



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2019/2020**

COURSE NAME : OCCUPATIONAL SAFETY AND HEALTH
COURSE CODE : BNJ 21102 / BNQ 20302
PROGRAMME CODE : BNL/BNH/BNM/BNK/BNG/BNN
EXAMINATION DATE : DECEMBER 2019 / JANUARY 2020
DURATION : 2 HOURS
INSTRUCTION : ANSWERS **FOUR (4)** QUESTIONS ONLY

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THIS QUESTION PAPER CONSISTS OF **FOURTEEN (14)** PAGES

- Q1** (a) Compare the duty of employer, employee, designer and manufacturer. (10 marks)
- (b) Carried out a Safety and Health Program based on the occupational safety and health policy given in **Figure Q1 (b)**. (15 marks)



Figure Q1 (b): Health and Safety Policy

- Q2** (a) In a risk assessment process, there has guideline under DOSH Malaysia called HIRARC. Interpret the HIRARC based on :-
- (i) Hazard Identification (3 marks)
 - (ii) Risk Assessment (3 marks)
 - (iii) Risk Control (3 marks)
- (b) Illustrate the Risk Matriks Table based on HIRARC Guidelines 2008 establish by DOSH. Elaborate the information regarding :-
- (i) Matriks 5 x 5 (5 marks)
 - (ii) Likelihood and severity (4 marks)
 - (iii) Risk Estimation (4 marks)
 - (iv) Colour (3 marks)
- Q3** (a) Explain in detail :-
- (i) Physical Injury (3 marks)
 - (ii) Economic Argument (4 marks)
 - (iii) Humanitarian Argument (3 marks)
- (b) There were numerous major industrial accidents that have contributed significantly to the evolution of occupational safety and health. Lessons learnt from those incidents have initiated more stringent precautionary and preventive measures. Interpret the implications and contributing factors of each tragedy in table **Table Q3 (b)**.

Table Q3 (b): Major Industrial Accidents

No.	Tragedy	Implications	Contributing factors
1.	Piper Alpha Tragedy		
2.	Bhopal Tragedy		
3.	Chernobyl Disaster		
4.	Hawks Nest Tragedy		
5.	Bright Sparkles		

(15 marks)

- Q4** (a) List **FIVE (5)** classification of hazard and give an example each of the hazard.

(10 marks)

- (b) Evaluate the occupational safety and health issue based on SDS given in appendix based on:-

- (i) PPE
- (ii) ERP
- (iii) Environmental Risk
- (iv) Handling
- (v) Control

(5 marks)

- (c) Explain the technique to reduce the occupational disease and occupational poisoning based on the DOSH reported data.

Table Q4 (c) : 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

(10 marks)

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- Q5** (a) NADOOPOD is a regulation under the OSHA 1994. Summarize the NADOOPOD and its function under the law. (5 marks)
- (b) In your workplace there has an accident which involves fatality case. One of your works doing welding process and suddenly the Argon tank was explode. Analyse the case and fill the report form. (5 marks)
- (c) In other department, the local exhaust ventilation was off because the fan was not function. Chemical content in of the room has spread out to the whole room. One you're your staff has collapse after inhaled a Benzene. Analyse the case and fill the report form. (5 marks)
- (d) Based on answer from **Q5 (b)** and **Q5 (c)**, evaluate the incident and how to prevent it in the near future based on factors below :- (10 marks)
- (i) Human Factors
 - (ii) Management
 - (iii) Environment



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- END OF QUESTIONS -

FINAL EXAMINATION

SEMESTER / SESSION : SEM 1 / 2019/2020

PROGRAMME CODE: BNL/BNH/BNM/BNK/BNG/BNN

COURSE NAME : OCC. SAFETY AND HEALTH

COURSE CODE : BNJ21102

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
 Specific treatment (see ... on this label)
 Absorb spillage to prevent material damage
 Store locked up
 Dispose of contents/container to ...

Other Non-GHS Classification:

WHMIS



NFPA/HMIS



NFPA SCALE (0-4)

Health	3
Flammability	0
Physical Hazard	0
Personal Protection	X

HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 7664-93-9	Sulfuric Acid, ACS	31.004 %
CAS 7732-18-5	Water	68.996 %
Percentages are by weight		

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Loosen clothing as necessary and position individual in a comfortable position. Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen. Get medical assistance if cough or other symptoms appear.

After skin contact: Rinse/flush exposed skin gently using soap and water for 15-20 minutes. Seek medical advice if discomfort or irritation persists.

After eye contact: Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if concerned.

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FINAL EXAMINATION

SEMESTER / SESSION : SEM I / 2019/2020

PROGRAMME CODE: BNL/BNH/BNM/BNK/BNG/BNN

COURSE NAME : OCC. SAFETY AND HEALTH

COURSE CODE : BNJ21102

SECTION 5 : Firefighting measures**Extinguishing media**

Suitable extinguishing agents: Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors.

Advice for firefighters:

Protective equipment: Wear protective eyewear, gloves, and clothing. Refer to Section 8. Use NIOSH-approved respiratory protection/breathing apparatus.

