Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2021/2022

COURSE NAME	:	BULDING CONSTRUCTION II (DESIGN AND DETAILING)
COURSE CODE	:	BFR 32003
PROGRAMME CODE	:	BFR
EXAMINATION DATE	:	JANUARY / FEBRUARY 2022
DURATION	:	3 HOURS
INSTRUCTION	:	1. ANSWER **FOUR (4)** QUESTIONS ONLY. 2. THIS FINAL EXAMINATION IS AN **ONLINE** ASSESSMENT AND CONDUCTED VIA **CLOSE BOOK**.

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

Q1 Among the ancient Assyrians and Babylonians, the bonding substance most often used was clay. The Egyptians developed a substance more closely resembling modern concrete by using lime and gypsum as binders. Lime or calcium oxide, derived from limestone, chalk, or (where available) oyster shells, continued to be the primary pozzolanic, or cement-forming, agent until the early 1800s. In 1824 an English inventor, Joseph Aspdin, burned and ground together with a mixture of limestone and clay. This mixture, called portland cement, has remained the dominant cementing agent used in concrete production.

(a) List **FIVE (5)** components of concrete.

(5 marks)

(b) With aid of illustration, explain types of formwork used in concrete works and how to apply formwork for in-situ concrete on site.

(8 marks)

(c) Workability is one of the physical parameters of concrete that affects the strength and durability and the cost of labor and appearance of the finished product. Explain in detail the tests on concrete carried out to test its workability and procedures.

(12 marks)

Q2 Industrialised Building System (IBS) is a construction method where the components are manufactures in the factory in a controlled and monitored environment. The Construction Industry Development Board (CIDB) classifies IBS in six major classifications based on different structural aspects.

(a) Explain the fabrication process of IBS.

(8 marks)

(b) List the IBS classifications in table as mentioned by CIDB.

(5 marks)

(c) Precast concrete stairs are part of the IBS component. Sketch the detailing for precast concrete staircase.

(12 marks)

Q3 You have been appointed as the Architect for a food manufacturing factory project in Shah Alam, Selangor. The client insists on using steel framing construction system to save time and cost.

(a) Prescribe the steel construction in terms of advantages and disadvantages.

(4 marks)

(b) With aid of illustration, provide methods and the application procedure of fireproofing for steel beam.

(9 marks)

(c) Sketch the detailing of steel construction process of;

(i) Column to foundation

(ii) Beams to column

(12 marks)

Q4 Long-span buildings create unobstructed, column-free spaces greater than 30 meters for a variety of functions. These include activities where visibility is important for large audiences (auditoriums and covered stadiums), where flexibility is important (exhibition halls and certain types of manufacturing facility), and where large movable objects are housed (aircraft hangars).

(a) Define **TWO (2)** methods to classify long-span structures.

(2 marks)

(b) List **THREE (3)** materials that can be used to construct long-span structure.

(3 marks)

(c) One of the ways in classifying long-span structure is through the structural active systems.

(i) Define Form Active structural systems.

(ii) Illustrate **FOUR (4)** samples of Form Active structural system.

(10 marks)

(d) Concrete long-span structures are designed to withstand the load applied to the structure.

(i) Illustrate **THREE (3)** types of concrete long-span structures.

(ii) Explain the load transfer of the structure.

(10 marks)

– END OF QUESTIONS –