THE OPEN UNIVERSITY OF SRI LANKA
14 SEP 2020
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THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF PHARMACY
ACADEMIC YEAR 2019/2020 – SEMSETER I

BACHELOR OF PHARMACY HONOURS

FMU6300- PHARMACEUTICAL BIOTECHNOLOGY AND GENETIC ENGINEERING

FINAL EXAMINATION

DURATION: THREE HOURS

DATE: 14th SEPTEMBER 2020 TIME: 01.30 PM – 04.30 PM

Part B (20 marks)

01.

1.1 What are the essential elements of an expression vector? (04 marks)

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1.2 Name two reporter genes (02 mark)

I.....

II.....

1.3 Name four (04) different types of cloning vectors and their relative insert sizes (04 marks)

I.....

II.....

III.....

IV.....

02.

2.1 Give three (03) expected benefits of genomic medicine. (03 marks)

I.....

II.....

III.....

2.2 Name two (02) approaches of target validation in drug discovery. (02 marks)

I.....

II.....

2.3 State three (03) applications of cell culture. (03 marks)

I.....

II.....

III.....

2.4 Provide the two (02) basic modes of actions used in the antibiotic classification (02 marks)

I.....

II.....

Part C (60 marks)

01.

1.1 Consider statement; "Researchers were able to clone a gene". What is meant by the term "clone"? (01 mark)

1.2 Compare and contrast genomic library with cDNA library. (06 marks)

1.3 Briefly explain the principle behind blue white colony selection. (04 marks)

1.4 Assume that you have constructed a genomic library of a pathogenic bacterium having a genome of 50 Mb using a plasmid vector of 10 kb insert size. Using the genome equivalent theory, determine how many genomic clones must be screened to find your gene of interest at 99% confident? (04 marks)

02.

2.1 Name two (02) methods of transformation used in molecular biology (02 marks)

2.2 What is meant by a "competent bacterial cell?" (02 marks)

2.3 With the appearance of COVID-19 pandemic, qRT PCR based virus detection is often discussed.

a. What is qRT PCR stands for? (04 marks)
b. What is the key enzyme used in this type of PCR? (02 marks)
c. How it differs from conventional PCR? (04 marks)
d. Why conventional PCR is failed in detecting COVID-19? (01 mark)

03.

3.1 Briefly explain why blood group O is considered as a universal donor while AB group is considered as a universal acceptor. (03 marks)

3.2 Explain the importance of "RhoGam" vaccine. (03 marks)

3.3 Briefly explain "enzyme immobilization" and name four (04) different techniques used for the immobilization of enzymes. (04 marks)

3.4 Provide five (05) applications and uses of enzyme papain. (05 marks)

04.

4.1 Briefly explain the metabolic role of the following hormones. (07 marks)

a. Adrenocorticotropic hormone (ACTH)
b. Thyroid hormone

4.2 With an appropriate example briefly explain the importance of phramacogenomics. (04 marks)

4.3 Explain the functional importance of Single Nucleotide Polymorphisms (SNPs) in human genome. (04 marks)