FACULTY OF INDUSTRIAL SCIENCES & TECHNOLOGY

TEST 2

COURSE	**:**	**CELL AND MOLECULAR**
COURSE CODE	**:**	**BSB 1163**
LECTURER	**:**	**NOOR SUHANA ADZAHAR**
DATE	**:**	**7 DECEMBER 2016**
DURATION	**:**	**1 HOUR 30 MINUTES**
SESSION/SEMESTER	**:**	**SESSION 2016/2017 SEMESTER I**
PROGRAMME CODE	**:**	**BSB**

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of **TWO (2) SECTIONS.** Answer all of the questions.
2. Candidates are not allowed to bring any material other than those allowed by the invigilator into the examination room.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO

This examination paper consists of **FIVE (5)** printed pages including front page.

SECTION A

Determine whether the following statements are **TRUE (/)** or **FALSE (X)**

No.	Statement	TRUE/ FALSE
1.	Transcription makes an RNA copy using the information present in the double-stranded DNA.	
2.	During translation the information carried by single stranded DNA is used to make a polypeptide molecule.	
3.	During transcription both strands of DNA are used to make single-stranded RNA molecules.	
4.	Split genes are present in prokaryotic cells.	
5.	Prokaryotic genes do not contain introns.	
6.	Translation starts at the first nucleotide 5' base of the mRNA and ends at the last nucleotide of mRNA.	
7.	Translation always starts at the codon AUG which specifies the amino acid arginine.	
8.	Promoters functions to enhance the expression of the cloned gene.	
9.	The leader and the trailer sequences of the mature mRNA do not provide information to determine the amino acid sequence of the polypeptide coded for by the mRNA.	
10.	Additional protein factors other than the structural proteins of the ribosomes are necessary for translation.	

(10 Marks)

Fill in the blanks with appropriate answer.

Genes cannot control an organism on their own; rather, they must interact with and respond to the organism's environment. Some genes are _____, or always "on," regardless of environmental conditions. Such genes are among the most important elements of a cell's genome, and they control the ability of DNA to _____ and _____itself. They also even can _____ itself when cells suffer occasionally DNA damage. These genes also control _____

synthesis and much of an organism's central metabolism.

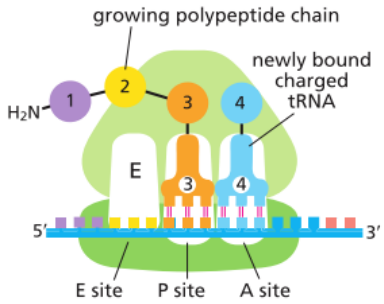
For prokaryotes, most regulatory proteins are _____ and therefore turn genes off. Here, the cells rely on protein–small molecule binding, in which a ligand or small molecule signals the state of the cell and whether gene expression is needed. The _____ or _____ protein binds at _____, near its regulatory target, which is the _____.

(10 Marks)

SECTION B

QUESTION 1

In translation process, mRNA message in decoded in ribosome, a large complex made from dozens of small proteins and rRNA molecules. With the help of this figure, briefly describe step by step process involved in the translation of mRNA.



(10 Marks)

QUESTION 2

Cells possess several mechanisms to repair DNA mutation and damage.

a) Briefly describe **TWO (2)** types of DNA repair mechanisms. Explain your answer with appropriate example.

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(6 Marks)

b) Compare and contrast between damage reversal, damage removal and damage tolerance.

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(3 Marks)

c) What happen to the cells if DNA damage is severe and cells not able to repair? Justify your answer.

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(1 Mark)

QUESTION 3

Dr David, scientist from medical research institute was recently join an expedition to Taman Negara. During his trip, he discovered unique leaves from unknown plant and he interested to study the molecular properties of the plants.

a) Firstly, he need to extract the DNA from that leaf sample. Describe the method and components needed for his experiment.

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(8 Marks)

b) Assume that Dr David had successfully extract the DNA from the sample, suggest what analysis should he do next in order to discover the genetic variability of that plant compared with other known plant.

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(2 Marks)

END OF QUESTION PAPER