UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2017/2018

COURSE NAME	:	OCCUPATIONAL SAFETY AND HEALTH
COURSE CODE	:	BFC43502
PROGRAMME CODE	:	BFF
EXAMINATION DATE	:	DECEMBER 2017 / JANUARY 2018
DURATION	:	2 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS. DO NOT BRING THIS QUESTION PAPER OUT OF THE EXAMINATION HALL.

THIS QUESTION PAPER CONSISTS OF **THIRTEEN (13)** PAGES

SECTION A

Answer all questions in an OMR form provided (total marks = 80).

Q1 What are the objectives of Occupational Safety and Health Act 1994 (Act 514)?

I. To protect persons at a place of work other than persons at work against risks to safety or health arising out of the activities of persons at work
II. To promote an occupational environment for persons at work which is adapted to their physiological and psychological needs
III. To provide the means towards a legislative system based on regulations and industry codes of practice in combination with the provisions of the Act
IV. To secure the safety, health and welfare of persons at work against risks to safety or health arising out of the activities of persons at work

A. I, II and III
B. I, II and IV
C. II, III and IV
D. All of the above

Q2 What is the difference between Statutory and Common Laws?

A. Statutory law requires penalty for a breach regardless of the occurrence of damage or loss, while actions are decided only if there is damage or loss for common law
B. Statutory law is enforced by DOSH while common law is enforced by Department of Justice
C. Statutory law should be handled by high court while common law can be issued by district court
D. The nature of statutory law is instructive while common law is prescriptive

Q3 The establishment of safety and health committee at workplace is required if

A. There are 40 or more workers
B. The workplace area is more than 25 m^2
C. There are elder workers that are more than 55 years old
D. Over time is required at workplace

Q4 Under Section 15 of Occupational Safety and Health Act 1994, the duty of employers and self-employed persons to their employee are prescribed as follow, **EXCEPT**

A. Ensure the safety, health and welfare of all his employees at work
B. Maintain the working environment so that it is safe, free from risks to health, and adequate as regards facilities for the welfare at work
C. Not interfere or misused anything provided for safety and health
D. Provide information, instruction, training and supervision for new and old employees

Q5 A construction company, Binamaju Sdn Bhd has recently won a 20-storey condominium project worth RM 200 million contract sum with the contract period of 36 months. Which of the followings describe the responsibility of the contractor to comply with the safety and health requirements underlined by the Act 514 and Act 139?

I. Submit JKJ 103 form to Department of Safety and Health
II. Appoint site safety supervisor
III. Appoint full time safety and health officer
IV. Ensure the crane possesses a valid certificate of fitness to operate *(Perakuan Mesin Angkat)*

A. I and IV
B. I, II and IV
C. II, III and IV
D. All of the above

Q6 Does an employer have to produce a safety and health policy statement?

A. No, there is no requirement to provide a safety and health policy statement
B. Yes, but only if they employ over 100 people
C. Yes, but only if they employ over 40 people
D. Yes, but only if they employ 5 people

Q7 Which organisation is responsible for the enforcement of the Building Operations and Works of Engineering Construction (BOWEC) Regulation 1986?

A. NIOSH
B. DOSH
C. SOCSO
D. CIDB

Q8 Incident classification is divided into three levels. Which of the followings is **NOT** included in the classification of workplace incident.

A. Major/Serious injury
B. Near misses
C. Fatality due to traffic accidents on the way to work
D. Damage to property/equipment

Q9 The followings are the techniques in hazard analysis, **EXCEPT**

I. Just-in-time (JIT)
II. Job safety analysis (JSA)
III. Failure Mode and Effect Analysis
IV. Hazard identification, risk assessment and risk control (HIRARC)

A. I only
B. I and IV
C. II and III
D. All of the above

Q10 Exposure monitoring is one of the monitoring types related to the area and personal monitoring. Which of the following answer is **NOT** included in the Exposure Monitoring?

A. Noise
B. Medical
C. Heat
D. Biological

Q11 Damage to hearing is cumulative and exposure limits are based on 8-hour averages. Workers who are not using operating equipment are often exposed to excessive noise as much as the operator. What are the factors that influence the noise level to which workers are exposed?

