UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2014/2015

COURSE NAME	:	CONCRETE TECHNOLOGY
COURSE CODE	:	BFS40603
PROGRAMME	:	4 BFF
EXAMINATION DATE	:	DECEMBER 2014/ JANUARY 2015
DURATION	:	3 HOURS
INSTRUCTIONS	:	ANSWER ANY **FOUR (4)** QUESTIONS ONLY

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

Q1 (a) Explain briefly the pozzolanic reactions in concrete containing amorphous biomass silica ash.

(5 marks)

(b) Explain the strength development and permeability of concrete containing biomass silica ash under different curing conditions.

(10 marks)

(c) Propose a project to study the effect of pozzolanic materials on concrete durability. Illustrate with appropriate concrete technology foresight.

(10 marks)

Q2 (a) Explain the synthesis of biomass silica ash and aggregate to produce a high performance sustainable concrete.

(5 marks)

(b) Explain the mathematical relationship for carbonation and permeability of concrete. Describe the concrete carbonation test.

(10 marks)

(c) State with infographics and graphs the long term effect of alternative aggregates in concrete durability.

(10 marks)

Q3 (a) Specify particle size distribution of aggregate and mix proportion for pervious concrete.

(5 marks)

(b) Explain the method to determine void ratio of pervious concrete.

(10 marks)

(c) Describe the design and use of pervious concrete in pavement. Illustrate with appropriate figures the application of porous concrete in a university campus.

(10 marks)

Q4 (a) Describe briefly the mix design of foamed concrete as a sustainable material for stabilization of soft soil.

(5 marks)

(b) Explain briefly a dynamic probe test apparatus to assess the in-situ surface hardness of foamed concrete.

(10 marks)

(c) Explain the calibration chart of the dynamic probe test on foamed concrete subbase on soft soil.

(10 marks)

Q5 (a) Explain briefly the development of an amorphous biomass silica ash for high early strength concrete.

(5 marks)

(b) Describe the use of a controlled density self-compacting concrete reinforced with bamboo strip for the development of a sustainable pontoon marina.

(10 marks)

(c) Explain the technical, environmental and economical advantages of concrete for an insulated cabin installation.

(10 marks)

Q6 (a) Tabulate the mix proportion of geopolymer concrete containing biomass aggregate and recycled polymeric fibre for enhanced flexural strength and durability.

(5 marks)

(b) Describe the properties of concrete stated in **Q6** (a) for use as soft soil subbase system.

(10 marks)

(c) Describe the mathematical modeling of a carbon sequestration media (CSM) and explain the performance of CSM with a data sheet and graphs.

(10 marks)

- END OF QUESTION -