58. Termination of translation is signaled by which of the following mRNA codons?

(a) UAA
(b) AAU
(c) UGA
(d) a and b
(e) a and c

59. After translation, all newly synthesized proteins;

(a) Require enzymatic removal of the initiating amino acid
(b) Require enzymatic addition of functional and prosthetic groups.
(c) Progressively assume a 3-D conformation by formation of hydrogen bonds, Van der Waals forces, ionic bonds and hydrophobic interactions.
(d) Require stabilization by formation of disulfide bridges.
(e) Automatically inherit enzymatic capabilities

60. One way in which antibiotics block protein translation is;

(a) By distorting the ribosomal 3-D conformation
(b) Blocking the "A" site of the ribosome
(c) Mimicking amino acids.
(d) Mimicking tRNAs.
(e) Blocking formation of amino acyl tRNAs

61. At which phase of the cell cycle is the morphology of chromosomes clearly seen?

(a) Prophase
(b) Interphase
(c) Metaphase
(d) Anaphase
(e) Telophase

62. Which amino acid is the hot spot in p53 mutations?

(a) Arginine
(b) Aspartate
(c) Asparagine
(d) Alanine
(e) Glycine

63. A normal human karyotype consist of

(a) 22 pairs of sex chromosomes
(b) 22 pairs of non-sex chromosomes
(c) 20 pairs of chromosomes.
(d) 2 pairs of non-sex chromosomes
(e) 24 pairs of chromosomes

74. In Edwards syndrome

(a) Additional chromosome is usually paternal
(b) Survival of newborns is restricted to a few years
(c) It is a structural abnormality
(d) Condition is also referred to as trisomy 13
(e) Cardiac abnormalities is common

75. Which of the following statements is true?

(a) Tetrasomy is a type of polyploidy
(b) Translocations are a type of numerical abnormality
(c) Formations of rings is due to the crossing over of different cell
(d) Robertsonian insertions are common
(e) None of the above

76. In the H-Ras oncogene:

(a) Glycine is replaced by valine
(b) Glycine is replaced by alanine
(c) Glycine is replaced by isoleucine
(d) Glycine is replaced by leucine
(e) Glycine is replaced by serine

77. Which domain in the EGF receptor is normally mutated?

(a) Ectodomain
(b) Transmembrane domain
(c) Tyrosine kinase domain
(d) C-terminal domain
(e) None of the above

78. The *Bcr* gene is located on chromosome

(a) 19
(b) 20
(c) 21
(d) 22
(e) 23

79. The following are tumour supressor genes except

(a) *Ink4*
(b) *Brca*
(c) *NF1*
(d) *APC*
(e) *Erb-B*

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SECTION A

In questions (1–90) circle the best answer in each case.

1. The proteins in the body are composed of _____ amino acids; _____ of these amino acids are termed essential amino acids.

(a) 20; 9
(b) 20; 11
(c) 40; 20
(d) 40; 9
(e) 40; 11

2. The energy-requiring process by which small molecules are joined to form larger molecules is specifically called

(a) Metabolism
(b) Anabolism
(c) Catabolism
(d) Enzymatic reactions
(e) Catalysis

3. Amino acids can be used for energy by converting them into various intermediate molecules of carbohydrate metabolism. Which intermediate molecule cannot be directly formed from an amino acid?

(a) Pyruvic acid
(b) Glyceraldehyde 3-phosphate
(c) Oxaloacetic acid
(d) Acetyl-CoA
(e) Citric acid

4. Which of the following processes is involved in using proteins as a source of energy?

(a) Glycolysis
(b) Ketogenesis
(c) Beta oxidation
(d) Oxidative deamination
(e) Lipolysis