I. The price of the equipment being operated
II. Types of equipment being operated
III. Condition/maintenance of the equipment
IV. Other equipment running at the same time

A. I and II
B. I, II and IV
C. II, III and IV
D. All of the above

Q12 The process of evaluating the risks to safety and health arising from hazards at work is defined as risk assessment. Select the most appropriate answer(s) why the risk assessment results are documented.

I. Risk control in OSH management
II. Future reference and review
III. Remove the hazards from work
IV. Future review and inform supervisors

A. I only
B. I and II
C. I, II and III
D. All of the above

Q13 The followings need to be considered when interviewing the witness for incident investigation:

I. Put person at ease
II. Ask appropriate question at the right time
III. Get the hearsay information
IV. Be friendly, understanding, and open-minded

A. I, II and III
B. I, II and IV
C. I, III and IV
D. II and IV only

Q14 Mobile scaffolds that are hired must be erected by

A. a competent person
B. the manager of the project
C. a licensed builder
D. a person from the hire company

Q15 Which of the followings require Professional Engineer (PE) design/certification as stipulated in BOWEC 1986 Regulation?

I. Metal tube scaffolds above 15m
II. Formworks and reshores for concrete work
III. Catch platform
IV. Rubbish chute exceed 12m

A. None of the above
B. All of the above
C. I, II and IV
D. I, III and IV

Q16 When conducting an incident investigation, which of the following need **NOT** to be considered for facts finding?

A. Collect the physical evidences (part, paper or other materials)
B. Make sketch and take photo of incident scene
C. Interview witness
D. None of the above

Q17 to Q18 are based on the following statement:

Alex works as a mason for a housing construction project. One of his tasks is to carry the mortar bag to the workplace. Instead of carrying out the task alone, he carried the heavy mortar bag with his friends.

Q17 Describe the type of risk control implemented?

A. Administrative
B. Substitution
C. Engineering
D. Elimination

Q18 After 3 years working as mason, Alex experienced a slip disc. What could be done by Alex's employer to help his employee?

A. Provide adequate PPE to Alex
B. Provide lifting equipment such as trolley to transfer the mortar bags
C. Get other worker to do the job for Alex
D. All of the above

Q19 Chemicals are found in variety of products used at the construction sites. Chemicals can exist in the form of

I. vapours
II. dusts
III. fumes
IV. liquids

A. I and II
B. I, II and III
C. I, III and IV
D. All of the above

Q20 Steel components need to be dipped in a highly concentrated hydrochloric acid tank to remove the scale and rust from steel surface. The acid produces vapour which is hazardous to the workers. The followings are examples of controlling the hazards at source, **EXCEPT**

A. Enclosure
B. Local exhaust
C. Dilution ventilation
D. Fugitive emission control

Q21 There are two types of health effect that caused by chemical exposure, acute and chronic. What is the major cause of acute health effect arise from exposure to chemical hazard?

A. Continue low concentration and mild exposure to chemical hazard
B. Sudden exposure with high concentration
C. Sudden exposure with low and long term concentration
D. Continue or repeated exposure for a prolonged period (years)

Q22 Which of the followings is **TRUE** about example of an administrative control?

A. Weekly toolbox meeting to educate employees about safety and health awareness at the workplace
B. Enclosing loud equipment to reduce noise exposure
C. Rotating jobs to minimize exposure to noise
D. Both A and C

Q23 Robert has been working in a construction industry for 10 years. Recently, he complained about tingling and loss of sensation in the fingers, loss of light touch and loss of grip strength to his employer. What could possibly be Robert's most frequent activity while working at the construction site?

