



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**PEPERIKSAAN AKHIR
SEMESTER II
SESI 2010/2011**

NAMA KURSUS : KEJURUTERAAN PENYENGGARAAN
DAN KESELAMATAN

KOD KURSUS : BDE 4073

PROGRAM : SARJANA MUDA KEJURUTERAAN
MEKANIKAL DENGAN KEPUJIAN

TARIKH PEPERIKSAAN: APRIL / MEI 2011

JANGKA MASA : 2 JAM

ARAHAN : JAWAB EMPAT (4) SOALAN SAHAJA
DARI LIMA (5) SOALAN YANG
DISEDIAKAN.

KERTAS SOALAN INI MENGANDUNGI LIMA (5) MUKA SURAT

SULIT

Q1 (a) Maintenance is divided by three (3) categories.

- (i) List the categories by priority; and
- (ii) Describe each category by clearly mentioning the impact of cost, time and the other factor respectively.

(9 marks)

(b) Rapid industrial growth in the country has brought in a need to pay considerable attention to the hazardous effects arising out of the working on factories as a whole.

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- (9 marks)
- (b) Rapid industrial growth in the country has brought in a need to pay considerable attention to the hazardous effects arising out of the working on factories as a whole.
- (i) Briefly explain about the Factories and Machinery Act 1967 and its Regulations.
 - (ii) Briefly explain about the Occupational Safety and Health Act 1994 and its Regulations.
- (8 marks)
- (c) Mechanical engineer must prepare their knowledge on maintenance and safety engineering.
- (i) Please describe the Building Operations and Works of Engineering Construction (Safety) Regulations 1986.
 - (ii) What is the importance of the regulation above to our economic growth?
- (8 marks)
- Q2** (a) In safety and health studies, the terms are very important to know before any decision will be made. Briefly explain:
- (i) Definition of Hazard;
 - (ii) Categories of hazard;
 - (iii) Example of hazard; and
 - (iv) Risk.
- (8 marks)
- (b) For hazard identification, a few methods were applied including *HIRARC*.
- (i) What is the definition of *HIRARC* and explain on *HIRARC* function
 - (ii) Describe how the 5 x 5 metrics were develop
 - (iii) Explain how the risk level were justify
 - (iv) Draft the Risk analysis by using 5x5 metrics for welding process.
- (17 marks)

- Q3** Industrial accident statistics are reference how the safety arrangement in the workplace. Table I below shows the industrial accidents based on the industrial sector from year 2005-2009.

Table 1: Industrial Accidents Statistics by sector from 2005-2009

Sector /Year	Year 2005			Year 2006			Year 2007			Year 2008			Year 2009		
	D	PD	NPD	D	PD	NPD	D	PD	NPD	D	PD	NPD	D	PD	NPD
Manufacturing	65	93	2058	66	116	2752	63	133	2094	76	134	1564	63	90	1419
Mining and Quarrying	3	4	107	2	1	22	9	1	5	6	0	4	3	1	2
Construction	87	36	246	81	25	365	95	10	76	72	2	55	71	6	38
Agriculture and Forestry	18	23	614	32	19	1014	30	14	712	42	7	365	44	8	440
Utility	2	20	177	5	6	66	10	4	51	19	12	82	23	3	116
Transport & Communication	14	0	145	10	1	47	2	0	7	8	1	18	18	0	21
Wholesale and retail	2	3	53	0	1	13	3	1	11	0	0	2	0	0	0
Hotel and restaurant	3	1	27	0	0	7	0	2	11	1	1	13	0	0	18
Financial & Real Estate	0	0	10	4	2	18	4	0	25	4	1	2	1	0	0
Public Services	2	2	22	9	3	44	3	3	16	2	1	3	1	0	0
Total	196	182	3459	209	174	4348	219	168	3008	230	159	2108	224	108	2054

Source: DOSH annual report 2007, 2008 and 2009.

