

SYLLABUS (PART B) – MECHANICAL

1. Air Conditioning and Ventilation System

- i. Relevant Regulations
 - a. Uniform Building By-Laws, 1984 / Sarawak Building Ordinance, 1994
 - b. Certificate of Completion and Compliance / Certificate of Fitness for Occupation / Occupation Certificate / Occupation Permit
 - c. Environmental Quality (Refrigerant Management) Regulations
- ii. Applicable Standards
 - a. ASHRAE Standards
 - b. MS 1525 : Code of Practice on Energy Efficiency & Renewable Energy for Non Residential Buildings
 - c. MS 1472 : Smoke Control in Protected Escape Routes using Pressurization
 - d. MS 1780 : Smoke Control using Natural (Displacement) or Powered (Extracted) Ventilation
 - e. MS 2586-7 : Smoke duct sections
 - f. MS 2449 : Performance rating of water-chilling packages using the vapour compression cycle
 - g. MS 2578-2 : Cooling tower
- iii. Type of Systems and Local Applications
 - a. Air-cooled Split Systems
 - b. VRF Systems
 - c. Package Units – Air-cooled & Water-cooled
 - d. Centralized Chilled Water Systems
 - e. District cooling systems
- iv. Design Considerations
 - a. Design Parameters – Temperatures, Air movement etc.
 - b. Overall Thermal Transfer Value (OTTV)
 - c. Roof Thermal Transfer Value (RTTV)
 - d. Energy Efficiency & Building Energy Intensity
 - e. Sustainability and Green Building Index

2. Fire Protection

- i. Relevant Regulations
 - a. Uniform Building By-Laws, 1984 / Sarawak Building Ordinance, 1994

- b. Fire Services Act, 1988
 - c. Fire Services (Designated Premises) Order 1998
 - d. Fire Services (Fire Certificate) Regulations, 2001
 - e. Certificate of Completion & Compliance / Certificate of Fitness for Occupation/
Occupation Certificate / Occupation Permit
- ii. Applicable Standards
- a. MS 1489 : Hydrant Systems, Hose Reels and Foam Inlets
 - b. MS 1539 : Portable Fire Extinguishers
 - c. MS 1745 : Fire Alarm and Detection Systems
 - d. MS 1910 : Automatic Sprinkler Systems
 - e. MS 1590 : Carbon Dioxide Extinguishing Systems
 - f. Environmental Quality (Halon Management) Regulations 1999
- iii. Fire Safety Requirements
- a. Type of occupancy and purpose groups
 - b. Fire safety systems for different purpose groups
 - c. Limits of compartmentation in buildings
 - d. Firefighting systems required for various types of buildings
- iv. Design Considerations
- a. Portable fire extinguishers
 - b. Hose reel systems
 - c. Dry riser systems
 - d. Wet riser systems
 - e. Automatic sprinkler systems
 - f. Gaseous extinguishing systems
 - g. Fire alarm and detection systems
 - h. Voice evacuation and firemen intercom systems
 - i. Emergency generating systems
 - j. Emergency lighting and exit signs
 - k. Fire lifts
- v. Local Practices
- a. Design submission procedures to Jabatan Bomba dan Penyelamat Malaysia.
 - b. Documents required for application for inspection
 - c. Application of Forms C1, C2 and C3

3. Hydraulics

- i. Relevant Regulations
 - a. Water Services Industry Act, 2006
 - b. Water Services Industry (Water Reticulation and Plumbing) Rules
 - c. Water Services Industry (Water Services Fees and Charges) Regulations
 - d. SPAN Uniform Technical Guidelines
 - e. Sabah Land Ordinance Water Supply Enactment 2003
 - f. Water Service Regulations under the following Sarawak Act - JKR, LAKU & Water Boards for Sarawak
 - g. Drainage, Sanitation and Sanitary Plumbing By-Laws, 1973
 - h. Certificate of Completion & Compliance / Certificate of Fitness for Occupation / Occupation Certificate / Occupation Permit
- ii. Applicable Standards
 - a. BS EN 6700 : Water Supply for Domestic Use within Buildings
 - b. MS 1402 : Code of Practice for Sanitary Systems in Building
- iii. Design Considerations
 - a. Cold water storage required
 - b. Design pressures
 - c. Water storage tanks
 - d. Booster pumps
 - e. Pump controls
 - f. Sanitary plumbing systems
 - g. Kitchen waste plumbing
 - h. Hot Water Plumbing
 - i. Metering
- iv. Local Practices
 - a. Design submission procedures to water service licensees
 - b. Design submission to local authorities for sanitary plumbing

4. Other Mechanical Systems

5. Gas Distribution

- i. Relevant Regulations
 - a. Gas Supply Regulations 1997
- ii. Applicable Standards
 - a. MS 830 : Code of Practice for Storage, Handling and Transportation of LPG

- b. MS 930 : Code of Practice for the Installation of Fuel Gas Piping Systems and Appliances

6. Lifts and Escalators

- i. Relevant Regulations
 - a. Gas Supply Regulations 1997 Factory and Machinery (Electric Passenger and Goods Lift) Regulations 1967
 - b. Certificate of Completion & Compliance / Certificate of Fitness for Occupation / Occupation Certificate / Occupation Permit
- ii. Applicable Standards
 - a. BS 2655 : Specification for lifts, escalators, passenger conveyors and paternosters. General requirements for electric, hydraulic and hand powered lifts.