KEMENTERIAN SUMBER MANUSIA

LEMBAGA PENILAIAN KOMPETENSI KESELAMATAN DAN KESIHATAN PEKERJAAN

PEPERIKSAAN JURUTEKNIK HIGIEN 2 (PEMERIKSAAN, PENGUJIAN DAN PENILAIAN KELENGKAPAN KAWALAN KEJURUTERAAN)

HIGIEN TECHNICIAN 2 EXAMINATION (INSPECTION, TESTING AND EXAMINATION OF ENGINEERING CONTROL EQUIPMENT)

KERTAS 3

PAPER 3

KEMAHIRAN MENGENDALIKAN PERALATAN

HANDLING EQUIPMENT SKILL

INSTRUCTION

CANDIDATES MUST READ THE FOLLOWING INSTRUCTIONS CAREFULLY AND FOLLOW ALL INSTRUCTIONS.

The examination will be based on the handling equipment skill. Candidates are required to **demonstrate equipment handling skills in the correct sequence**. Duration of handling equipment skills is **30 minutes**.

NO.	TASK
1	Type of equipments and their usage
2	Physical inspection of system's components
3	On site calibration of equipment
4	Correct method of measuring and equipment handling

1. Type of equipments and their usage

a. **Smoke Tube / Smoke Generator**

- Candidate must explain the usage of smoke tube/smoke generator during physical inspection of LEV.

b. **Anemometer**

- Candidate must show evidence that the equipment has been calibrated by manufacturer or accredited laboratory.
- Candidate must explain the usage of hot-wire anemometer for measuring capture and face velocity.

c. **Tachometer / Stroboscope**

- Candidate must show evidence that the equipment has been calibrated by manufacturer or accredited laboratory.
- Candidate must explain the usage of digital tachometer/ stroboscope for measuring fan rpm.

d. **Digital Manometer / U-tube Manometer / Pressure meter / Integrated Anemometer**

- Candidate must show equipment setting and their usage.

e. **Measuring tape / Distance meter**

- Candidate must explain the usage of measuring tape / distance meter to measure the capture distance and dimension of hood or ducting.

f. **Silicon tubing**

- Candidate must explain the usage of silicon tubing.

g. **Pitot Tube**

- Candidate must explain the usage of pitot tube.

2. Physical Inspection of System's Components

a. Candidate must visually inspect the condition of each LEV component.
b. Candidate must check air flow in front of hood using smoke tube.
c. Candidate must perform leak test at all duct joints using smoke tube.
d. Candidate must perform leak test at cyclone cleaning door using smoke tube.

3. On Site Calibration of Equipment

a. **Digital Manometer / U-tube Manometer / Pressure meter / Integrated Anemometer / Anemometer**

- Candidate must calibrate u-tube manometer before use by checking the water level inside the tube; **OR**
- Candidate must calibrate digital manometer / pressure meter / Integrated Anemometer / Anemometer before use by showing '0' reading (zeroing).

4. Correct Method of Measuring & Equipment Handling

a. **Capture Velocity**

- Candidate must measure capture velocity at the centerline from hood opening towards the contaminant generation point.
- Candidate must position the sensor of hot-wire anemometer correctly.
- Candidate must identify effective capture distance.

b. **Face Velocity**

- Candidate must measure the face velocity by dividing hood opening into several equal areas with distant in between measurement points not more than 150mm / 6 inches.
- Candidate must position the sensor of hot-wire anemometer correctly.

c. **Static Pressure**

- Candidate must use the correct connection for static pressure measurement.
- Candidate must measure static pressure at all specified points at:

  i. Hood
     - Before and after elbow.

  ii. Ducting
     - Before and after air cleaner.
     - Before and after fan.

- Candidate must mention the pressure drop across the air cleaner.
- If a u-tube manometer is used:
  i. Candidate must keep the u-tube manometer in vertical position at all time.
  ii. Candidate must read the water level at correct position to reduce parallax error.

d. **Velocity Pressure**

- Candidate must measure velocity pressure using pitot traverse at specified locations
- Candidate must insert the pitot tube at the correct position.
- If a u-tube manometer is used:
  i. Candidate must keep the u-tube manometer in vertical position at all time.
  ii. Candidate must read the water level at correct position to reduce parallax error.

e. **Fan Speed (rpm)**

- Candidate must measure the rpm at the correct pulley (Fan rpm at fan's pulley and motor rpm at motor's pulley).
- Candidate must read the display on tachometer / stroboscope when it is stable.
- Candidate must mention the fan value of rpm from the fan nameplate.