MISSION STATEMENT:  
1. To uphold the image and status of the Certificated Engineer.  
2. To represent the Certificated Engineer at ECSA and other decision-making bodies concerning legislation, safety & health standards, the environment and the machinery regulations.  
3. To promote continued education and training of its members and future engineers.  
4. Promote fellowship in the engineering profession.

EDITORIAL

Welcome to the latest edition of the Western Cape News Bulletin

In this issue we have the normal questions and answers for factories GCC examinations. We have the continuation of the “Lighting up the fairest Cape 1895 to 1995” with part 21 of the series. There are two articles from SafeNet – on COIDA – medical treatment for work related injuries or diseases, part 1 and 2.

We bring you a synopsis of results and comments from the Commissioners of Examiners (Factories) for the November 2014 GCC examinations. Some of the observations should make one wonder how people are approaching the examinations.

Any contributions to future editions of this Bulletin from members would be welcome.

I trust that you will find the content of this news bulletin interesting enough to pass on to your colleagues and friends.

Chris Schnehage  
Email: chris@icmeewc.co.za

LOCAL BRANCH NEWS

Activities of the Western Cape Branch since the last Bulletin were as follows:

There has not been any activity within the branch in the last quarter.

Plans for the next few months still need to be made and we will communicate any functions to take place.

Any members out there who would like to join us on the committee? Please think about this and volunteer to join us. Thank you!

Until next time, Ciao for now!

Chris Schnehage  
Email: chris@icmeewc.co.za  
Tel: 083 326 8023

OHSAct June 2010

10.2  
A working area at your factory where persons also work at night is without natural lighting. In terms of the regulations you are required to provide an emergency source of lighting with a view of emergency evacuation in this area.

10.2.1  
What must the illuminance be at floor level for safe evacuation of that work place when the emergency source of lighting is activated?  
Answer: ERW 3 (4) [0,3 lux]

10.2.2  
What must be the illuminance be when it is necessary to stop machinery before evacuation?  
Answer: ERW 3 (4) [20 lux]

10.2.3  
How soon must the emergency source of lighting be activated?  
Answer: ERW 3 (5) (a) [15 sec]

10.2.4  
How long must the emergency lighting source last?  
Answer: ERW 3 (5) (b)

10.3  
You are planning to do repair work to equipment where asbestos insulation has been used extensively during the construction of the plant. You will not be able to prevent the exposure of employees to the asbestos and have to control their exposure.

10.3.1  
Name THREE aspects of how you will control the exposure of persons to the asbestos.  
Answer: AR 11 (2) (a) to (f)

10.3.2  
What are the requirements you have to comply with in order to regard the control of exposure as adequate?  
Answer: AR 11 (1) (a) and (b)

Jorge Pereira  
Cert Eng

Jorge Pereira GCC Preparation Classes Pty Ltd.  
Classes to be held in Thornton, Cape Town  
For more information please contact: jorgepereira43@yahoo.co.za or 082 896 8489
A simple lifting machine shown in FIGURE 1 is used to raise a series of loads. These loads, with their corresponding efforts, are shown in the table below:

<table>
<thead>
<tr>
<th>LOAD</th>
<th>250 N</th>
<th>500 N</th>
<th>750 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>EFFORT</td>
<td>72 N</td>
<td>142 N</td>
<td>212 N</td>
</tr>
</tbody>
</table>

Determine the following:

7.1.1 The velocity ratio of the machine in the sketch

7.1.2 The law of the machine

7.1.3 The mechanical advantage and the efficiency of this machine when lifting the 250 N load.

7.1.4 The maximum efficiency attainable by the machine

7.1.5 The maximum load that can be raised if the maximum applied effort is 700 N

---

**Answer:**

7.1.1 In the block and tackle shown, there are four sections of the rope supporting the load so that if the lower block is raised through 1 meter, then each of the four sections shortens by 1 meter and therefore, the effort-end of the rope will move through 4 meters. Therefore, voltage-ratio (VR) = 4

7.1.2 The formula is \( P = a + bW \). Assuming the relation between \( W = \text{Load} \) and \( P - \text{effort} \) is linear and \( a \) and \( b \) are constants.

