

BMI2604

October/November 2015

MOLECULAR BIOLOGY

Duration 2 Hours

100 Marks

EXAMINERS

FIRST

SECOND

PROF J DEWAR

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Closed book examination

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This paper consists of 2 pages

ANSWER FIVE (5) OF THE SEVEN (7) QUESTIONS

Students must answer the questions in the examination answer book provided.

Dear student, take a deep breath, exhale and relax Now you are ready
to start answering the questions All the best!

[TURN OVER]

QUESTION 1 [20]
Describe how the structure of DNA within a chromosome changes during mitosis

QUESTION 2 [20]
“When compared to the anatomy of a eukaryotic cell there are unique features associated with the mitochondrion” Discuss

QUESTION 3 [20]
You are an oncologist required to treat a solid tumour. Describe how you would use your knowledge of cell cycling to achieve this

QUESTION 4 [20]
Discuss DNA replication

QUESTION 5 [20]
You are a molecular biologist working in a modern laboratory supplied with all the necessary equipment and reagents. Starting with bacteria supposedly containing p53 cDNA that is inserted into an expression plasmid, describe the various practical steps you would follow to introduce and express the p53 gene in cultured human cancer cells

QUESTION 6 2 x 10 = [20]
Discuss the following laboratory techniques

6 1	DNA microarray analysis	(10)
6 2	DNA sequencing	(10)

QUESTION 7 2 x 10 = [20]

7 1	With the aid of a labelled diagram, describe RNA translation	(10)
7 2	Describe similarities and differences between cell culture involving bacterial cells and cell culture involving human cells	(10)

TOTAL MARKS: 100