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OF SCIENCE AND TECHNOLOGY

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QUALIFICATION : <b>BACHELOR OF SCIENCE HONOURS</b>	
QUALIFICATION CODE: <b>08BOSC</b>	LEVEL: <b>8</b>
COURSE: <b>BIOSYNTHETIC PATHWAYS AND MOLECULAR BIOLOGY</b>	COURSE CODE: <b>BPM821S</b>
DATE: <b>JANUARY 2025</b>	SESSION: <b>1</b>
DURATION: <b>3 HOURS</b>	MARKS: <b>100</b>

**SECOND OPPORTUNITY / SUPPLEMENTARY: EXAMINATION QUESTION PAPER**

**EXAMINER:** *PROF LAMECH MWAPAGHA*

**MODERATOR:** *DR HARRIS ONYWERA*

**INSTRUCTIONS:**

1. Answer all questions on the separate answer sheet.
2. Please write neatly and legibly.
3. Do not use the left side margin of the exam paper. This must be allowed for the examiner.
4. No books, notes and other additional aids are allowed.
5. Mark all answers clearly with their respective question numbers.

**PERMISSIBLE MATERIALS:**

1. None

**This question paper consists of four (4) pages including this front page.**

**Question 1****[12]**

- (a) The Tricarboxylic acid cycle is a source of biosynthetic precursors. Provide in a tabulated form as shown below **SIX (6)** metabolic precursors and from each give **ONE (1)** example of an amino acid they lead to. (6)

	Metabolic Precursors	Amino Acids
1		
2		
3		
4		
5		
6		

- (b) Briefly discuss the biosynthesis of the Fatty acids (6)

**Question 2****[16]**

- (a) Describe **FOUR (4)** ways in which emerging technologies impact the discovery and application of cancer biomarkers (8)
- (b) What are some of the Challenges involved in cancer biomarkers Development? (8)

**Question 3****[9]**

- (a) Why is the activation of telomerase activity a "neoplastic" trait? (4)
- (b) Give **FIVE (5)** contributions of Henrietta Lacks to modern medicine (5)

**Question 4****[16]**

- (a) Describe the two pathways utilized by the body for the excretion of compounds once they have entered the bloodstream (8)
- (b) Give **FOUR (4)** reasons as to why the knowledge of mechanism of action of drugs is important (8)

### Question 5

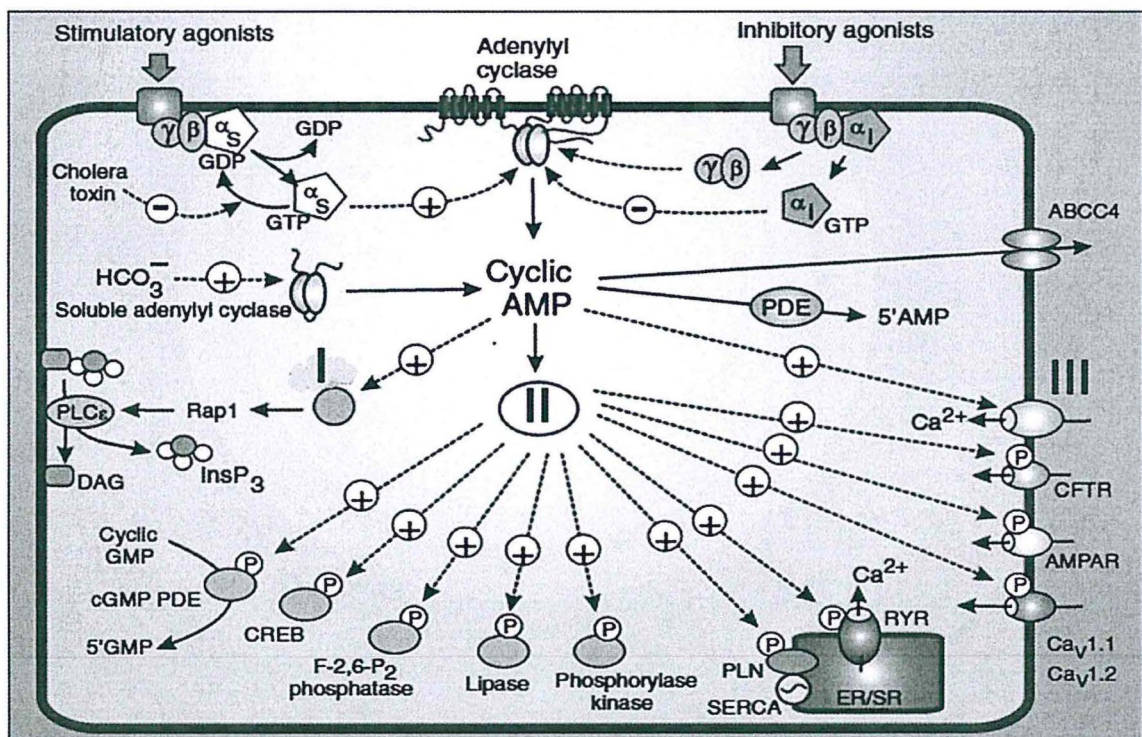
[16]

- (a) What is signal amplification in cell signaling pathways, and why is it important? (6)
- (b) Briefly describe some of the specific roles of ERK, JNK, and p38 in cell division (10)

### Question 6

[14]

- (a) The signalling pathway below is responsible for multiple processes that operate during both development and adult life.