From the table given:

\[
72 = a + b250 \quad (l)
\]

\[
142 = a + b500 \quad (2)
\]

From (I): \( a = 72 - b250 \) \( (3) \)

Substitute (3) in (2) we get, \( b = 0.28 \) and \( a = 2 \)

Therefore, the law is: \( P = 2 + 0.28W \)

7.1.3 Mechanical Advantage (MA) =

\[
W = \frac{\text{load}}{P} = \frac{250}{72} = 3.472
\]

\[
\eta = \frac{\text{MA}}{\text{VR}} = \frac{3.472}{4} = 86.806\%
\]

7.1.4

\[
\eta = \frac{1}{0.28 \times 4} = 89.286\%
\]

\( \therefore \) \( \eta \geq 50\% \) the machine is Reversible.

7.1.5 From formula:

\[
700 = 2 + 0.28W
\]

\[
W = \text{max load} = 2493\,\text{kN}
\]

---

**Jorge Pereira (Cert Eng)**

---

**SafeNet Thought for the Day**

25th of April 2014

**Medical treatment for work related injuries or diseases**

We are often asked:

1. Whether or not an employer can force an injured employee to visit a medical practitioner of the employers choice?; and

2. Can an employer refuse to report cases to the Compensation Commissioner should he / she be of the opinion that the injury or disease is not work-related?

**Can an employee be forced to visit a medical practitioner of the employer’s choice?**

Although the Compensation for Occupational Injuries and Diseases Act, 1993 (COID Act, 1993) do not contain a specific section or regulation which prohibits this practice the answer is **NO**. The Compensation Commissioner on an annual basis publishes government gazettes which contain the annual increases in medical tariffs. The pre-amble to all these gazettes contain general information which starts with the sentence which states "The employee is permitted to freely choose his own service provider e.g. doctor, pharmacy, physiotherapist, hospital etc."

It is clear from this statement that it stays the employee prerogative to decide which service provider he / she will prefer. The only exception to this rule would be a case where the employer with the approval of the Compensation Commissioner provides comprehensive medical aid facilities such as hospitals, nursing and other services. A typical example could be the South African National Defense Force who owns and operates their own hospitals.

**Can an employer refuse to report cases to the Compensation Commissioner should he / she be of the opinion that the injury or disease is not work-related?** - NO, the Compensation for Occupational Injuries and Diseases Act, 1993 do not allow for employers to:

1. Decide on the merits or validity of the case; or

2. Refuse to report the work related injury or Occupational Disease to the office of the Compensation Commissioner.
Section 68(2) of the COID Act, 1993 titled Notice of occupational disease by employee and employer states “An employer shall within 14 days after having so received notice or having learned in some other way that an employee has contracted a disease referred to in section 65 (1), report such disease in the prescribed manner to the commissioner or mutual association concerned, as the case may be, irrespective of whether he may be of the opinion that the employee did not contract such disease in his employ or in the employ of a previous employer.

It is clear from above that only the Compensation Commissioner can decide on the merits or validity of the case. The COID Act, 1993 do however allow for the employer to submit additional information should the employer be of the opinion that the injury sustained or occupational disease contracted should not be accepted as work related. Typical examples would be:

1. On the Monday morning an employee reported a knee injury. The employer was however informed by another employee that the injured employee was carried of the soccer field the previous Sunday due to him sustaining a knee injury; and / or
2. An employee was diagnosed with a lung problem which he claims is due to over exposure to fumes generated during spray painting operations. The said employee is not employed in the spray painting area and it is common knowledge that the employee does panel beating and spray painting from his garage at home.

The prescribed form must be completed and if available, any evidence should be submitted. Based on the contents of the evidence submitted the Compensation Commissioner could decide not to accept the claim.

