UNIVERSITY OF JOHANNESBURG

Supplementary Examination (Practical session)

PROGRAM	:	**NATIONAL DIPLOMA** *ENVIRONMENTAL HEALTH*
SUBJECT	:	**OCCUPATIONAL HEALTH AND SAFETY 11**
CODE	:	**OHS 21-1**
DATE	:	**12 JANUARY 2017**
DURATION	:	**120 Minutes**
TOTAL MARKS	:	**90 Marks**

EXAMINER	:	**Masekameni MD**
MODERATOR	:	**Chadyiwa M**
PAGES	:	**4**

INSTRUCTIONS TO STUDENT

1. Answer all questions
2. Carefully read the questions. you will be penalized if your answers are not properly structured and numbered
3. Calculator usage will help in answering some of the questions
4. In science number 1 or 5 does not send any message, please provide motivation for each answer you find.

QUESTION 1 [14]

Please answer all question and logically construct your answers

1. Please lets know our instruments used in physical stressors. You are required to indicate, which instrument you are going to use, sampling strategy and referral legislation.

1.1. John the carpenter work in a furniture manufacturing sector and during his operations at work, he used drilling, wood cutting machines and a grinder. Which stressor his he exposed to, which instrument are you going to use, describe your sampling strategy and indicate which piece of legislation you are going to use. [8]

1.2. You are caring out a walk through survey at Kanhym abattoir and you discovered that, the area is too bright to operate under, which instrument you will use to carry-out a scientific evaluation. [1]

1.3. Which instrument and describe thermometers will you use to evaluate heat stress

[4]

1.4. Ventilation is a critical control measure especially under high thermal environment, which instrument you will use, when measuring wind speed inside a workshop. [1]

QUESTION 2 [28]

Company called Makinya express employed 800 workers by the year 2013 and each worker was working 50 hours per week and they experienced 14 cases of disabling injuries. However, by the year 2014 half of the workers experienced 2 hours cut-off per day. After such cut-off hours for some employees in 2014, the company experienced 12 cases of left hand bone fractures. You further found out that the injured workers are right handed and this incident never disrupted their ability to conduct their work. The company further experienced two cases where employees missed a day shift other than the one they were working on, as a results of skin rash.

2.1. How many workers did the company had in 2013 and 2014 [1]

2.2. Calculate the number of man-hours worked in 2013 per day [2]

2.3. Calculate the number of man-hours worked in 2013 per week [2]

2.4. Calculate the number of man-hours worked in 2013 per month [2]

2.5. Calculate the number of man-hours worked in 2013 per year [2]

2.6. Calculate the number of man-hours worked in 2014 per day for workers experienced 2 hours' cut-off [2]

2.7. Calculate the number of man-hours worked in 2014 per day [2]

2.8. Calculate the number of man-hours worked in 2014 per week [2]

2.9. Calculate the number of man-hours worked in 2014 per month [2]

2.10. Calculate the number of man-hours worked in 2014 per year [2]

2.11. Calculate the DFIR [3]

2.12. Calculate the Incident rate [3]

2.13. Do you think the two hour cut-off in 2014 reduced or increased the number of disabling injuries? Motivate. [2]

QUESTION 3 [28]

You conducted an assessment at Lethabo power station and you have identified multiple sources of noise producing various dB levels. The first sources which, was the boiler engine rated 96 dB, while the conveyor belt rated 55 dB, the coal grinding mills rated 101 and four primary fan where each rated 92 dB (A).

3.1. What will be the corresponding combined sound pressure level? [6]

An operator of a furnace at the hospital attends to the furnace for 20 minutes every hour. In the control room where he spend the rest of each hour, the noise level is 62 dB (A). The noise level to which he is exposed each time he attends the furnace is 101 dB (A). The operator works a 12 hour shift and has a 1 and half hour break where the exposure is 25 dB (A).

3.2. Calculate the total sampling time [2]

3.3. Calculate the average sound pressure level [4]

3.4. Calculate TWA-40 hour equivalent and determine if the worker is over exposed or not [4]

A sophisticated student from the University of Johannesburg while travelling to and from class each day, listens to headset music at 112 dB for 30 minutes.

3.5. Calculate the total exposure time [2]

3.6. Calculate the 8 hour sound pressure level [4]

3.7. If you were to assist this student Calculate the total time the student must listen to the music without being at risk of developing hearing loss. [6]

QUESTION 4 [20]

Peter works as a baker at GLO-Bake bakery, he works an 8 hour shift each day. He is exposed to heat where the following split readings were recorded using WBGT instruments: for the first 15 minutes, 18 °C natural wet bulb temperature, 23.4 °C dry bulb temperature and 24.3 °C globe temperature, next reading recorded for 25 minutes, 16 °C natural wet bulb temperature, 22.2 °C dry bulb temperature and 23.9 °C globe temperature third readings were taken for 30 minutes, 14 °C natural wet bulb temperature, 20.1°C dry bulb temperature and 21.2°C globe temperature, while the fourth readings were taken for 10 minutes, 19 C natural wet bulb temperature, 24.5°C dry bulb temperature and 25.3°C globe temperature.

4.1. Calculate the time weight average (TWA) WBGT index and use the legislation to determine if Peter is over exposed or not? [15]

4.2. Given the above exposure readings if Peter is working in a cold environment such as a butchery will he be over exposed to cold or not? Calculate his exposure. [5]

Total marks= 90