1) Most organisms have 61 codons and fewer than 45 species of tRNA, this is accounted for by:
A- Universality
B- Wobble hypothesis
C- Unidirectionality
D- Specificity
E- Unambiguous

Answer: B

2) Which is true regarding the activation of amino acids and synthesis of aminoacyl tRNA:
A- Aminoacyl tRNA synthetase connects the amine group of the amino acid to the specific tRNA
B- Each type of amino acid iS activated by a different aminoacyl tRNA synthetase
C- The aminoacyl tRNA synthetase transfers the activated amino acid to the 5/ end of the correct tRNA
D- GTP is required for amino acid activation
E- Aminoacyl-tRNA synthetases recognize the correct tRNAs only through the anticodon loop

Answer: B

3) One of the following is not true regarding the Wobble hypothesis:
A- Base pairing between the codon and anticodon are antiparallel
B- The first two bases of the codon base pair with the last two bases of the anticodon according to Watson Crick base pairing
C- Unusual base pairs form because of flexibility of bases in codons on mRNA
D- The first base of the anticodon with the third base of the codon may follow wobble pairing rules
E- Adenosine deaminase converts adenosine to the nucleoside inosine by deamination process

Answer: C

4) sickle cell anemia is an example of which of the following?
A- Frame shift mutation
B- Large scale mutation
C- Missense mutation
D- Nonsense mutation
E- Silent mutation

Answer: C

5) If the following eukaryotic mRNA were properly modified and sent to the cytoplasm, what size protein (in amino acids) would it encode?
5' GGUCUGAGUCUUAUGCAAGUUCAGUGAUACCUAAAU3':
A- 11
B- 4
C- 8
D- 5
E- 12

Answer: B

6) Which one of the following statements best describes the relationship between tumor suppressor proteins (TSP) and cancer?
A- TSPs cause cancer tumor growth
B- When activated, TSPs will cause uncontrolled cell division.
C- Mutation to a TSP will cause a cell to undergo apoptosis.
D- Mutation of a TSP predisposes a cell to formation of protooncogenes.
E- When mutated, TSPs will cause uncontrolled cell division.

Answer: E

7) Which of the following statements is true regarding of DNA damage?
A- All DNA damage results in diseases such as cancer
B- Most DNA damage is repaired by the cell
C- All DNA damage is caused by physical, chemical or biological agents
D- Most DNA damage is advantageous to the cell
E- Cells are not efficient in repairing DNA damage

Answer: B

8) In the genetic code of human nuclear DNA, one of the codons specifying the amino acid tyrosine is UAC. Another codon specifying this same amino acid is:
A- GGC
B- UAG
C- UAA
D- UGG
E- UAU

Answer: E

9) In which phase of the cell cycle are the chromosomes inactive, condensed, and not transcribed to messenger RNA?
A- G1 phase
B- S phase
C- M phase
D- G2 phase
E- Both G2 and G1 phases

Answer: C

10) Peptidyl transferase:
A- Is a DNA enzyme
B- Is involved in amino acid activation
C- Is located in the 40S subunit
D- In termination step, hydrolyzes the bond linking the peptide to the tRNA in P site, causing release of polypeptide chain
E- Is stimulated by initiation factors

Answer: D

11) A patient was admitted to the hospital for therapy with an antibiotic that inhibits the translocation of peptidyl-tRNA of the 50S ribosomes. This patient was most likely treated with:
A- Tetracycline
B- Chloramphenicol
C- Erythromycin
D- Streptomycin
E- Levofloxacin

Answer: C

12) Formation of 48S Initiation complex requires:
A- 43S complex, mRNA, IF-4, ATP
B- 43S complex, mRNA, IF-2, ATP
C- 43S complex, met-tRNA, IF-4, GTP
D- 43S complex, met-tRNA, IF-2, ATP
E- 43S complex, mRNA, IF-2, GTP

Answer: A

13) Delivery of aminoacyl-tRNA to the A site of the ribosome in the elongation step requires:
A- EF-1, GTP complexed with aminoacyl-tRNA
B- EF-2, GTP complexed with aminoacyl-tRNA
C- Release factors
D- Peptidyl transferase
E- EF-1, ATP complexed with aminoacyl-tRNA

Answer: A

14) Which of the following is a CDK inhibitor that prevents the phosphorylation of Rb and so cell cycle arrest occurs?
A- p53
B- Bcl-2
C- BRCA-2
D- BRCA-1
E- p21

Answer: E

15) Degeneracy of genetic code refers to tion:
A- An amino acid may have more than one codon
B- All organisms use the same genetic code
C- Each codon codes for only one amino acid
D- The base is only read once
E- The same four bases form codons in all living organisms

Answer: A