5. Which of the following substances are NOT stored in the body?

(a) Amino acids
(b) Glycogen
(c) Triglycerides
(d) Cholesterol
(e) Glucose

6. Once glycogen stores are filled, glucose and amino acids are used to synthesize:

(a) Glycoproteins.
(b) Proteins.
(c) Lipids
(d) Lactic acid.
(e) Phospholipids

7. A toxic waste product of protein metabolism that must be excreted from the body is:

(a) Ammonia
(b) Carbon dioxide
(c) Urea
(d) Uric acid
(e) Water

8. The daily-recommended consumption amount of protein for a healthy adult is about _____% of total kilocalorie intake per day

(a) 1
(b) 10
(c) 30
(d) 60
(e) 100

9. In transamination, an amine group is transferred to _____ to form a nonessential amino acid.

(a) Keto acid
(b) Ketone body
(c) Acetyl-CoA
(d) Carbon dioxide
(e) Water

10. In oxidative deamination, an amine group is removed from an amino acid (usually glutamic acid) leaving ammonia and a keto acid. In this process _____ is formed, which can enter the electron transport chain.

(a) NADH
(b) NAD^+
(c) FAD
(d) $FADH_2$
(e) ATP

40. Comparing mRNA transcription in eukaryotes and prokaryotes;

(a) Both prokaryotes and eukaryotes undergo post transcriptional modification.
(b) Only prokaryotes undergo post transcriptional modification.
(c) Prokaryotic mRNA requires 5' cap.
(d) Eukaryotic mRNA undergoes splicing, 5' capping and poly A tail addition.
(e) Only prokaryotic mRNA requires splicing.

41. At which codon does protein translation begin?

(a) AUG
(b) GUA
(c) UAA
(d) UGA
(e) GUU

42. Redundancy or degeneracy of the Genetic Code refers to;

(a) The fact that the code is inadequate.
(b) The fact that one amino acid may be specified by more than one codon.
(c) The fact that one codon specifies more than one amino acid.
(d) The fact that the genetic code is incomplete.
(e) None of the above.

43. An open reading frame is best described as;

(a) A region of at least 50 nucleotides within a start and stop codon.
(b) A region of 50 nucleotides preceded by a start codon.
(c) Any region that begins with the specified start codon.
(d) Any region that has a stop codon.
(e) A region of at least 50 nucleotides that has a definite stop codon.

44. The Inosinate nucleotide carries which of the following bases?

(a) Thymine
(b) Hypoxanthine
(c) Adenine
(d) Uracil
(e) Guanine

45. The Wobble hypothesis states that;

(a) An unusual base of the tRNA anticodon can form bonds with more than one specific base on the mRNA strand.
(b) Variations in base pairing due to the presence of an unusual base in the tRNA anticodon enables at least 32 tRNA molecules to recognize the 61 different codons.
(c) The first base of the tRNA anticodon enables variations in base pairing with the codon.
(d) The last two bases of the tRNA anticodon provide stronger and more specific base pairing to the codon.
(e) All of the above.

46. Which of the following describes the initiation process of protein translation?

(a) The 18S and the 16S rRNAs in eukaryotic and bacterial ribosomes respectively, are necessary for attachment at the Shine-Dalgarno consensus sequence.
(b) The $tRNA_i^{Met}$-fMet anticodon binds at the "start" codon of mRNA within the "A" site of the ribosome.
(c) It requires use of a consensus sequence to guide the smaller subunit so that the "P" site of the ribosome resides over the "start" codon.
(d) It requires initiation factor 1 (IF1) to stop the two ribosomal subunits from prematurely complexing.
(e) In both eukaryotes and bacteria fMet serves as the initiating amino acid.

47. Initiation of translation in eukaryotes involves;

(a) Formation of an eIF4F complex that brings the 3' and 5' ends of the mRNA into the 40S ribosomal subunit.
(b) Formation of an eIF4F complex that brings the 3' and 5' ends of the mRNA into the 80S ribosomal subunit.
(c) Recognition of the Shine-Dalgarno consensus sequence by the eIF4F complex.
(d) Scanning of the mRNA from the 5' end for the first AUG codon by eIF3 and eIF4B.
(e) None of the above.