A. Driving the backhoe
B. Fixing window frame using hammer
C. Vibrating the concrete
D. Tying the steel bar

Q24 All of the followings are examples of engineering controls, **EXCEPT**

A. adjustable workstation to accommodate various employee size
B. maintenance of the machine
C. the use of forklift instead of manual lifting
D. installation of sound-dampening shields around noisy equipment

Q25 to Q29 are based on the table below:

Table Q25 to Q29

Hazard Identification				Risk Analysis				Risk Control
No.	Work Activity	Hazard	Which can cause/effect	Existing Risk Control (if any)	Lkelihood	Severity	Risk	Recommended Control Measures
1	Erect working platform	Unguarded floor	Head injury/fatal	Safety helmet, housekeeping	4	5	20 (High)	1) Fence upper floor exposed edges 2) Establish safe work procedure
2	Loading concrete onto platform	Uneven floor	Fall of person/ broken leg	Housekeeping, safety shoes	4	3		Put plank on floor, anti-slip mat
		Heavy load	Muscular strain / back pain	Manual lifting procedure	3	1	3 (Low)	
3	Plastering work	Defective platform	Fall from height/ fatal	Safety belt	4	5	20 (High)	1) Install handrail 2) Use new plank as platform
				Nil	3	1	3 (Low)	Provide drinking facilities
4	Clearing unsused material	Sharp object	Finger cut	Nil	3	1	3 (Low)	Provide leather glove

Table Q25 to Q29 depicts a HIRARC report prepared for 'plastering' process of Project ABC. Note that all grey boxes are intentionally left blank.

Q25 Which of the following(s) are **TRUE** for 'erect working platform' activity?

I. The risk could cause multiple fatalities
II. The head injury/fatal case due to the hazard at this company is rare
III. One of the recommended control measures type is isolation
IV. If IBS precast framing system is used as a construction method, the hazard can be eliminated

A. I only
B. I and II
C. I, III and IV
D. All of the above

Q26 Based on the As Low As Reasonably Practicable (ALARP) principle, which of the followings is the most suitable control measure for 'heavy load' hazard in 'loading concrete onto platform' activity?

A. Use forklift to lift the concrete onto the higher platform
B. Use small container
C. Use precast wall panel as a construction method
D. No further control measure is required as the level of risk is low

Q27 Which of the followings are **TRUE** for 'defective platform' hazard in 'plastering' activity?

I. The risk level could be lower if the existing control measure is changed to safety harness
II. The severity level could be lower if the existing control measure is changed to safety harness
III. The likelihood level could be lower if the existing control measure is changed to safety harness
IV. The fall from height case at this company could be frequent

A. I, II and III
B. I, II and IV
C. All of the above
D. None of the above

Q28 Which of the followings is/are **WRONG** about the HIRARC prepared above?

I. For 'uneven floor' hazard in 'loading concrete onto platform' activity, the risk level is 12 (medium)
II. For 'plastering work' activity, the other hazard involved apart from defective platform is 'hot weather'
III. For 'plastering work' activity, the other hazard involved apart from defective platform is 'dehydration'
IV. The type of control measure proposed for 'sharp object' hazard in 'clearing unused material' activity is PPE

A. II only
B. III only
C. I, II and IV
D. None of the above

Q29 Which of the followings are **TRUE** about the HIRARC prepared for the whole plastering process?

I. The HIRARC is prepared for a construction of more than 1-storey building project
II. All the existing risk controls are categorised as least effective
III. At least one engineering control is proposed as recommended control measure
IV. At least one activity has the potential to cause multiple fatalities if the hazard involved is not controlled

A. I, II and III
B. I, II and IV
C. All of the above
D. None of the above

Q30 What are the two main causes of incidents in the workplace?

A. Unsafe acts and unsafe people
B. Unsafe people and unsafe machines
C. Unsafe conditions and unsafe machines
D. Unsafe acts and unsafe conditions

Q31 Why should 'near-misses' be reported?

A. To educate employees
B. To test the first aider
C. To ensure complete recovery
D. To stop a more serious event occurring

Q32 Why do we need to conduct an accident investigation?

I. To fulfil legal requirement
II. To prevent repetition of the same accident from happening again in the future
III. For a report purpose
IV. To determine which party should be blamed and pay for the damages

A. I and II
B. I, II and III
C. II, III and IV
D. III and IV

Q33 Incident is an unexpected or unplanned event in a sequence of events that occurs through a combination of causes which results in physical harm, damage to property, a near miss or any combination of these effects. What are the root causes of an incident?

