
UNIVERSITI SAINS MALAYSIA

Peperiksaan Semester Pertama
Sidang Akademik 2006/2007
*First Semester Examination
Academic Session 2006/2007*

Oktober/November 2006

EBB 399/2 - Keselamatan dan Kesihatan Pekerjaan *EBB 399/2 - Occupational Safety and Health*

Masa : 2 jam
Time : 2 hours

Sila pastikan bahawa kertas peperiksaan ini mengandungi LAPAN muka surat yang bercetak sebelum anda memulakan peperiksaan.

Kertas soalan ini mengandungi LIMA soalan.

Jawab EMPAT soalan. Jika calon menjawab lebih daripada empat soalan hanya empat soalan pertama mengikut susunan dalam skrip jawapan akan diberi markah.

Mulakan jawapan anda untuk setiap soalan pada muka surat yang baru.

Semua soalan mesti dijawab dalam Bahasa Malaysia.

Please ensure that this paper consists of EIGHT printed pages before you proceed with the examination.

This paper contains FIVE questions.

Answer any FOUR questions. If a candidate answers more than four questions, only the first four answers will be examined and awarded marks.

Answer to any question must start on a new page.

All questions must be answered in Bahasa Malaysia.

1. Sebagai Jurutera Keselamatan dalam industri bincangkan tentang pengwujudan **Sistem Pengurusan Keselamatan dan Kesihatan Pekerjaan (OSH)** yang cekap dalam aspek-aspek yang berikut:

[a] Kepentingannya pengwujudan Sistem Pengurusan OSH di tempat kerja.

(8 markah)

[b] Kelebihan Akta Keselamatan Pekerjaan dan Kesihatan Pekerjaan (OSHA 1994) jika dibandingkan dengan Akta Kilang dan Jentera (FMA 1967).

(9 markah)

[c] Manfaat dalam pelaksanaan Latihan OSH untuk pekerja di syarikat anda.

(8 markah)

2. Huraikan bagaimana anda dapat melaksanakan fasa-fasa yang berikut dalam **Konsep Bulatan Cekap (*Virtuous Circle Concept*)** untuk pengurusan Keselamatan & Kesihatan Pekerjaan (OSH) di tempat kerja:

[a] Pengurusan 'Sistem Aktif' dan 'Sistem Reaktif'.

(8 markah)

[b] Aspek pembangunan Polisi Keselamatan dan Kesihatan Pekerjaan.

(8 markah)

[c] Proses Audit untuk Keselamatan dan Kesihatan Pekerjaan di tapak.

(9 markah)

3. [a] Huraikan, jenis dan kepentingan setiap fasa, bagaimana pengurusan **Amalan Kerja Cepak** (*Efficient Worksite Practices*) dalam aspek keselamatan pekerjaan dapat dilaksanakan di sebuah tempat kerja dengan menggunakan contoh misalnya di sebuah kilang kuari atau tapak pembinaan.

(15 markah)

- [b] Terangkan **tugas-tugas harian utama** Pegawai Keselamatan dalam pelaksanaan program pengurusan sistem keselamatan pekerjaan dan kesihatan yang cekap.

(10 markah)

4. **Kes Penyiasatan Keselamatan Pekerjaan dan Kebakaran**

Syarikat ATP (M) Bhd ialah sebuah kilang pembuatan. Dalam proses pengangkutan kimia toksik oleh En. Ishak dengan mesin angkut susun; tong kimia terjatuh dan bahan kimia telah mengalir keluar ke atas lantai tempat kerja. Kerja-kerja penyelenggaraan yang melibatkan kimpalan yang berdekatan mengeluarkan percikan api yang memulakan kebakaran ke atas tumpahan kimia. Semua bahagian kilang telah habis terbakar dalam tempoh 50 minit. En. Bala, Penyelia Pengeluaran, telah cedera kerana tidak sempat keluar dari kilang apabila berlakunya kebakaran tersebut. Cik Dian, Pekerja Kilang, dalam keadaan panik telah tercedera tangannya disebabkan oleh mesin pengeluaran di tempat kerjanya. En. Tomaz, Pekerja Awam asing, telah cuba membantu merawat tangan Cik Dian tetapi telah menggunakan ubat yang salah, oleh itu tangan Cik Dian menjadi lebih teruk.

Fakta Penyiasatan:

- Mesin angkut susun dalam kejadian tersebut telah disewa daripada Syarikat AKT. Mesin angkut susun tersebut tidak ada peralatan keselamatan seperti penggera. En. Ishak ialah pekerja kontrak dan baru seminggu bekerja dengan Syarikat AKT dan tidak mengikuti langsung kursus keselamatan perkerjaan.
- Kimia toksik dan kimia-kimia yang lain telah diimport daripada negara Afrika melalui agennya di Negara Thai. Tong-tong kimia tidak ada pelekat maklumat/amaran langsung.
- En. Bala, yang cedera, tidak tahu memadamkan api walaupun telah bertugas dalam kilang ini untuk 15 tahun.
- Cik Dian ialah pekerja sambilan semasa menunggu keputusan peperiksaan SPM beliau.
- Pekerja kontrak kimpalan (WEL Engineering) telah diupah oleh Ketua Kilang Syarikat ATP. Surat Keizinan untuk kerja, '*Permit to Work*', tidak dikeluarkan oleh Pengurusan Atasan Syarikat ATP.
- En. Tomaz tidak pernah dilatih dalam Kursus Pertolongan Kecemasan.

