA.
- B) Exons are joined together.
- C) Binding of miRNA to the 3'-untranslated region of mRNA.
- D) Introns are removed from RNA.
- E) Adding a cap to the 5'-untranslated region (5'-UTR) of the RNA.

Answer: C

43. In eukaryotes, which of the following molecules can tell you the sequence of introns and exons?

- A) Pre-mRNA
- B) miRNA
- C) mRNA
- D) Polypeptide
- E) Complementary DNA (cDNA)

Answer: A

44. Which of the following is correct about alternative splicing?

- A) Alternative removal of introns
- B) Alternative connecting of exons
- C) Exons are moved and can be put before or after any exon
- D) All of the above are incorrect

Answer: B

45. All of the following are true regarding polyadenylation EXCEPT:

- A) Takes place in the nucleus.
- B) 200-300 adenine residues are added to the 3' end of the mRNA
- C) Carried out by RNA polymerase II.
- D) Is needed to stabilize the mRNA.
- E) Adenine nucleotides are added after the polyadenylation sequence AAUAAA.

Answer: C

46. Which of the following is not a function of the 5' cap?

- A) Adenylates the 3' end.
- B) Regulates nuclear export.
- C) Increases half-life of mRNA.
- D) Plays a role in translation.

Answer: A

47. Which of the following has a function similar to operons in eukaryotes?

- A) Enhancers
- B) Silencers
- C) PPE
- D) Promoters

Answer: C

48. Which of the following is correct?

- A) Enhancers can be located upstream or downstream of the gene.
- B) Enhancers can be located up to 50 kilo BP away from the gene.
- C) Mediators mediate the attachment of activators to the pre-initiation complex.
- D) All of the above are correct.

Answer: D

49. Which of the following is correct?

- A) TFIIF has a kinase and a helicase-like function.
- B) TFIIB binds to the BRE element in promoters.
- C) There have to be 4 core components in EACH eukaryotic promoter region.
- D) TFIIE can attract TFIIF.
- E) More than one of the above are correct.

Answer: E

50. Which of the following correctly describes a core component of promoters in eukaryotes?

- A) TATA box at -10
- B) Initiator at -2 ~> -6
- C) Downstream promoter element at +16 ~> +20
- D) TFIIB recognition element at -37 ~> -32

Answer: D

51. Changing the position of this sequence from upstream of a gene to its downstream would not affect the expression of this gene:

- A) Promoter
- B) Promoter proximal element
- C) Enhancer
- D) A CpG island
- E) A transcription initiation site

Answer: C

52. On which side of the gene is the promoter located?

- A) 3' side
- B) 5' side
- C) It can be located on any side.

Answer: A

52. In eukaryotes, which of the following general transcription factors bind to the TATA box?

- A) TFIIA.
- B) TFIIB.
- C) TFIID.
- D) TFIE.
- E) TFIF.

Answer: C

SHEET 9

53. It is necessary for the gene that codes for the repressor of lac operon to be near the structural genes.

- A) False
- B) True

Answer: A

54. As more and more lactose is metabolized what is expected to happen?

- A) Decrease in transcription of the lac operon because of the increase of glucose.
- B) Increase in transcription because of the increase of lactose.
- C) Decrease in transcription because of the decrease of Allolactose.
- D) NONE of the above

Answer: A

55. A bacterial gene (gene A) ordinarily makes a protein that binds to DNA. A mutation of gene A decreases the expression of another gene, gene B. We can conclude that:

- A) gene A is a positive regulator of gene B.
- B) gene A is a negative regulator of gene B.
- C) gene B is a positive regulator of gene A.
- D) gene B is a negative regulator of gene A.
- E) genes A and B regulate one another.

Answer: A

56. The following mutation would cause constitutive expression of the Lac operon:

- A) Deletion of the promoter
- B) Deletion of the *LacI* gene.
- C) Inability of allolactose to bind to the lac repressor
- D) Constant binding of catabolite-activating protein (CAP) upstream of the promoter
- E) Constant binding of the RNA polymerase to the promoter

Answer: B

57. What is the action of cyclic AMP (cAMP) on the lac operon?

- A) It binds the RNA polymerase stabilizing its binding to the promoter.
- B) It binds the repressor preventing its binding to the promoter.
- C) It binds catabolite activating protein (CAP) stimulating its binding upstream of the promoter.
- D) It binds to and activates beta-galactosidase.
- E) It binds to and stabilizes the polycistronic mRNA.