I. Personal factor
II. Supervisory performance
III. Financial factor
IV. Management policy & decisions

A. I & II
B. I & III
C. I, II & IV
D. I, III & IV

Q34 When an incident occurred at the workplace, there will be two groups involved to perform the investigation which are the internal investigation team and external investigation team. Identify all members of internal investigation team.

I. DOSH
II. SHO
III. Members of safety and health committee
IV. External consultant of the company
V. Upper management

A. I, II, III and V
B. II, III and V
C. II, III, IV and V
D. All of the above

Q35 Incident investigation report is supposed to be accurate, clear and complete in terms of description of the incidents and the information regarding the incidents. Which of the followings are the criteria of an incident investigation report should have?

I. Information leading up to the accidents
II. Identification of all causal factors
III. Recommendations
IV. Proper review sign off

A. I and II
B. I, II and III
C. I, II and IV
D. All of the above

Q36 Incident investigation strategies involve several steps in order to propose appropriate corrective action to prevent the recurring of accident. Once the causes and root causes of incident are determined, there are several incident investigation steps involved prior to implementing the preventive and corrective action. In sequential order, arrange the steps in incident investigation below.

I. Determine the causes & root cause
II. Analyze incident
III. Determine corrective action
IV. Search for and establish facts
V. Gather information
VI. Isolate essential contributing factors
VII. Implement corrective action
VIII. Report, review the findings

A. IV → V → I → III → II → VII → VI →VIII
B. V → IV → III → I → VII →II → VI →VIII
C. V → IV → VI → I → III → VIII → II → VII
D. IV → V → II → I → III → VI → VIII → VII

Q37 to Q40 are based on the table below:

Table Q37 to Q40

Date	Summary case	Classification case	Contributing factors	Observation
26/10/2015	Location: Construction site, KL Incident happened as the 1.2-tonne bucket filled with sand was lifted by tower crane. During the process, suddenly bucket fell down and struck the victim under. The incident happened at around 1830 hours.	Fatal	Serious bodily injury	Failure of hoisting system

Table Q37 to Q40 above describes the summary of a fatal case happening at a construction site reported to Department of Occupational Safety and Health (DOSH).

Q37 Which of the followings is/are potential person/parties to be the witness(es) of the incident?

I. Other workers who witnessed the incident
II. Supervisor who was absent during the incident
III. Tower crane operator
IV. Signalman

A. I and IV
B. I, III and IV
C. None of the above
D. All of the above

Q38 What are the potential cause(s) of the incident?

I. Failure to provide PPE (safety helmet) to worker
II. No inspection of crane/lifting equipment before use
III. Inadequate maintenance of the crane
IV. No supervision

A. II only
B. I, II and III
C. II, III and IV
D. All of the above

Q39 Before the incident investigation report is published, investigation team carried out interviews to the witnesses in order to gather information related to the incident. Which of the followings is/are **NOT** suitable practice while conducting interviews?

I. Asking "Is it true that the crane operator is sleepy during the incident?"
II. Asking "Why you did not yell to the victim to get away from the scene?"
III. Conducting interview with all witnesses simultaneously
IV. Refuse to supply a copy of witness' statement to him/her because the incident investigation findings are confidential

A. I only
B. I and II
C. II, III and IV
D. All of the above

Q40 Which of the followings is/are **TRUE** about correct practice of SHO responsibilities for the above case?

I. The SHO needs to quickly notify the DOSH Johor State about the incident
II. Since the incident happened after normal working hours, the SHO decided to notify the nearest DOSH office after 11am the next working day
III. The SHO did not notify or make a police report about the incident because he presumes it is an occupational accident and not crime
IV. The SHO completes the incident record form and submit the report summary to safety and health committee

A. I and IV
B. I, II and IV
C. IVonly
D. None of the above

SECTION B
Answer all questions.

Q41 (a) Identify **TWO (2)** health hazards involved for each of the occupations below:

(i) Excavating operators

(2 marks)

(ii) Masons

(2 marks)

(b) **Figure Q41** shows a working scenario on a construction site. Analyze the photo given, prepare a Hazard Identification, Risk Assessment and Risk Control (HIRARC) form (at least **FOUR (4)** hazards) to ensure the hazard is As Low As Reasonably Practicable (ALARP).