48. Which statement below best describes the requirements for the elongation phase of protein translation;

(a) An amino acid coupled with GTP and other soluble elongation factors.
(b) An initiation complex, amino acids and soluble elongation factors.
(c) Amino acids esterified to their respective tRNAs and soluble elongation factors.
(d) Amino acids esterified to their respective tRNAs and an initiation complex.
(e) An initiation complex, charged tRNA and soluble elongation factors.

100. Protein synthesis in bacteria is inhibited by antibiotics in which of the following mechanisms?

(a) Streptomycin mimics charged tRNA and can bind within the "A" site.
(b) Chloramphenicol mimics charged tRNA and can bind within the "A" site
(c) Puromycin blocks the formation of the initiation complex
(d) Streptomycin blocks transfer of the peptide during elongation
(e) Tetracycline blocks the "A" site of the ribosome.

101. Acrocentric chromosome has

(a) centromere in an intermediate position
(b) centromere at the terminal end
(c) centromere in its centre
(d) satellites
(e) no centromere

102. Which of the following statement(s) is/are true concerning monosomy?

(a) Disomy is possible
(b) Nullisomy is possible
(c) Full term is always achieved
(d) Metaphase lag can cause it
(e) Anaphase lag may cause it

103. Which of the following is characteristic of XYY males?

(a) Fertility is normal
(b) Additional Y is of maternal origin
(c) Show emotional immaturity
(d) Most have learning difficulties
(e) Majority show severe gynecomastasia

104. Which of the following concerning ring chromosomes is false?

(a) It is a numerical abnormality
(b) It is a structural abnormality
(c) It is a mixoploidy abnormality
(d) Is lethal on sex chromosomes
(e) It is a type of reciprocal translocation

105 HRT is sufficient to cause

(a) endometrium cancer
(b) breast cancer
(c) prostate
(d) ovarian cancer
(e) None of the above

106. Concerning polycyclic aromatic hydrocarbons (PAHs)

(a) Are found in tobacco
(b) Are found in HRT
(c) Sufficient to cause bladder, lung, skin cancers
(d) Cytochrome P-450 enzymes convert it to ultimate carcinogens
(e) None of the above

107 Sarcomas affect

(a) Bone
(b) Gut
(c) Blood
(d) Skin
(e) muscle

108. Point mutations in the coding sequence of proto-oncogenes results into

(a) Chromosome rearragements
(b) Hyperactive protein made in excessive amounts
(c) Hyperactive protein made in normal amounts
(d) Hyperactive fused protein made in normal amounts
(e) Hyperactive fused protein made in excess amounts

109 BCR-ABL fusions leads to

(a) acute lymphocytic leukemia
(b) chronic myelogenous leukemia
(c) chronic lymphocytic leukemia
(d) acute myelogenousleukemia
(e) None of the above

110. The Ink4a gene codes for

(a) p12
(b) p13
(c) p14
(d) p15
(e) P16

. Which amino acid is considered essential in children because they cannot generate an adequate amount via the urea cycle?

(a) Histidine
(b) Glutamine
(c) Arginine
(d) Proline
(e) Glutamate

Homocystinuria is caused by deficiencies in enzymes that are responsible for metabolism of what amino acid?

(a) Phenylalanine
(b) Tyrosine
(c) Methionine
(d) Glycine
(e) Alanine

If an individual has a vitamin B6 deficiency, which of the following amino acids could still be synthesized and be considered nonessential?

(a) Tyrosine
(b) Serine
(c) Alanine
(d) Cystein
(e) Aspartate

. Homocystinuria and macrocytic anaemia can be caused by deficiencies in which vitamins?

(a) B12 and B6 (pyridoxine)
(b) B12 and B7 (biotin)
(c) B7 and B9 (folate)
(d) A and B3 (niacin)
(e) B12 and B9 (folate)

. What type of amino acids accumulate and are excreted into the urine giving a burnt sugar odour in maple syrup urine disease?