Answer: C

SHEET 10

58. Deacetylation of histones has which of the following effects?

- A) Uncoiling of histone structure, preventing it from being accessed by transcriptional machinery.
- B) Uncoiling of histone structure, allowing it to be accessed by transcriptional machinery.
- C) Coiling of histone structure, preventing it from being accessed by transcriptional machinery.
- D) Coiling of histone structure, allowing it to be accessed by transcriptional Machinery.

Answer: C

59. One of the following is NOT a regulation by epigenetics:

- A) Methylation of histones
- B) A point mutation of the promoter regions
- C) Methylation of cytosines within promoter regions
- D) Binding of noncoding RNAs to promoters regions
- E) Conversion of heterochromatin to euchromatin

Answer: B

SHEET 11

60. In situ hybridization done on a tissue section reveals staining in one region, and immunohistochemistry reveals staining in another. This indicates:

- A) A gene is expressed, but the protein is degraded.
- B) A gene is expressed in one region, but its protein product is localized somewhere else.
- C) Both mRNA and protein are modified
- D) A pre-mRNA exists in one region of the tissue, but it is modified somewhere else.
- E) A protein exists in one region of the tissue, but it is modified somewhere else.

Answer: B

61. The reason behind analyzing the expression of a housekeeping gene in Northern blotting is:

- A) To ensure the expression of all genes in a sample
- B) To measure the stability of mRNA in a sample
- C) To ensure equal loading of total RNA of a sample
- D) To estimate the length (size) of mRNA molecules
- E) To determine the splicing of mRNA molecules

Answer: C

SHEET 12/A+B

62. To which of the following structures in a typical molecule of tRNA is an amino acid attached?

- A) Anticodon loop
- B) Variable loop
- C) CCA tail
- D) D loop

Answer: C

63. According to the table, which amino acid would result from the anticodon ACG?(**very important**)

- A) Thr
- B) Arg
- C) Cys
- D) b+c

		Second letter				
		U	C	A	G	
First letter	U	UUU } Phe UUC } UUA } Leu UUG }	UCU } UCC } Ser UCA } UCG }	UAU } Tyr UAC } UAA } Stop UAG } Stop	UGU } Cys UGC } UGA } Stop UGG } Trp	U C A G
	C	CUU } CUC } Leu CUA } CUG }	CCU } CCC } Pro CCA } CCG }	CAU } His CAC } CAA } Gln CAG }	CGU } CGC } Arg CGA } CGG }	U C A G
	A	AUU } AUC } Ile AUA } AUG } Met	ACU } ACC } Thr ACA } ACG }	AAU } Asn AAC } AAA } Lys AAG }	AGU } Ser AGC } AGA } Arg AGG }	U C A G
	G	GUU } GUC } Val GUA } GUG }	GCU } GCC } Ala GCA } GCG }	GAU } Asp GAC } GAA } Glu GAG }	GGU } GGC } Gly GGA } GGG }	U C A G

This question has two important things: first, you should know that this table shows the amino acids for each codon not anticodon so you should write the codon for 5'ACG3' and it is 3'UGC5' (REMEMBER that the codon and the anticodon are always antiparallel) always keep in mind the direction of translation/transcription.

Answer: B

64. Which of the following could be an effect of miRNA regulation?

- A) Decreasing half-life of mRNA
- B) Halting of translation mid-way through the process
- C) The breakdown of ribosomes
- D) Affects the 5' UTR of mRNA

Answer: A

65. Which of the following is NOT correct about tRNA?

- A) tRNA is a short single-stranded RNA (ssRNA).
- B) Charging tRNAs with amino acids is mediated by aminoacyl-tRNA synthetases.
- C) tRNA contains a three-nucleotide sequence known as an anticodon.
- D) Some tRNAs can bind to more than one codon due to wobble base pairing in the second base of the codon.
- E) The match between tRNA anticodon and the mRNA codon ensures the fidelity of translation.

