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PROFESSIONAL COMPETENCY EXAMINATION 2026

INFORMATION FOR APPLICANTS

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1. INTRODUCTION

In line with the Registration of Engineers Act 1967 (Revised 2015), only registered Professional Engineers with a Practising Certificate can submit engineering plans to Local Authorities. In order to apply for a Practising Certificate, Professional Engineers must sit and pass the Professional Competency Examination (PCE) in their relevant branch of practice.

Presently, the PCE for the following branches of practice are in place:

No.	Branch of engineering
1.	Civil engineering
2.	Mechanical engineering
3.	Electrical engineering
4.	Chemical engineering
5.	Environmental engineering
6.	Mining engineering
7.	Geotechnical engineering
8.	Structural engineering
9.	Transportation engineering
10.	Automotive engineering
11.	Road Safety Audit (RSA)

At present, the Board does not conduct the PCE for engineering branches other than those listed above.

This document is issued by the Board of Engineers Malaysia as information for Professional Engineers to prepare for the Professional Competency Examination.

2. AIMS OF THE PROFESSIONAL COMPETENCY EXAMINATION

The Professional Competency Examination will test the candidates within the limits of “professional engineering services” as defined in the Registration of Engineers Act 1967.

The examination will also test the candidate’s knowledge, experience and application of:

- (a) Regulations and rules of engineering practice by BEM
- (b) Statutory laws, codes, regulations
- (c) Standards of professionalism and ethical behaviour imposed by BEM

SAMPLE QUESTIONS

Geotechnical Engineering Paper 1

Objective Questions

- Q1. Which of the following is NOT the purpose of slope stability analysis?
- A. To predict the weathering profile in a residual weathered formation
 - B. Assess slope stability under short-term and long term condition
 - C. Evaluate possibility of landslides involving natural and existing engineered slopes
 - D. Redesign failed slopes and plan for design of preventive and remedial measures
 - E. Analyze landslides and understand failure mechanism and influence of environmental factors

SAMPLE QUESTIONS

Geotechnical Engineering Paper 1

Objective Questions

Q2. Which of the following statements is/are TRUE?

- i. A transverse load applied to a group of vertical piles with a fixed head condition may result in a combination of compression, tension and transverse forces in the individual piles
- ii. If the load capacity of piles is fully derived from end-bearing founded on bedrock, group reduction factors generally need not be applied
- iii. The maximum axial compressive stress under working load that may be applied to a prestressed concrete pile acting as a short strut should be $\frac{1}{4}$ x (specified works cube strength at 28 days plus the prestress after losses)
- iv. During bored piling process, bentonite slurry is kept below groundwater level to prevent formation of bentonite cake
- v. Bentonite is a clay which principally contains kaolinite

- A. (i) and (ii)
- B. (i) and (v)
- C. (ii) and (iii)
- D. (iii) and (iv)
- E. (iv) and (v)

SAMPLE QUESTIONS

Geotechnical Engineering Paper 2

Subjective Questions

- Q1. 1. List and explain three (3) circumstances under which a pile foundation is required instead of shallow pad footing.

(20 marks)

2. Why base resistance is NOT ADVISABLE to be adopted in the design of micropile socketed in karstic limestone bedrock?

(10 marks)

3. Bored pile of 900mm diameter and 48m length is drilled and cast in the ground with the details as shown in the table.

Layer	Thickness (m)	Average SPT N
1	10	12
2	15	15
3	6	25
4	7	32
5	20	100

The design parameters and criteria are:

- i. Ultimate unit shaft resistance, $f_u = 3N$ kPa ($N < 20$)
- ii. Ultimate unit shaft resistance, $f_{su} = 2N$ kPa ($N > 20$)
- iii. f_{su} is limited to 150 kPa
- iv. Ultimate unit base resistance, $f_{bu} = 40N$ kPa
- v. f_{bu} is limited to 3000 kPa
- vi. FOS (Shaft) = 2 and FOS (Base) = 3

Ultimate Shaft Resistance					
Layer	Thickness	Average SPT	f_{su}	f_{su} Used	
1	10	12	36	36	1017.9
2	15	15	45	45	1908.5
3	6	25	50	50	848.2
4	7	32	64	64	1266.7
5	20	100	200	150	8482.3
					13524

Ultimate Base Resistance					
Layer	Thickness	Average SPT	f_{bu}	f_{bu} Used	
1	10	12	480	480	
2	15	15	600	600	
3	6	25	1000	1000	
4	7	32	1280	1280	
5	20	100	4000	3000	1909.0

- vii. Concrete Grade 35 N/mm²
- viii. steel $f_y = 500$ MPa (high yield)
- ix. Reinforcement cover = 75mm

(a) Calculate the maximum allowable structural compression capacity of the pile based on BS 8004.

(10 marks)

(b) Calculate the allowable geotechnical compression capacity of the pile.

(30 marks)

(c) The pile is subjected to a service moment of 750 kNm and service vertical load of 5000 kN. Design the main steel reinforcement bars. Assume load factor of 1.5 for all loadings and 25mm as main bar. (Design chart for circular column attached).

(30 marks)