



Workshop on PCE Candidates: Technical Paper (Electrical)

Presented by:

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Workshop 3: 23rd August 2023



Dubai 2,
MATRADE Exhibition & Convention Centre



PART B – Electrical Paper 1 & 2

Category	Weightage
Regulatory Practice	20%
Electricity Supply System	25%
System Protection	15%
Building Systems	30%
Infrastructure	10%



Electrical Syllabus Outline - 1

A. Regulatory Practice

- Registration of Engineers Act 1967
- Street, Drainage and Building Act
- Uniform Building By-Law
- The Electricity Supply Act 1990 and Sarawak Electricity Ordinance
- The Energy Commission Act 2001
- Factories and Machinery Act 1967
- Fire Services Act 1988 (Act 341)
- The Communications and Multimedia Act 1998



Electrical Syllabus Outline - 2

B. Electricity Supply System

- Generation, transmission and distribution system
- High Voltage System
- Generation System
- Medium Voltage System and Equipment
- Low Voltage Distribution System
- Power Quality and Electromagnetic Compatibility





Electrical Syllabus Outline - 3

C. System Protection

- Basic concepts
- Short Circuit & System Discrimination
- Types of protection relay
- Instrumentations
- Unit Protection Requirement





Electrical Syllabus Outline - 4

D. Building Systems

- Lighting System
- Lightning Protection
- Fire Protection For Electrical Engineers
- Extra Low Voltage System
- Vertical and Horizontal transportation
- Hazardous Environment
- Energy Efficiency





Electrical Syllabus Outline - 5

E. Infrastructure

- Exterior Lighting
- Traffic Control System
- Special Systems

Common Requirements

- Work Acceptance
- Ingress Protection (IP) Classification for Enclosures
- Switchboard forms of Segregation



PART B: Electrical Paper 1 - SAMPLE QUESTION

- Q1. Which of the following statements does not describe the function of the Minister under “The Electricity Supply Act”
-
- A. Efficient use of energy
- B. Power to fix tariff for electricity
- C. Competency of persons in charge
- D. Licensing of electrical installation
- E. Control of electrical equipment and plant for safety

[Regulatory Practice]

PART B: Electrical Paper 1 - SAMPLE QUESTION

- Q2. Which is the best installation method to minimize eddy current losses in single core cable sheaths ?
-
- A. Flat formation
- B. Trefoil formation
- C. Alternate formation
- D. Cross bonding of sheaths
- E. Bundle in air

[Electrical Supply System]



PART B: Electrical Paper 1 - SAMPLE QUESTION

- Q3. What is expected short circuit current at 400V if a 1000kVA transformer of 11/0.4kV with an impedance of 5% is connected to a 11kV infinite bus ?
-
- A. 8,000 Amps
- B. 1,250 Amps
- C. 50,000 Amps
- D. 2,8886 Amps
- E. 28,886 Amps

[System Protection]



PART B: Electrical Paper 2 - SAMPLE QUESTION

- Q1. You are requested to plan the electrical installation for a modern 8-storey commercial building with the following information:
 - a. Building aircond with 1x35HP ACPU service basement and ground floor, 7 sets 17HP APU for each floors, 1x7HP and 1x25HP ACPU on the 8th Floor
 - b. 1x15HP lift motor at roof and 1x5HP water pump at basement floor
 - c. Lighting and other power loads per floor (including basement and ground) at estimated 5kW and 4kW respectively.
 - d. The landlord will be responsible for the consumption with respect to aircond on all floors, lift, water pumps, lighting and power in stairs and basement.
 - e. The basement floor will house TNB substation and consumer main switch board whilst the rest of the floors will be sublet for offices.
 - f. Draw a single line diagram of the installation showing the sizes of main conductors, method of running, rating of switches and metering arrangement on the main intake board and individual metering by the TNB for each floor.

[Building Systems]



PART B: Electrical Paper 2 - SAMPLE QUESTION

- Q2. Answer completely the following two questions:
 - a) As a electrical consulting engineer, described clearly the general procedures which would be established for acceptance of works under your supervision.
 - b) Describe the role of SIRIM certification in the work acceptance procedure.

[Infrastructure & Common Requirements]





Electrical Paper 2 Expectations

What are some of the expectations that the examiners have for those taking the Professional Competency exams?

1. Being familiar with all the regulatory requirements in this country if you want to practice here. The Court will not accept such excuses given that you only work in a silo environment and you are not aware of certain laws.
2. You must be competent in all areas of your discipline including high voltage, transmission and generation or even high rise. Once you are given the competency licence, you are allowed to do design for all areas. There is no such thing for a PEPC given with restriction to only low voltage installations.



Electrical Paper 2 Expectations

1. Technical competency is also very important as people can get electrocuted, electrical installations being terribly over-designed leading to wastages, electrical equipment not adequately protected by relays which may cause the equipment to explode and killing people standing nearby.
2. You are expected to learn from others in areas that you have no working experience. Be pro-active to ask questions on other areas you are not competent in and especially on understanding the reasons behind why things are done in a certain way.
3. Our questions will test you on your conceptual understanding. Calculations, if any will be very basic.



PCE TIPS

1. Time Management

- **Paper 1:** 40 Qs in 90 mins - average 2 mins/Q with 10 mins spare for checking/collating
- Answer all those questions you know first and then come back to those you are not sure.
- **Paper 2:** 3 Qs in 90 mins - 30 mins/Q.
- Use the extra time given at the beginning to read the Qs thoroughly and select the 3 out of the 5 Qs to answer.



PCE TIPS

2. Dos and Don't in Answering the Long Question.

Dos

- a) It is essential you must **read and understand** the Question properly and then **answer to the point**. Many had answered questions off tangent and not addressing what the question has asked for.

- b) Do know your engineering concepts well. Questions will be testing your understanding of engineering concepts and how you can apply in real live situation, in addition to complying with statutory regulations.





PCE TIPS

Don't

- a) Never copy wholesale from any hand book, seminar notes or text book to answer a question and hoping that in the massive copying the examiner will be able to search for the right answer. Very likely the answer given will not be directly addressing the question being asked. Precious time will be wasted to copy answers from outside sources rather than answering through your knowledge and experience. Answers that go off tangent will earn **zero mark**.





Q & A





THANK YOU



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