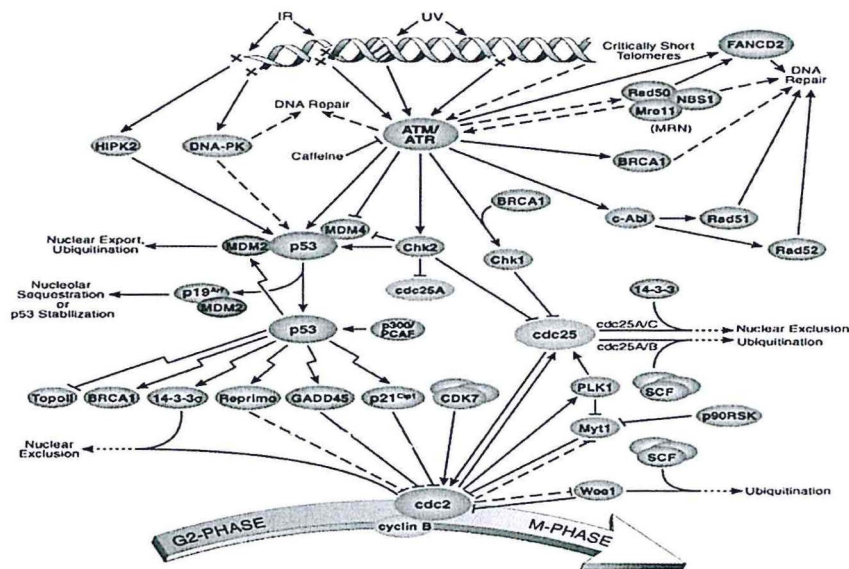


- I. Name the effectors; (3)
- II. State **SIX (6)** signalling functions of the pathway (6)



- (b) Using the figure below explain the activation of the G2/M checkpoint following DNA damage

(5)



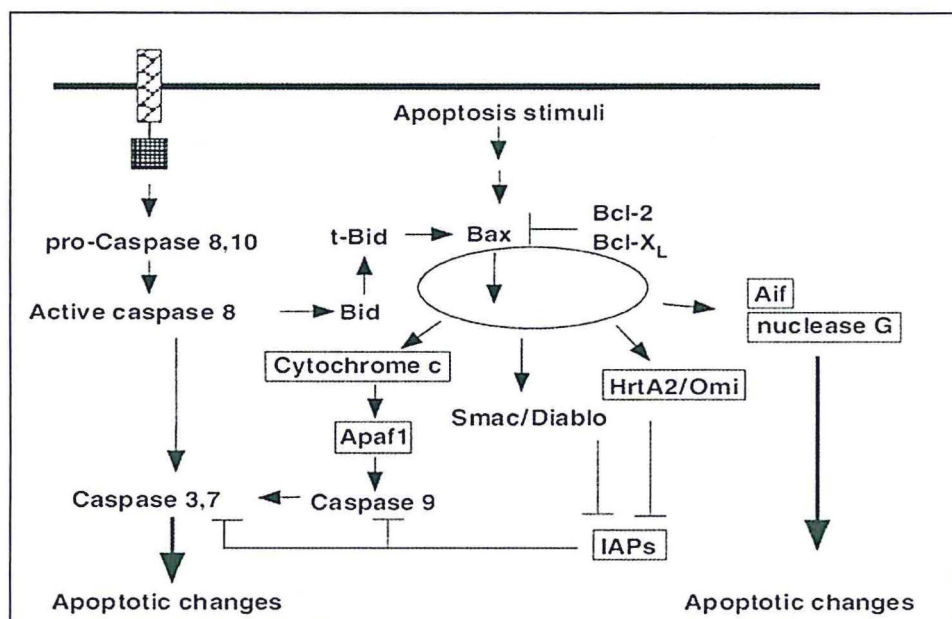
### Question 7

[17]

- (a) Briefly describe the stages of apoptosis.
- (b) The figure below shows two pathways utilised during the process of apoptosis. Name the pathways and give a detailed description on how the key players enable apoptosis.

(5)

(12)



THE END