Additional information (precautions): Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6 : Accidental release measures**Personal precautions, protective equipment and emergency procedures:**

Ensure adequate ventilation. Ensure that air-handling systems are operational.

Environmental precautions:

Should not be released into environment. Prevent from reaching drains, sewer, or waterway.

Methods and material for containment and cleaning up:

Wear protective eyewear, gloves, and clothing. Refer to Section 8. Always obey local regulations. Containerize for disposal. Refer to Section 13. If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Keep in suitable closed containers for disposal.

Reference to other sections:**SECTION 7 : Handling and storage****Precautions for safe handling:**

Avoid contact with skin, eyes, and clothing. Follow good hygiene procedures when handling chemical materials. Refer to Section 8. Follow proper disposal methods. Refer to Section 13. Do not eat, drink, smoke, or use personal products when handling chemical substances.

Conditions for safe storage, including any incompatibilities:

Store in a cool location. Keep away from food and beverages. Protect from freezing and physical damage. Provide ventilation for containers. Keep container tightly sealed. Store away from incompatible materials.

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SECTION 8 : Exposure controls/personal protection

FINAL EXAMINATION

SEMESTER / SESSION : SEM I / 2019/2020 PROGRAMME CODE: BNL/BNH/BNM/BNK/BNG/BNN
 COURSE NAME : OCC. SAFETY AND HEALTH COURSE CODE : BNJ21102

- Control Parameters:** 7664-93-9, Sulfuric Acid, ACS, OSHA PEL: 1mg/m3
7664-93-9, Sulfuric Acid, ACS, ACGIH TLV: 1 mg/m3
- Appropriate Engineering controls:** Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.
- Respiratory protection:** Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. When necessary use NIOSH approved breathing equipment.
- Protection of skin:** Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Wear protective clothing.
- Eye protection:** Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses or goggles are appropriate eye protection.
- General hygienic measures:** Perform routine housekeeping. Wash hands before breaks and at the end of work. Avoid contact with skin, eyes, and clothing. Before wearing wash contaminated clothing.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Clear, colorless liquid.	Explosion limit lower: Explosion limit upper:	Not Determined Not Determined
Odor:	Odorless	Vapor pressure:	<0.00120mmHg
Odor threshold:	Not Determined	Vapor density:	Not Determined
pH-value:	< 0.03	Relative density:	Not Determined
Melting/Freezing point:	11C	Solubilities:	Miscible
Boiling point/Boiling range:	105 - 325C	Partition coefficient (n-octanol/water):	Not Determined
Flash point (closed cup):	Not Determined	Auto/Self-ignition temperature:	Not Determined
Evaporation rate:	Not Determined	Decomposition temperature:	Not Determined
Flammability (solid,gaseous):	Not Determined	Viscosity:	a. Kinematic: Not Determined b. Dynamic: Not Determined
Density: Not Determined			

FINAL EXAMINATION

SEMESTER / SESSION : SEM I / 2019/2020

PROGRAMME CODE: BNL/BNH/BNM/BNK/BNG/BNN

COURSE NAME : OCC. SAFETY AND HEALTH COURSE CODE : BNJ21102

SECTION 10 : Stability and reactivity**Reactivity:** Nonreactive under normal conditions.**Chemical stability:** Stable under normal conditions.**Possible hazardous reactions:** None under normal processing.**Conditions to avoid:** Incompatible materials.**Incompatible materials:** Organics, Metals, Chlorates, Alkalines, Carbides, Fulminates, Reducing agents, Nitrates, Acetic acid, Oxidizing agents**Hazardous decomposition products:** Oxides of sulfur.

Acute Toxicity:		
Inhalation:	510 mg/m ³ 2 h	Inhalation LC50 Rat
Oral:	2140 mg/kg	Oral LD50 Rat
Chronic Toxicity: No additional information.		
Corrosion Irritation: No additional information.		
Sensitization:	No additional information.	
Single Target Organ (STOT):	No additional information.	
Numerical Measures:	No additional information.	
Carcinogenicity:	No additional information.	
Mutagenicity:	No additional information.	
Reproductive Toxicity:	No additional information.	

SECTION 12 : Ecological information**Ecotoxicity****Freshwater Fish:** 96 Hr LC50 Brachydanio rerio: >500 mg/L [static]**Fish:** LC50 - Gambusia affinis (Mosquito fish) - 42 mg/l - 96 h**Invertebrates:** EC50 - Daphnia magna (Water flea) - 29 mg/l - 24 h**Persistence and degradability:****Bioaccumulative potential:****Mobility in soil:****Other adverse effects:**

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SECTION 13 : Disposal considerations**Waste disposal recommendations:**

Contact a licensed professional waste disposal service to dispose of this material. Dispose of empty containers as unused product. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

FINAL EXAMINATION

SEMESTER / SESSION : SEM I / 2019/2020

PROGRAMME CODE: BNL/BNH/BNM/BNK/BNG/BNN

COURSE NAME : OCC. SAFETY AND HEALTH

COURSE CODE : BNJ21102

SECTION 14 : Transport information

UN-Number

1830

UN proper shipping name

Sulfuric Acid Solution

Transport hazard class(es)



