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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2012/2013**

COURSE NAME : BUILDING CONSTRUCTION
COURSE CODE : BFB 4083 / BFB 40803
PROGRAMME : 4 BFF
EXAMINATION DATE : JUNE 2013
DURATION : 3 HOURS
INSTRUCTION : ANSWER **4 (FOUR)** QUESTIONS

THIS PAPER CONSISTS OF SEVEN (7) PAGES

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- Q1**
- (a) The objectives of site investigation (SI) have been defined by the various Codes of Practice (BS CP 2001:1950, 1957; BS 5930:1981). Briefly explain **FOUR (4)** main objectives of SI in building construction.
(4 marks)
 - (b) There are 2 types of soil samples namely disturbed and undisturbed. Differentiate both types of samples in terms of meaning, the types of soil sampler used, method of penetration and appropriate soil types.
(8 marks)
 - (c) Reconnaissance surveys represent a type of field survey that is often used to gather initial information regarding the presence or absence of historic properties within a project area. Identify **TWO (2)** purpose, procedure and requirement of site reconnaissance.
(6 marks)
 - (d) The rapid technological development has transformed our work style and speed up the process of task with the aid of the latest equipment. State and defend your opinion on the effectiveness of using new technology in the setting out work of a building.
(7 marks)
- Q2**
- (a) There are many techniques for ground improvement. Although less widely used, it is still capable of providing economic technical solutions for various types of ground weaknesses. Discuss **FIVE (5)** methods for ground improvement.
(10 marks)
 - (b) With the aid of sketches, explain the following types of retaining wall.
 - (i) Gravity Retaining Wall
 - (ii) Semi-gravity Retaining Wall
 - (iii) Cantilever Retaining Wall
 - (iv) Counterfort Retaining Wall(12 marks)
 - (c) Explain how slab can be designed based on two conditions.
(3 marks)

- Q3** (a) Distinguish between shrinkage and swell. (4 marks)
- (b) Based on the data from **Table 1**, calculate Mass Diagram assuming shrinkage is 25% and sketch the graph.

Table 1 : Mass Diagram

Station	End Area (ft ²)		Vol Cut (yd)	Vol Fill (yd)	Adjusted Fill (yd)	Mass Diagram Ordinate
	Cut	Fill				
0	45	0				
1	145	25				
2	165	30				
3	65	121				
4	45	115				
5	65	135				
6	135	55				

(12 marks)

- (c) As a civil engineer we have to be concern on health and safety issues especially during the construction process and also towards achieving a zero accident in a construction project. Categorize the action that should be taken and should be prevented during a dewatering process in a construction project.

(9 marks)

- Q4** (a) The purpose of a partition wall is a room's separator or dividing a space. Partition walls are usually not load-bearing. With the aid of sketches, describe the method of constructing a wooden frame for plywood partition with size 2.5 m high x 8 m wide.

(10 marks)

- (b) Identify **THREE (3)** essential factors for setting out a roof that should be considered.

(6 marks)

- (c) Despite the plausible advantages and strong support from the government, IBS adoption in Malaysia has yet to obtain a good response. Set up the recommendations to overcome barriers of implementing IBS in the Malaysian building industry.
(9 marks)
- Q5** (a) Wallpaper is a type of wall covering used in both commercial and residential applications. Wallpaper can be applied to practically any substrate when properly prepared. With the aid of sketches, describe methods of installing wallpaper as a wall finishing material.
(15 marks)
- (b) The down-conductor system should provide multiple parallel paths for the discharge of energy to the ground. In some cases it may be practical to increase the number of down-conductors to reduce the separation requirements. Write **FIVE (5)** characteristics a down-conductor system.
(10 marks)
- Q6** (a) Road is one of the most common mode of transport . With the aid of a sketch, define clearly each of the following road layer materials :
- i. Wearing Course
 - ii. Binder Course
 - iii. Sub grade
 - iv. Sub Base
 - v. Base Course
- (15 marks)
- (b) There are two categories of home water supply namely direct and indirect. Make **FIVE (5)** comparisons between the two systems.
(10 marks)

