Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER III
SESSION 2018/2019

COURSE NAME	:	CELL AND TISSUE ENGINEERING TECHNOLOGY
COURSE CODE	:	DAK 22203
PROGRAMME	:	DAK
EXAMINATION DATE	:	AUGUST 2019
DURATION	:	2 HOURS 30 MINUTES
INSTRUCTION	:	ANSWER ALL QUESTIONS

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

Q1 (a) Describe the elements of aseptic environment.

(i) Area (2 marks)

(ii) Work Surface (2 marks)

(iii) Personal Hygiene (2 marks)

(iv) Reagents and Media (2 marks)

(v) Cultures (2 marks)

(b) Write the procedure for sterile handling during pipetting in laboratory. (3 marks)

(c) Discuss the mechanism of substances movement across the cell membranes. (6 marks)

(c) Relate **three (3)** factors that initiate autophagy process in cell. (6 marks)

Q2 (a) Describe **three (3)** purpose of artificial media. (3 marks)

(b) (i) Discuss the function of antibiotic in animal culture media. (2 marks)

(i) Write the disadvantage of using antibiotic in culture media. (3 marks)

(c) Discuss the procedure to maintain physicochemical properties of pH, temperature and foaming during incubation of cell culture. (12 marks)

(d) (i) Describe **three (3)** use of plant cell culture technology. (3 marks)

(ii) Define photomorphogenesis. (2 marks)

Q3 (a) State the importance of cell quantification in bio product industry.
(2 marks)

(b) Draw in detail procedure to quantify cell using uv-vis and cell dry mass.
(6 marks)

(c) Name and sketch growth phase involved during fermentation of cells in batch mode.
(5 marks)

(d) Identify the importance of knowing growth curve and kinetic modeling of fermentation process in industries.
(4 marks)

(e) Compare batch, fed batch and continuous bioreactor in a table.
(8 marks)

Q4 (a) Draw the process of DNA recombinant and explain each process.
(10 marks)

(b) Describe how technology of DNA recombinant is beneficial in agriculture sector.
(4 marks)

(c) Explain the role of Lambda (λ) phage as vector during DNA Recombination.
(3 marks)

(d) Write ethical issues related to tissue engineering for the followings.

(i) Embryonic stem cell
(2 marks)

(ii) Animal research
(2 marks)

(iii) Organ regeneration
(2 marks)

(iv) Gene therapy
(2 marks)

- END OF QUESTION -