The team at SafeNet
SafeNet (Africa) Tel: (021) 946 1261 Fax 086 627 5424
e-mail: admin@safenetafrica.co.za
Website: http://www.safenetafrica.co.za

SafeNet Thought for the Day

2nd of May 2014

Medical treatment for work related injuries or diseases (2)

We are often asked:

1. Whether or not medical facilities or medical practitioners could refuse to treat employees who sustained work-related injuries or those who contracted an Occupational Disease?, and
2. Who is accountable for the medical bills should the Compensation Commissioner not accept the claim for compensation?

Can medical facilities or medical practitioners refuse to treat COID cases? - It often happens that medical practitioners or other medical facilities such as pharmacies refuse to provide the required medical services to COID patients, due to the fact that the service providers wait long for payment. Section 5 of the National Health Act, 2003 titled Emergency Treatment states “A health care provider, health worker or health establishment may not refuse a person emergency medical treatment”.

It is clear from above legal requirement that medical treatment may not be withheld in the event of emergencies. The term “emergency medical treatment” is not defined by the legislation, but we can safely assume that it would be treatment needed as to save the persons life. No mention is made of smaller or non-live threatening injuries and medical facilities or medical practitioners would therefore be within their right to refuse medical treatment in such cases.

Who is accountable for the medical bills should the Compensation Commissioner not accept the claim for compensation? - The Compensation Commissioner on an annual basis publishes government gazettes which contain the annual increases in medical tariffs. The pre-amble to all these gazettes contain general information which contains the following sentence “An employee seeks medical advice at his own will. If an employee represented to a medical service provider that he is entitled to treatment in terms of the COID Act, 1993, and yet failed to inform the Compensation Commissioner or his employer of any grounds for a claim, the Compensation Fund cannot accept responsibility for medical expenses incurred. The Compensation Commissioner could also have reason not to accept a claim lodged against the Compensation Fund. In such circumstances the employee would be in the same position as any other member of the public regarding payment of his medical expenses”.

In the event of the Compensation Commissioner refusing to accept the claim lodged by the employee or his employer, all medical expenses incurred to date would be for the account of the injured party as he would be regarded as the client of the medical practitioner or facility.

The team at SafeNet
SafeNet (Africa) Tel: (021) 946 1261 Fax 086 627 5424
e-mail: admin@safenetafrica.co.za
Website: http://www.safenetafrica.co.za
2013 Nov. GCC exam results

The following report as received from the Commissioners of Examiners for the Government Certificate of Competency examinations has been reproduced by kind permission of the Department of Labour.

Readers of these result statistics should please pass on to candidates for the examinations whom they may know.

EXAMINER'S REPORT

NATIONAL EXAMINATIONS: November 2013
LEGAL KNOWLEDGE: Occupational Health and Safety Act (13050046)
ENGINEER'S CERTIFICATE OF COMPETENCY (GCC)

PART I – STATISTICS

1. 

<table>
<thead>
<tr>
<th>Date of Exam</th>
<th>Candidates enrolled</th>
<th>Candidates wrote exam</th>
<th>Success</th>
<th>Percentage passes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov 2013</td>
<td>297</td>
<td>203</td>
<td>92</td>
<td>45.5%</td>
</tr>
<tr>
<td>June 2013</td>
<td>252</td>
<td>190</td>
<td>58</td>
<td>30.5%</td>
</tr>
<tr>
<td>Nov 2012</td>
<td>265</td>
<td>188</td>
<td>62</td>
<td>33.0%</td>
</tr>
<tr>
<td>June 2012</td>
<td>262</td>
<td>174</td>
<td>73</td>
<td>42.0%</td>
</tr>
<tr>
<td>Nov 2011</td>
<td>268</td>
<td>180</td>
<td>50</td>
<td>27.8%</td>
</tr>
<tr>
<td>June 2011</td>
<td>238</td>
<td>159</td>
<td>80</td>
<td>51.3%</td>
</tr>
<tr>
<td>Nov 2010</td>
<td>238</td>
<td>172</td>
<td>46</td>
<td>26.7%</td>
</tr>
<tr>
<td>June 2010</td>
<td>239</td>
<td>158</td>
<td>78</td>
<td>49.4%</td>
</tr>
<tr>
<td>Nov 2009</td>
<td>218</td>
<td>157</td>
<td>44</td>
<td>28.0%</td>
</tr>
<tr>
<td>June 2009</td>
<td>205</td>
<td>138</td>
<td>52</td>
<td>37.7%</td>
</tr>
<tr>
<td>Nov 2008</td>
<td>219</td>
<td>157</td>
<td>68</td>
<td>43.2%</td>
</tr>
</tbody>
</table>