(a) Acidic
(b) Basic
(c) Neutral
(d) Branched-chain
(e) Aromatic

26. A newborn infant has elevated levels of phenylalanine and phenylpyruvate in her blood. Which of the following enzymes might be deficient in this baby?

(a) Phenylalanine dehydrogenase
(b) Phenylalanine oxidase
(c) Dihydropteridinereductase
(d) Tyrosine hydroxylase
(e) Tetrahydrofolate synthase

27. Ketogenic amino acids have a carbon skeleton that is catabolized to acetyl CoA or acetoacetate, which can enter the pathway of ketone body synthesis in the liver. Which of the following is NOT a set of amino acids that are considered ketogenic?

(a) Phenylalanine and tyrosine
(b) Methionine and valine
(c) Threonine and lysine
(d) Leucine and isoleucine
(e) Tryptophan

28. Which of the following nutritionally essential amino acids are required for growth,especially in children?

(a) Arginine and histidine
(b) Tryptophan and lysine
(c) Methionine and phenylalanine
(d) Threonine and valine
(e) Leucine and isoleucine

29 In beta oxidation, free fatty acids are converted to

(a) Glycerol
(b) Glyceraldehyde 3-phosphate
(c) Pyruvic acid
(d) Acetyl-CoA
(e) Citric acid

30 Which of the following processes converts lactic acid to glucose?

(a) Lipolysis
(b) Krebs cycle
(c) Cori cycle
(d) Beta oxidation
(e) Glycosylation

31. Replication of DNA occurs during which cell cycle phase?

(a) G1 phase
(b) G2 phase
(c) S phase
(d) Mitosis
(e) Interphase

32. DNA can be described as;

(a) Parallel strands arranged in a helix.
(b) A sugar-phospherous backbone with bases attached.
(c) A sugar-phosphate backbone with the pyrimidines adenine and guanine and the purines cytosine and thymine.
(d) A double helix with two strands arranged antiparallel to each other.
(e) A deoxyribose strand elongated from the 5'-OH of the sugar by phosphodiester bonds.

33. Replication of DNA is described as semi conservative because;

(a) The two DNA strands do not fully separate during replication.
(b) The base composition ratio on the two strands is maintained with equal numbers of purines to pyrimidines.
(c) One of the daughter cells contains the original DNA while the other contains only the newly synthesized DNA.
(d) Each daughter cell contains a hybrid of newly synthesized DNA and parent DNA.
(e) None of the above.

34. Which statement best describes the formation of the replication fork in prokaryotes?

(a) DnaB helicase recognizes and unwinds DNA at a specified consensus sequence.
(b) DnaA recognizes and unwinds a small portion of the DNA at a specified consensus sequence followed by the loading of DnaB helicase which further unwinds the DNA strands.
(c) DnaC loads DnaB which unwinds the DNA followed by the formation of the replication fork by DnaA.
(d) Gyrase unwinds DNA and single stranded binding protein stops the strands

35. DNA processivity is enhanced by the presence of which DNA polymerase subunit?

(a) The α subunit
(b) The β subunit
(c) The clamp loading γ complex
(d) The ε subunit
(e) The χ subunit

36. The process of mRNA transcription in both bacteria and eukaryotes:

(a) Aims to create mRNA copies of the entire genome of an organism.
(b) Requires a primer for polymerase activity.
(c) Transcribes mRNA from the coding strand
(d) Requires RNA polymerase holoenzyme to attach at a promoter region and unwind the DNA.
(e) Does not require RNA polymerase to recognize specific consensus sequences

37. Single stranded binding protein:

(a) Adds negative supercoils to the unwinding DNA helix
(b) Unwinds and separates the parent DNA strands
(c) Prevents the two parent DNA strands from annealing
(d) Loads DnaB helicase into the unwound initiator sequence
(e) Lays down primers required for DNA polymerase activity