Legend: D -Death
 PD -Permanent Disability
 NPD -Non-Permanent Disability

Refer to the table:

- (i) Please calculate the percentage of D, PD and NPD for each sector from year 2005-2009.
- (ii) Explain about what are engineer can be contribute to reduce the number of the overall industrial accidents?
- (iii) With a specific task, please give an idea how the maintenance activities will be the effect to the manufacturing sector and construction sector respectively?

(25 marks)

- Q4** Occupational Disease and Poisoning are the phenomena that will reduce the worker productivity. Table 2 below shows the number of Investigation cases of Occupational Diseases and poisoning from year 2005-2009.

Table 2: Total Number of Investigation Cases of Occupational Diseases and Poisoning from 2005 to 2009

No.	Types of Disease	2005	2006	2007	2008	2009
1.	Occupational Lung disease (OLD)	51	38	50	56	57
2.	Occupational Skin Disease (OSD)	57	30	192	70	53
3.	Occupational Noise Hearing Loss (NIHL)	190	106	120	169	427
4.	Occupational Muscular Skeletal Disorder(OMD)	10	22	18	31	57
5.	Disease caused by chemical agent (poisoning)	139	116	117	41	61
6.	Disease caused by biological agent	0	3	1	2	3
7.	Occupational Cancer	0	2	1	3	2
8.	Other and Non- Occupational Disease	4	45	47	81	2
TOTAL		451	362	546	453	669

- (i) Calculate the percentage of each types of disease and make the analysis for the year 2005-2009.
- (ii) Malaysian government has established the Noise Exposure Regulations 1989 but the number of Occupational Noise Hearing Loss (NIHL) disease has increased from year 2006-2006. Please explain how the regulation should be implemented to reduce the number of NIHL.
- (iii) Chemical has three (3) methods to enter the human body. List the methods.
- (iv) Use and Standards of Exposure of Chemicals Hazardous to Health Regulations 2000. (USECHH 2000). Please explain the regulations and its objective to the workers and workplaces. Also describe a few technique on how to monitor the chemical exposure at the workplace.
- (v) NADOOPOD Regulations 2004 is new approach to protect workers from safety and health risk. Please explain what is NADOOPOD 2004 Regulations and their methods to reduce the number or industrials accidents and occupational diseases.

(25 marks)

- Q5** Occupational Safety and Health Challenges was identified by the Department of Occupational Safety and Health. Table 3 below shows the DOSH Challenges for the year 2005-2010

Table 3: DOSH Challenges for the year 2005-2010

Challenges *	Anticipated Solutions
*Improvement of delivery system	With the improvement of the delivery system, the backlog and waiting time in any work process/ activity can be shortened. This will make industries involved with occupational safety and health more competitive.
*Awareness of OSH remains low	A negative and lack a radical attitude towards OSH by certain industrial sectors contributes to the low implementation of OSH. The department will focus more on these sectors to increase their OSH awareness.
*Domestic and international pressure	The spread of news of the weaknesses in OSH management by the NGOs and the need to improve the standards in all sectors to be paralleled with the development of the country have made the department more sensitive. Proper action needs to be taken on OSH issues locally and internationally.
* Increased occupational health risks at the workplace	Technological and scientific advances have contributed to an increase in health risks at the workplace due to the use of hazardous chemicals, equipment usage as well as the working environment and method. This lead to the requirement of having guidelines and code of practices.
*Emergence of new occupational hazards	Among the challenges faced by the department is the emergence of new occupational hazards such as handling of new chemicals and diseases arising from indoor air quality.

- (i) Please describe what are the activities that can be a solution for each challenges.
- (ii) How the awareness program will be influence the workers from the safety aspect?
- (iii) What is indoor air quality and how the air quality will be affect the workers health?
- (iv) What are the related Malaysia standard regarding the Occupational Safety and Health Management. Briefly explain about the standard.

(25 marks)