2. Percentage passes: 45.5%

3. Highest marks obtained: 85% by candidate No. 890512 5079 089- Strand Campus- 6/0612
   Lowest mark: 10% by candidate No. 810710 5788 082- Centurion- 8/5843
   No answers in script 0% by candidate No. 860530 5 000 008- Vereeniging- 8/5842

Institutions with best results: Pinelands 6 passes out of 7 who wrote (14 enrolments)
Centurion 5 passes out of 8 who wrote (10 enrolments)
Krugersdorp 4 passes out of 6 who wrote (6 enrolments)
Brakpan 4 passes out of 6 who wrote (7 enrolments)

4. Distribution of marks: (previous examination in brackets)

<table>
<thead>
<tr>
<th>%</th>
<th>Number of candidates</th>
<th>Number of candidates</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9</td>
<td>1 (1)</td>
<td>50-59</td>
</tr>
<tr>
<td>10-19</td>
<td>4 (6)</td>
<td>60-69</td>
</tr>
<tr>
<td>20-29</td>
<td>17 (16)</td>
<td>70-79</td>
</tr>
<tr>
<td>30-39</td>
<td>37 (42)</td>
<td>80-89</td>
</tr>
<tr>
<td>40-49</td>
<td>52 (67)</td>
<td>90-100</td>
</tr>
<tr>
<td>Totals</td>
<td>111</td>
<td>92</td>
</tr>
</tbody>
</table>

PART II- CANDIDATES’ WORK

General remarks relative to the examination as a whole and intended for publication in respect of the following:

1. Shortcomings in the answers of the candidates (by way of questions):

   Question 1: This question dealt with some definitions of the Act and duties of the employees and the CEO of a business. It was very well answered where 143 candidates (70.4 %) obtained 5 or more marks for the question.

   Question 2: This question also dealt with the Act regarding health and safety representatives and committees, and the sale of equipment for which safety standards are prescribed. It was also well answered where 141 candidates (69.5 %) obtained 5 or more marks for this question.

   Question 3: This question dealt with the General Safety Regulations. The question was about flammable liquid stores, confined spaces and about building a stack. The question was well answered where 134 candidates (66 %) obtained 5 or more marks for this question.

   Question 4: This question dealt with the Driven Machinery Regulations. It dealt mainly with the safety of the operator of machinery. It was very poorly answered where 94 candidates (46.3 %) obtained 5 or more marks for this question.

   Question 5: This question dealt with the General Machinery Regulations. It dealt mainly about the appointment of a competent person and working near moving machinery. It was reasonable answered where 105 candidates (51.7 %) obtained 5 or more marks for this question.

   Question 6: This question dealt with the Electrical Machinery Regulations. It dealt mainly with electrical machinery in Hazardous locations and earthing requirements. It was poorly answered and only 79 candidates (38.9 %) obtained 5 or more marks for this question.
Question 7: This question dealt with the Lift, Escalator and passenger Conveyor Regulations. It dealt with a definition and the registration and maintenance of lifts. It was very poorly answered where only 53 candidates (26.1 %) obtained 5 or more marks for this question while 45 candidates did not answer the question at all or obtained 1 or no marks.

Question 8: This question also dealt with the Hazardous Chemical Substance Regulations and the Asbestos Regulations. The HCS and the Asbestos Regulations dealt with the exposure of employees. It was poorly answered where 88 candidates (43.3 %) obtained 5 or more marks for this question.

Question 9: This question dealt with the Construction Regulations and the General Administrative Regulations. The construction regulations dealt demolition work while the general administrative regulations were about incident reporting and investigating. It was reasonable answered where only 84 candidates (41.4 %) obtained 5 or more marks for this question.