38. The following components are required during transcription of mRNA in eukaryotes:

(a) Mg^{2+}, Zn^{2+}, template DNA, ribonucleotides and RNA polymerase II
(b) Mg^{2+}, Zn^{2+}, template DNA, ribonucleosides and RNA polymerase II
(c) Mg^{2+}, Zn^{2+}, template DNA, ribonucleotides and RNA polymerases I and III
(d) Template DNA, ribonucleotides and RNA polymerases I and III
(e) Mg^{2+}, Zn^{2+}, template DNA, ribonucleosides and RNA polymerase II and III

39. Which of the following statements best describes *E.coli* RNA polymerase?

(a) It has six core subunits
(b) It has no 3'-5' proofreading ability
(c) It has a σ subunit among its core subunits
(d) It is a ribozyme
(e) It requires a primer for mRNA synthesis

11. Which of the following nutritionally essential amino acids are required for growth,especially in children?

(a) Arginine and histidine
(b) Tryptophan and lysine
(c) Methionine and phenylalanine
(d) Threonine and valine
(e) Leucine and isoleucine

12. Which of the following nutritionally essential amino acids are considered solelyketogenic (not glucogenic)?

(a) Arginine and valine
(b) Tryptophan and isoleucine
(c) Methionine and phenylalanine
(d) Threonine and histidine
(e) Leucine and lysine

13. The degradation of amino acids can be classified into families, which are named after the end product of the degradation pathway. Which of the following is such an end product?

(a) Citrate
(b) Glyceraldehyde-3 phosphate
(c) Fructose-6-phosphate
(d) Malate
(e) Succinyl CoA

14. Which of the following amino acids is NOT associated with cofactors propionyl CoA, methylmalonyl CoA, and succinyl CoA?

(a) Valine
(b) Threonine
(c) Aspartate
(d) Isoleucine
(e) Methionine

15. What cofactor is directly needed for leucine metabolism?

(a) Propionyl CoA
(b) Methylmalonyl CoA
(c) Succinyl CoA
(d) HMG CoA
(e) Acetyl CoA

16. A folic acid deficiency would interfere with the synthesis of which of the followi amino acids from the indicated precursors?

(a) Aspartate from oxaloacetate and glutamate
(b) Glutamate from glucose and ammonia
(c) Glycine from glucose and alanine
(d) Proline from glutamate
(e) Serine from glucose and alanine

17. What amino acid do certain tumour cells need to grow, thus making the amino acid enzyme an anti-tumour agent?

(a) Arginine
(b) Asparagine
(c) Methionine
(d) Threonine
(e) Leucine

18. Which of the following amino acid degradation pathway disorders would lead renal failure due to stone formation?

(a) Phenylalanine
(b) Tyrosine
(c) Methionine
(d) Glycine
(e) Branched-chain amino acids

19. Which of the following is NOT an amino acid that can be made from and/or metabolized back to glycolytic intermediates?

(a) Threonine
(b) Alanine
(c) Cysteine
(d) Glycine
(e) Serine

20. Which of the following is NOT an amino acid that can be made from, or metabolized to, citric acid cycle intermediates?

(a) Proline
(b) Aspartate
(c) Arginine
(d) Histidine
(e) Glutamate

49. Select the most accurate statement that describes ribosomes:

(a) Eukaryotes have 50S and 40S subunits.
(b) Eukaryotes have 50S and 30S subunits.
(c) Bacteria have 60S and 30S subunits.
(d) Bacteria have 50S and 30S subunits.
(e) All subunits in both bacteria and eukaryotes exist as large 70S and 80S complexes at all times.

50. Which feature of tRNA does not vary from specie to specie:

(a) The CCA (3') sequence on the amino arm.
(b) The guanylate at the 5' end.
(c) The G=U aminoacyltransferase recognition site.
(d) The eight (8) modified nucleotides.
(e) The extra arm.

51. Which statement concerning the activation phase of protein translation is accurate?

(a) It has no proof reading phase and is therefore prone to error.
(b) It has a single filter system in which incorrect amino acyl adenylates are hydrolyzed by amino acyl synthetases.
(c) It has a filter system in which unhydrolyzed amino acyl adenylates are esterified to the specific tRNAs.
(d) Amino acyl synthetases have active sites in which only their specific tRNAs and amino acids can fit with maximum bond formation.
(e) The amino acyl synthetase active site must accommodate a specific tRNA.