(16 marks)

– END OF QUESTIONS –

FINAL EXAMINATION

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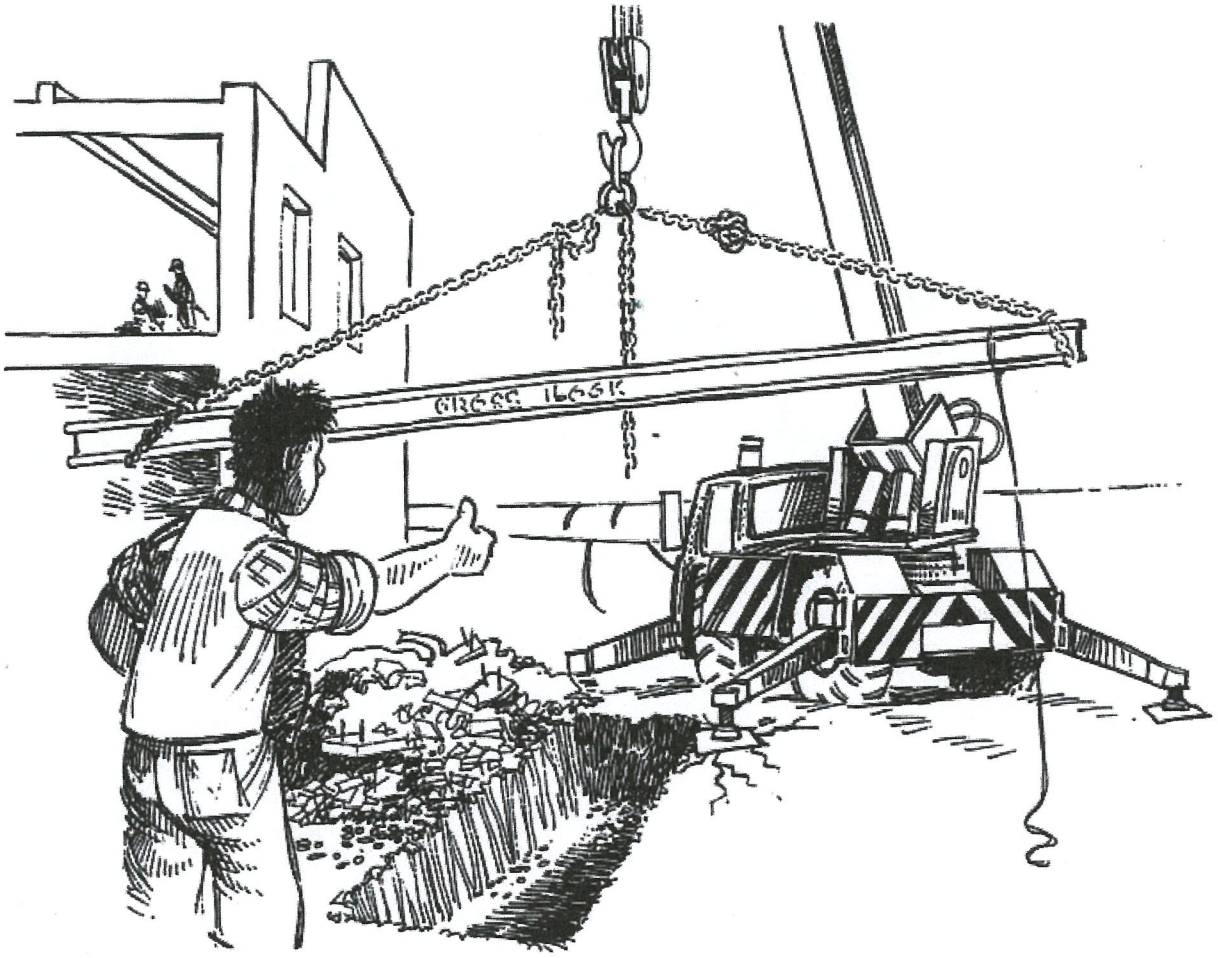

FIGURE Q41