Question 10: This question dealt with the Pressure Equipment Regulations dealing with gas installations and the manufacture and testing of pressure vessels. It was also poorly answered where 81 candidates (39.9 %) obtained 5 or more marks for this question while 29 candidates did not answer the question at all or obtained 1 or no marks.

2. Shortcomings in the answers of the candidates (by way of questions):
Questions are still answered in too general terms repeating the facts given in the question without giving the requested information or they repeat the question as the answer. Some candidates still tend to answer, "must comply with the OHSAct and Regulations" or "as prescribed by the regulations". A number of candidates still do not answer any questions on the definitions and thus loosing needed marks as the marks for definitions in this paper amounted to 18%. Many candidates left out questions or parts of questions.

3. Difficulties in respect of the interpretation of the questions:
None

4. Difficulties in respect of the interpretation of the syllabus:
None

5. General findings
5.1 The standard of the work: Acceptable
5.2 Tidiness/Exposition: Acceptable. The answers were generally neat with the handwriting of a number of candidates that were very difficult or in a few cases impossible to read.
4.3 Language: There was only one paper answered in Afrikaans.

6. Positive suggestions Nil.

6 December 2013
Examiner
Again, this pattern is very similar to the previous session.

**Question 1:** This was a compulsory question.
Question 1.1: The candidates were asked to calculate the energy and temperature efficiency at certain stages on a steam generator plant by also using steam tables. Only a few candidates could answer the question correctly.
Question 1.2: The candidates were given a scenario where vehicles were involved in an accident due to diesel fires. The candidates were also asked to calculate the forces on the front and back wheels. Only a few candidates could answer the question correctly.

**Question 2:** This was a compulsory question.
Question 2.1: The candidates were asked to calculate the energy and temperature efficiency at certain stages on a steam generator plant by also using steam tables. Only a few candidates could answer the question correctly.

**Question 3:** This was a compulsory question.
Question 3.1: The candidates were asked to name 8 basic behavioural safety principals to ensure effective implementation of the safety system. general safety items that in an electrical workshop. This question was not well answered.
Question 3.2: The candidates were asked to name 6 outcomes of behavioural safety. This question was also fairly answered.
Question 3.3: has asked for 10 examples of reactive monitoring of data in an organisation to prevent re-occurrence of incidents in the workplace. Most of the candidates could not answer this question.
Question 3.4: has asked for 2 basic steps of risk assessment. This question was well answered.

**Question 4**
Question 4.1: This question was a strength of material question on a solid and hollow shaft that is used to transmit power. The candidates were asked to calculate the size of the shaft and the percentage saving on the hollow shaft. This was a fairly easy question for those candidates who knew the formulae.

**Question 5:**
Question 5.1: The candidates were asked to calculate the cost of two transformers with different losses and prices. They were also asked which transformer they will select and why. This question was not well answered.
Question 5.2: The candidates were asked to calculate the shaft power and efficiency on a three phase induction motor. Only a few candidates could answer this question

**Question 6:**
Question 6.1: This question was on a two stage single-acting reciprocating air compressor where the candidates have to answer various questions. Most of the candidates could not answer this question.
Question 6.2: The candidates were asked to calculate the isentropic efficiency and power required on a centrifugal machine that compresses air. This question was better answered than the previous one.

**Question 7:**
Question 7.1: The candidates were asked to calculate the torque required on the drum of a passenger lift and the power required to lift the car at a specific stage. Some candidates could answer this question.
Question 7.2: The candidates were asked to name 3 types of bucket elevators. Some candidates could answer this question, but many of them have quest the answers.
Question 7.3: has asked for 8 examples of hazardous locations. This question was well answered.
Question 7.4: has asked for 4 earth fault current protective measures that can be used to protect people, animals and property against harmful earth fault currents. Those who knew SANS 10142-1 have answered this question very well.
Question 7.5: has asked for 4 factors to keep in mind before an electrical installation can be done. Again, those who knew SANS 1 0142-1 have answered this question very well.

**General comments**
The common problems are as follow:
• Candidates not prepared;
• Lack of technical background;
• Basic formulae and basis mathematics not known; and
• Does not understand the questions.