52. The activation process during protein synthesis refers to:

(a) Formation of an enzyme bound amino acyl adenylates.
(b) The release of a pyrophosphate as an amino acid is bound to ATP.
(c) Recognition of an amino acid by its specific amino acyl synthetase enzyme.
(d) The recognition of a specific tRNA molecule by its amino acyl synthetase enzyme.
(e) The esterification of an amino acid to its specific tRNA.

53. In bacteria and eukaryotes, the 70S and 80S ribosome complexes are formed during which phase of protein translation?

(a) Elongation
(b) Activation
(c) Initiation
(d) Termination
(e) Peptide bond formation.

54. During peptide bond formation,

(a) The α-amino group of the amino acid in the "A" site acts as a nucleophile and displaces the tRNA in the "P" site.
(b) The α-amino group of the amino acid in the "P" site acts as a nucleophile and displaces the tRNA in the "A" site.
(c) The carboxyl group of the amino acid in the "P" site acts as a nucleophile and displaces the tRNA in the "A" site.
(d) The carboxyl group of the amino acid in the "A" site acts as a nucleophile and displaces the tRNA in the "P" site.
(e) The tRNA in the "A" site gets displaced and the growing peptide chain moves into the "P" site.

55. The roles of the 23S rRNA and the EF-G (translocase) in bacteria include;

(a) Releasing deacylatedtRNA from the ribosome and peptide bond formation respectively.
(b) Positioning of the ribosome over the mRNA and translocation of the ribosome respectively.
(c) Translocation of the ribosome and peptide bond formation respectively.
(d) Peptide bond formation and translocation of the ribosome respectively.
(e) Termination of translation and ejection of the ribosome from the mRNA respectively.

56. During translocation of the ribosome in protein translation;

(a) The ribosome moves one codon towards the 5' end of the mRNA.
(b) The ribosome moves with the aid of ATP hydrolysis towards the 3' end of the mRNA.
(c) The ribosome moves one codon so that the growing peptide resides in the "A" site.
(d) The ribosome moves one codon so that the growing peptide resides in the "P" site.
(e) The ribosome moves one codon so that the next incoming aminoacyltRNA enters at the "P" site.

57. Which statement most accurately distinguishes between protein translation in bacteria and eukaryotes?

(a) Eukaryotic ribosomes do not possess an "E" site and deacylatedtRNA is released straight from the "A" site.
(b) Eukaryotic ribosomes do not possess an "E" site and deacylatedtRNA is released straight from the "P" site.
(c) Eukaryotic ribosomes possess an "E" site and deacylatedtRNA is released after ribosomal translocation.
(d) Prokaryotic ribosomes do not have an "E" site and deacylatedtRNA is ejected from the "P" site.
(e) Ribosomes in bacteria and eukaryotes have exactly the same sites and functions.

SECTION B

In question (91- 110) circle the correct answer/s. More than one answer is possible. Half a mark for wrong judgment will be deducted.

91. Which statement/s best describe the properties of DNA polymerase III:

(a) It extends the DNA in the 5'-3' direction.
(b) It has as many as 10 subunits required for its function.
(c) It has 3'-5' exonuclease activity as a proofreading feature.
(d) It contains clamp proteins that increase processivity.
(e) It extends the DNA strand without requiring primers.

92. On the lagging strand during DNA replication:

(a) Okazaki fragments are synthesized from RNA primers.
(b) Okazaki fragments are extended in the 3'-5' direction.
(c) Primers are eventually removed by DNA pol I.
(d) DNA is synthesized in a continuous manner.
(e) Only one Okazaki fragment is synthesized.