[a] Daripada maklumat di atas; berikan dan huraikan pandangan anda tentang siapa yang bersalah dan sebabnya daripada 6 aspek fakta penyiasatan tersebut mengikut Akta OSHA dan Undang-Undang Negara Malaysia.

(15 markah)

[b] Sebagai Jurutera Keselamatan, bincangkan cadangan yang anda dapat berikan supaya kemalangan tersebut tidak berlaku lagi.

(10 markah)

5. Sebagai seorang Jurutera Keselamatan, huraikan aspek-aspek yang berikut untuk pelaksanaan **Penaksiran Risiko (*Risk Assessment*)** di tempat kerja:

[a] Takrifan di antara 'Risiko' dengan 'Penaksiran Risiko',
(6 markah)

[b] Objektif pelaksanaan 'Pengawalan Risiko' di tempat kerja,
(6 markah)

[c] Fasa-fasa pelaksanaan 'Sistem Pengawalan Risiko',
(6 markah)

[d] Kegunaan Matriks Penaksiran Risiko secara penaksiran kuantitatif.
(7 markah)

1. *As a Safety Engineer in the industry describe the means towards development of an effective Occupational Safety and Health Management System in the following aspects:*

[a] Significance in the development of Occupational Safety Management System at a work place.

(8 marks)

[b] Benefits of the Occupational Safety and Health Act (OSHA 1994) when compared to the Factory and Machinery Act (FMA 1967).

(9 marks)

[c] Advantages in the implementation of the OSH Training for staff in your company.

(8 marks)

2. *Discuss how you can carry out the following phases for the successful implementation of the 'Virtuous Circle Concept' for effective Occupational Safety and Health (OSH) at a work place:*

[a] Implementation of 'Active System' and 'Reactive System'.

(8 marks)

[b] Aspects in the development of Occupational Safety and Health Policy.

(8 marks)

[c] Audit process for Occupational Safety and Health at site.

(9 marks)

3. [a] *Deliberate, the types and significance, how **Efficient Worksite Practices** can be carried out at a work site for workplace safety using an example such as a factory, quarry or construction site.*

(15 marks)

- [b] *Describe the **major daily duties** of a Safety Officer in the implementation of an efficient occupational safety and health management programme.*

(10 marks)

4. **Occupational Safety and Fire Investigation:**

Company ATP (M) Bhd is a manufacturing plant. In the process of Mr. Ishak transporting toxic chemicals with a fork-lift, the chemical drums fell and the chemicals flowed out onto the factory floor. A welding maintenance job carried out nearby created a spark which initiated a fire from the split chemicals in the factory. The whole factory was burned to the ground in 50 minutes. Mr. Bala, the Production Supervisor, was injured from the fire since he did not get out of the burning factory in time. Ms Dian, a factory worker, in a state of panic due to the fire injured her hand in a production equipment at her work place. Mr. Tomaz, a foreign general worker, tried to offer first-aid to Ms. Dian's hand however he used the wrong medicine thus making the wound of Ms Dian's hand even worse and more painful.

Facts from Investigation:

- *The fork-lift machine involved in the incident was rented from AKT Company. The mentioned fork-lift was not installed with any safety devices such as alarms. Mr Ishak is a contract worker who has just started work for only one week at AKT Company; and had not attended any safety induction courses whatsoever.*
- *The toxic chemicals and other types of chemicals were imported from an African country via their agent in Thailand. The chemical containers were not attached with any labelling and warning stickers.*
- *Mr. Bala, who was hurt in the fire, did not know how to put out a fire even though he has been working in this factory for 15 years.*

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- *Ms Dian is a temporary staff waiting for her SPM examination results.*
- *The contract welding staff from WEL Engineering has been commissioned to carry out maintenance work by the ATP Company's Factory Manager. However no 'Permit to Work' directive for this job was ever issued by the Senior Management of ATP Company.*
- *Mr. Tomaz was never trained in First-Aid.*

[a] From the above facts as outcome of the investigation; give and discuss the rationale of your opinion on who is guilty, and in which instances, corresponding to the various 6 facts obtained from the point of view of the OSHA Act and Malaysian Law.

(15 marks)

[b] As a Safety Engineer, offer your opinion and suggestions on what needs to be done so that this unfortunate incident does not happen again.

(10 marks)

5. *As a Safety Officer, discuss the following aspects for the effective implementation of Risk Assessment at the work site:*

[a] Definition between 'Risk' and 'Risk assessment',

(6 marks)

[b] Aims of implementing Risk Assessment at work site,

(6 marks)

[c] Phases of work for carrying out 'Risk Control System',

(6 marks)

[d] Application of 'Risk Assessment Matrix' for quantitative evaluation.

(7 marks)