Answer: D

66. miRNA plays a role in transcriptional and post transcriptional regulation by which of the following?

- A) Gene silencing through translational repression and target degradation
- B) Cleavage of telomeres
- C) Gene amplification
- D) RNA editing

Answer: A

67. Which of the following would not DIRECTLY affect protein translation?

- A) Dysfunctional miRNA
- B) A mutation in the genes responsible for the synthesis of rRNA
- C) Ubiquitination of proteins

Answer: C

68. What is the anticodon that is complementary to the codon UAC?

(Directions from 5'-t3')

- A) UTG.
- B) UAG.
- C) GAU.
- D) GTA.
- E) GUA.

Answer: E

69. In eukaryotes, all of the following steps happen during translation elongation stage EXCEPT:

- A) Binding of aminoacyl-tRNA to the A site.
- B) Formation of a peptide bond.
- C) Exit of aminoacyl-tRNA from E site.
- D) Translocation of tRNA from A site to P site.
- E) Hydrolysis of GTP into GDP to provide energy.

Answer: C

70. How long is the peptide that is generated from this eukaryotic mRNA knowing that the first U is the 5'-end of the mRNA

UGUGUGUCACUUAUAAUGGCGCAUAUGAGG

- A) 4
- B) 3
- C) 5
- D) 10
- E) 2

Answer: C

SHEET 13

71. A gene normally expresses a 130-amino acid-long protein. A point mutation occurred in the coding DNA of this protein that results in the production of an abnormal protein with 112 amino acids. The mutation is:

- A) Silent mutation.
- B) Nonsense mutation.
- C) Missense mutation.
- D) Conversion of a stop codon into Methionine codon.
- E) Insertion of three nucleotides in the promoter region.

Answer: B

72. Below are two sequences of a segment of DNA.

CCG GTC TAG *Normal sequence*

CCG GTC GTAG *Mutated sequence*

Which type of mutation has occurred?

- A) Substitution mutation
- B) Deletion mutation
- C) Nonsense mutation
- D) Insertion mutation

Answer: D

73. DNA glycosylases cleaves the _____ and Uvr complex cuts _____:

- A) phosphodiester, phosphodiester
- B) phosphodiester, hydrogen bonds
- C) glycosidic, phosphodiester
- D) glycosidic, glycosidic

Answer: C

74. The UV light cause cell death in which of the following diseases:

- A) Xeroderma pigmentosum (XP)
- B) Cockayne's syndrome
- C) Fragile X syndrome
- D) A+B

Answer: A

75. Nucleotide Excision Repair in bacteria the enzyme that recruited to the lesion and create cuts is _____:

- A) DNA polymerase1.
- B) UvrABC protein complex
- C) Transcription factor 2 H(TFIIH)
- D) (RPA)

Answer: B

76. Pyrimidine dimers are reversed by enzymes known as:

- A) Ligase
- B) DNA polymerase1
- C) photolyase
- D) none of the above

Answer: C

77. oxygen radical is reduced by the enzyme _____, this produces _____ which is still harmful for the cell.

- A) Superoxide-dismutase, hydrogen peroxide(H_2O_2)
- B) polymerases, H_2O_2
- C) Superoxide-dismutase, H_2O
- D) Superoxide-dismutase, CO_2 .

Answer: A

78. regard to incorporation of base analogs which of the following is correct:

- A) 5-bromouracil (5-BU) analog of adenine
- B) 6-methylguanine pairs with thymine
- C) creation of AP sites
- D) Ionized form of 5-BU pairs with guanine

Answer: D

79. The wrong statement about Deamination is:

- A) The deamination of cytosine yields uracil.
- B) The deamination of adenine yields hypoxanthine.
- C) The deamination of thymine yields methylated cytosine
- D) its induced mutation
- E) C+D

Answer: E

80. Depurination is a spontaneous mutation that occurs only in purines,

- A) true
- B) false

Answer: B

81. Which of the following is correctly matched?

- A) translocation mutation we have transfer of genetic material within the same chromosome.
- B) all mutagens are carcinogens.
- C) Macromutation involves small regions of the DNA.
- D) none of the above is correct.