93. DNA replication in eukaryotes:

(a) Requires Origin Recognition Complex (ORC) to load the helicase MCM complex during initiation.
(b) Requires many origins of replication since replication is slower than in prokaryotes.
(c) Utilizes Polymerase α as the main polymerizing enzyme complex.
(d) Utilizes polymerase σ as the main polymerizing enzyme complex.
(e) Does not require the presence of PCNA clamp proteins.

94. Transcription of mRNA in eukaryotes involves:

(a) Formation of a closed complex after TATA Binding Protein binds at the TATA box.
(b) Unwinding of a specific initiator sequence downstream of the TATA binding site by the closed complex.
(c) The activities of RNA polymerases I, II and III.
(d) Transcription factors with helicase activity that unwind the DNA during initiation with the aid of ATP.
(e) Phosphorylation of certain amino acid residues of RNA polymerase.

95. Describing protein synthesis, which of the following statement/s are correct?

(a) In bacteria, ribosomes begin protein synthesis even before transcription is complete.
(b) Protein synthesis in eukaryotes only begins when the mature mRNA is transported to the cytoplasm.
(c) The process of protein synthesis does not have any proof reading phases.
(d) All proteins made are immediately ready for function within the cell.
(e) Polysomes move in the 3'-5' direction as they read the mRNA nucleotides in triplets called codons.

96. Select the best statement/s that describe the function and activity of amino acyl synthetases.

(a) Amino acyl synthetases show marked specificity for tRNA and amino acids.
(b) Amino acyl synthetases have three filter (proofreading) phases.
(c) Amino acyl synthetases are ribozymes.
(d) Amino acyl synthetases have only one mode of action.
(e) Amino acyl synthetases are all monomeric enzymes.

97. During protein synthesis, the following events occur in the initiation phase;

(a) Methionine is formylated in both bacteria and eukaryotes.
(b) The 30S and 50S subunits simultaneously attach to the mRNA.
(c) The 50S subunit complexes with the 30S subunit after all initiation factors are released from the complex and GTP is hydrolyzed.
(d) The IF2-GTP-initiating aminoacyltRNA complex attaches at the initiating codon before the 50S subunit complexes with the 30S subunit.
(e) IF3 joins the 30S complex on the mRNA strand to stop premature formation of the 70S ribosome.

98. After protein translation, the polypeptide chains:

(a) Always automatically fold into functional 3-D proteins.
(b) Sometimes require addition of prosthetic groups.
(c) Sometimes require enzymatic cleavage to form functional proteins.
(d) Sometimes form disulfide bridges to avoid degradation.
(e) Always undergo removal of some residues at the amino terminal.

99. During termination of protein translation in bacteria:

(a) Release factors covalently bind at the termination codons on the mRNA.
(b) Release factors will only recognize one specific stop signal on the mRNA.
(c) Release factors hydrolyze the peptidyl-tRNA bond and transfer the peptide to a water molecule.
(d) Release factors only serve a single purpose of transferring the peptide to a water molecule.
(e) Release factors are accommodated within the 'P' site of the ribosome where they recognize stop signals on the mRNA.

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SCHOOL OF MEDICINE

DEPARTMENT OF PHYSIOLOGICAL SCIENCES
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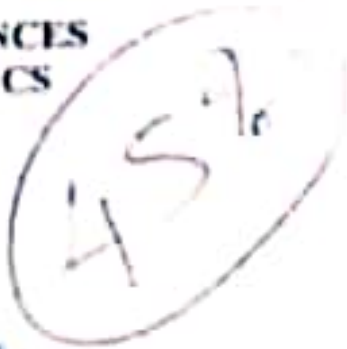
BC315



DURATION: THREE (3) HOURS

COMPUTER NO: 1 1 C C 6 5 1 3

INSTRUCTIONS TO CANDIDATES

1. There are two sections in this paper
2. Section A has 90 multiple choice questions. Each question has ONE correct answer. No mark will be deducted for a wrong answer. 70 %
3. Section B has 20 multiple choice questions each question has ONE OR MORE correct answers. Circle the most appropriate answers. Half a mark will be deducted for each wrong answer. 30%