Class:

8 Corrosive substances

Packing group:II

Environmental hazard:

Transport in bulk:

Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Acute, Chronic

SARA Section 313 (Specific toxic chemical listings):

7664-93-9 Sulfuric Acid

RCRA (hazardous waste code):

None of the ingredients is listed

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

7664-93-9 Sulfuric Acid 1000 lbs

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients is listed



FINAL EXAMINATION

SEMESTER / SESSION : SEM I / 2019/2020

PROGRAMME CODE: BNL/BNH/BNM/BNK/BNG/BNN

COURSE NAME : OCC. SAFETY AND HEALTH

COURSE CODE : BNJ21102

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases:**Abbreviations and acronyms:**

IMDG: International Maritime Code for Dangerous Goods

PNEC: Predicted No-Effect Concentration (REACH)

CFR: Code of Federal Regulations (USA)

SARA: Superfund Amendments and Reauthorization Act (USA)

RCRA: Resource Conservation and Recovery Act (USA)

TSCA: Toxic Substances Control Act (USA)

NPRI: National Pollutant Release Inventory (Canada)

DOT: US Department of Transportation

IATA: International Air Transport Association

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

ACGIH: American Conference of Governmental Industrial Hygienists

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

DNEL: Derived No-Effect Level (REACH)

Effective date : 02.15.2015**Last updated** : 03.19.2015

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FINAL EXAMINATION

SEMESTER / SESSION : SEM 1 / 2019/2020

PROGRAMME CODE: BNL/BNH/BNM/BNK/BNG/BNN

COURSE NAME : OCC. SAFETY AND HEALTH

COURSE CODE : BNJ21102

JKKP 6 - PEMBERITAHUAN MENGENAI KEMALANGAN/KEJADIAN BERBAHAYA

PERATURAN-PERATURAN KESELAMATAN DAN KESEHATAN PEKERJAAN (PEMBERITAHUAN MENGENAI KEMALANGAN, KEJADIAN BERBAHAYA, KERACUNAN PEKERJAAN DAN PENYAKIT PEKERJAAN) 2004

Bahagian A - Maklumat Pemberitahu

Pemberitahu - Peraturan 5 (1) & (2) Majikan

Nama

Jawatan

Nama & Alamat Organisasi

No ROC

No. Pend. JKKP

Orang yang boleh dihubungi (Jika lain dari atas)

No. Telefon

Kod Klasifikasi Industri (Jadual 3)

Bahagian B - Orang yang terlibat

(Jika lebih dari seorang, sila gunakan borang berasingan bagi setiap orang terlibat)

Nama

Tarikh Lahir

No K/P atau No. Paspor

Warganegara

Jantina	<input type="checkbox"/>	L	<input type="checkbox"/>	F
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Pekerjaan

Nama & Alamat Organisasi

Tempat Kejadian

Tarikh dan Masa Kejadian

Tarikh Mula Laporan kepada JKKP

Bahagian C - Huraian kemalangan atau kejadian berbahaya

Sila huraikan apa yang berlaku sebelum, semasa dan selepas kejadian.

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Tanda Tangan Pemberitahu

Tarikh

Penafian

Mengisi borang ini tidak menjadikan pengaduan ke atas sebarang ketidakbilikitan oleh orang yang mengisi borang.

FINAL EXAMINATION

SEMESTER / SESSION : SEM I / 2019/2020
COURSE NAME : OCC. SAFETY AND HEALTH

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JKKP 7

REPORT FOR OCCUPATIONAL POISONING / OCCUPATIONAL DISEASE OCCUPATIONAL SAFETY AND HEALTH
(NOTIFICATION OF ACCIDENT, DANGEROUS OCCURANCE, OCCUPATIONAL POISONING AND OCCUPATIONAL DISEASE) REGULATION 2004

Part A1

Notifier - Regulation 7(1) Employer
(If more than one person please use separate form)

Name
[]

Designation
[]

Name & Address of Organisation
[]

Contact Number
[]

R.O.C. No. [] JKKP Reg. No. []

Industrial Classification Code (Table 3) []

Contact person (if different from above)
[]

Part A2

Notifier - Regulation 7(2) Registered Medical Practitioner

Name
[]

Designation
[]

Address of Clinic / Hospital
[]

Contact Number
[]

Part B - Affected Person

Name
[]

Date of Birth []

NIRC/Passport No []

Nationality [] Gender Male Female

Occupation []

Name & Address of Organisation
[]

Location of incident
[]

Part C - Occupational Poisoning / Disease

Diagnosis / Provisional Diagnosis
[]

Date of Diagnosis
[]

Name and Address of Attending Doctor
[]

Part D

Description of work that led to occupational poisoning/disease (Please describe any work done by the affected person which might have led to them getting the disease is thought to have been caused by exposure to an agent at work, e.g a specific chemical - please state what that agent is)

[]

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[]

Signature of Notifier

Date []

Disclaimer

Completing this form does not constitute to an admission of liability of any kind by the person making the report or by any other persons)