END OF QUESTIONS

- Q1**
- (a) Objektif penyiasatan tapak (SI) telah ditentukan oleh pelbagai Kod Amalan (BS 2001:1950 CP, 1957; BS 5930:1981). Terangkan secara ringkas **EMPAT (4)** objektif utama SI dalam pembinaan bangunan. (4 markah)
- (b) Terdapat 2 jenis sampel tanah terganggu dan tidak terganggu. Membezakan dari segi makna, jenis sampel tanah yang digunakan, kaedah penembusan dan jenis tanah yang sesuai. (8 markah)
- (c) Kajian *Reconnaissance* mewakili sejenis kajian lapangan yang sering digunakan untuk mengumpul maklumat awal mengenai kehadiran atau ketiadaan harta bersejarah dalam kawasan projek. Kenal pasti **DUA (2)** tujuan, prosedur dan keperluan peninjauan tapak. (6 markah)
- (d) Kepsatan teknologi telah mengubah gaya kerja dan mempercepatkan proses tugas dengan bantuan peralatan terkini. Sila mempertahankan pendapat anda mengenai keberkesanan teknologi baru dalam kerja penetapan bangunan. (7 markah)
- Q2**
- (a) Terdapat banyak teknik dalam pembaikan tanah, kurang digunakan secara meluas untuk mampu menyediakan penyelesaian teknikal ekonomi untuk pelbagai jenis miskin tanah. Bincangkan **LIMA (5)** kaedah untuk penambahbaikan tanah. (10 markah)
- (b) Dengan bantuan lakaran, terangkan jenis berikutan tembok penahan.
- (i) *Gravity Retaining Wall*
 - (ii) *Semi-gravity Retaining Wall*
 - (iii) *Cantilever Retaining Wall*
 - (iv) *Counterfort Retaining Wall*
- (12 markah)
- (c) Papak boleh direka berdasarkan dua keadaan. Menerangkan. (3 markah)

- Q3** (a) Membezakan antara pengecutan dan pengembangan. (4 markah)
- (b) Berdasarkan data dari **Jadual 1** di bawah, kira *Mass Diagram* menganggap pengecutan ialah 25% dan lakarkan graf.

Jadual 1: Mass Diagram

Station	End Area (ft ²)		Vol Cut (yd)	Vol Fill (yd)	Adjusted Fill (yd)	Mass Diagram Ordinate
	Cut	Fill				
0	45	0				
1	145	25				
2	165	30				
3	65	121				
4	45	115				
5	65	135				
6	135	55				

(12 marks)

- (c) Sebagai seorang jurutera Awam kita mempunyai kebimbangan mengenai isu-isu kesihatan dan keselamatan terutama semasa proses pembinaan dan juga ke arah mencapai kemalangan sifar dalam projek pembinaan. Kategorikan perkara-perkara yang boleh dan tidak boleh dilakukan sebagai langkah berjaga-jaga penyahairan semasa proses pembinaan (9 markah)

- Q4** (a) Tujuan dinding partision adalah pemisah bilik atau membahagikan ruang. Dinding partision biasanya tidak menanggung beban. Dengan bantuan lakaran, terangkan kaedah pembinaan rangka kayu untuk partition papan lapis dengan saiz 2.5 m tinggi x 8 m lebar. (10 markah)
- (b) Kenalpasti **TIGA (3)** factor penting untuk menetapkan bumbung yang perlu dipertimbangkan. (6 markah)
- (c) Walaupun kelebihan munasabah dan sokongan yang kuat daripada kerajaan, penggunaan IBS di Malaysia masih belum mendapat sambutan yang baik. Sediakan cadangan untuk mengatasi halangan-halangan pelaksanaan IBS dalam industri pembinaan Malaysia. (9 markah)

- Q5** (a) Wallpaper adalah sejenis meliputi dinding yang digunakan dalam kedua-dua aplikasi komersil dan kediaman. Wallpaper boleh digunakan hampir mana-mana substrat apabila ia betul-betul bersedia. Dengan bantuan lakaran, terangkan kaedah memasang kertas dinding sebagai bahan dinding penamat. (15 markah)
- (b) *Down-conductor system* perlu menyediakan pelbagai laluan selari bagi pelepasan tenaga ke tanah. Dalam beberapa kes ia mungkin praktikal untuk meningkatkan bilangan ke-konduktor untuk mengurangkan keperluan pemisahan. Tulis **LIMA (5)** ciri-ciri *down-conductor system*. (10 markah)
- Q6** (a) Road adalah salah satu cara yang paling biasa pengangkutan. Dengan bantuan lakaran, mentakrifkan dengan jelas setiap satu daripada bahan-bahan lapisan jalan berikut:
- i. *Wearing Course*
 - ii. *Binder Course*
 - iii. *Sub grade*
 - iv. *Sub Base*
 - v. *Base Course*
- (15 markah)
- (b) Terdapat dua kategori bekalan air di rumah, secara langsung dan tidak langsung. Buat lima (5) perbezaan antara kedua-dua sistem. (10 markah)

SOALAN TAMAT