Answer: D

82. Mutations can happen in which of the following?

I. in DNA replication II. in meiotic recombination
III. As a consequence of the damaging effects of physical or chemical agents on the DNA

- A) II only
- B) I only
- C) III only
- D) I, II, and III

Answer: D

 The questions below are related to more than one sheet, now try to solve them.

83. Which of the following occurs in eukaryotes but not prokaryotes?

- A) miRNA regulation
- B) Synthesis and translation of an mRNA strand at the same time
- C) Removal of sigma subunit
- D) identification of the shine Dalgarno sequence

Answer: A

84. At which points can gene expression be regulated?

- A) During transcription
- B) Post transcription
- C) During translation
- D) Post translation
- E) All of the above

Answer: E

85. Which of the following is not a consensus sequence in DNA?

- A) Shine dalgarno sequence
- B) BRE element (TFIIB recognition element)
- C) Downstream promoter element
- D) TATA box

Answer: A

86. One of the following is part of the basal transcriptional complex:

- A) Co-activator
- B) RNA polymerase
- C) Co-repressor
- D) Transactivator
- E) NONE of the above

Answer: B

87. One of the following is NOT a cis-acting element:

- A) Shine-Dalgarno sequence
- B) Iron-response element
- C) Iron response element binding protein .
- D) Enhancer
- E) GC-rich box (-35 sequence)

Answer: C

88. This is NOT a mechanism we discussed by which non-coding RNA molecules can ultimately regulate proteins:

- A) Recruitment of transcriptional regulatory proteins to the promoter region
- B) Coating and condensation of DNA
- C) Binding to the 3'-end of mRNA causing its degradation.
- D) Binding to mRNA blocking translation.
- E) Phosphorylation of translation initiation factor

Answer: E

89. Which of the following sentences does best describe the core promoter?

- A) Region of an mRNA between the 5'-end and the translation start site.
- B) A cluster of prokaryotic genes that are transcribed together.
- C) Region of DNA in front (downstream) of a structural gene mainly composed of proximal elements.
- D) Region of DNA usually in front (upstream) of a gene that binds RNA polymerase and initiates gene expression.
- E) Consensus sequences that bind activator proteins and enhance the transcription.

Answer: D

90. Which of the following types of DNA polymerase does not take part in DNA repair?

- A) DNA polymerase I
- B) DNA polymerase II
- C) DNA polymerase III
- D) DNA polymerase IV

Answer: C

91. Which of the following types of DNA polymerase has 3'→5' exonuclease activity?

- A) DNA polymerase I
- B) DNA polymerase II
- C) DNA polymerase III
- D) DNA polymerase IV

Answer: C

92. Which of the following is NOT correct about transcription?

- A) In eukaryotes, the mRNA carries only one gene (Monocistronic).
- B) In prokaryotes, several genes may be carried on the same mRNA (Polycistronic).
- C) The consequences of an error in the RNA synthesis is less significant than that in the DNA replication.
- D) In prokaryotes, the termination signal usually consists of a GC-rich sequence followed by T residues.
- E) In eukaryotes, the termination signal determined by a consensus sequence followed by a downstream GU-rich sequence.

Answer: D

93. Pick the correct pair with respect to primers used in DNA replication.

- A) RNA primer- for prokaryotes only
- B) DNA primer-for eukaryotes only
- C) DNA primer- for both prokaryotes and eukaryotes
- D) RNA primer- for both prokaryotes and eukaryotes

Answer: D

94. An RNA produced from a fragment of DNA has the sequence of AAUUGGCU. The Sequence of the non-template strand In the DNA that gave rise to this sequence is which one of the following?

- A) AGCCAATT
- B) AAUUGGCU
- C) AATTGGCT
- D) TTAACCGA
- E) UUAACCGA

Answer: C

BEST OF LUCK >3