

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCES

BACHELOR OF SCIENCE HONOURS DEGREE EXAMINATIONS

DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY

THEORY: SBB4204 ADVANCED CELL BIOLOGY

DECEMBER 2005

3 HOURS (100 marks)

INSTRUCTIONS

Answer FOUR (4) Questions. Each question carries 25 marks. Where a question contains subdivisions, the mark value for each subdivision is given in brackets. Illustrate your answer where appropriate with large, clearly labelled diagrams.

1. (a) What do you understand by the term proto-oncogene? Describe any three ways in which a proto-oncogene can be made oncogenic. (18 marks)
- (b) Write short notes on the p53 gene (7 marks)
2. (a) Describe the main features of the eukaryotic cell cycle and show how cyclin and cyclin dependent protein kinases (cdk) control the cell cycle. (15 marks)
- (b) Explain what is meant by MPF and describe events of mitosis induced by it. (10 marks)
3. A new pathogen infects a person. Explain the range of defenses the body would mobilize as its immune response.
4. Describe how motion is generated along an actin filament.
5. Giving examples, describe the five types of proteins that participate in the control of cell growth.
6. (a) Identify and comment briefly on the defining properties of a stem cell. (15 marks)
- (b) Compare and contrast ethical issues in the uses of embryonic stem cells. (10 marks)

END OF EXAMINATION