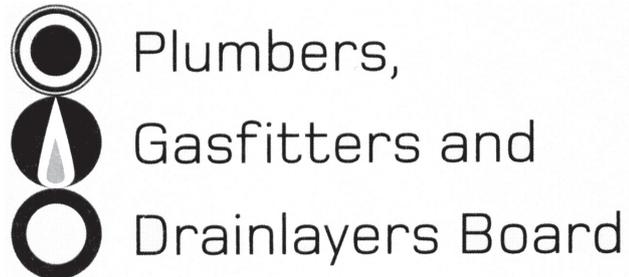


No. 9194



CRAFTSMAN EXAMINATION, NOVEMBER 2007  
**COMMON**

ANSWER SCHEDULE



## ANSWER 1

(a) To prevent the spread of fire and smoke from one section to another. (1 mark)

(b) A fusible link melts at a predetermined temperature and causes the spring loaded or weighted louvres in the duct to close and prevent the spread of fire. (2 marks)

(c) Any ONE:

1 Where a duct penetrates a fire rated bulkhead.

2 Prior to any branch take off.

(1 mark)

(d) A fire cell is rated in the time it will be effective, e.g. 30 minutes.

(1 mark)

(e) Any FOUR:

Fit a special silencer on the fan outlet.

Use internally insulated duct work to absorb the noise.

Use lower fan speeds with larger ducting to reduce noise velocity.

In rectangular ducting fit turning vanes to sharp bends.

Use long radius bends and swept junctions.

Use flexible joints where fans connect to ducting.

And provide anti vibration mounts for fans.

Cross bracing or stiffening of the ducting.

(4 marks)

**Total 9 marks**

## ANSWER 2

(a) Any FOUR:

Use of zones allows separate temperature control of various areas of a building.

Usage.

Solar gain.

Prevailing winds.

Efficiency.

Building design.

(½ mark each) (2 marks)

(b) (i) Temperature difference =  $95 - 40 = 55^{\circ}\text{C}$ .

(1 mark)

$$\text{Heat input} = \frac{23000 \times 55 \times 4.187}{1000}$$

(1 mark)

$$= \frac{5296555\text{kJ}}{1000}$$

$$= 5296.55\text{MJ}$$

(1 mark)

(ii)  $\frac{5296.55}{3.6}$

$$= 1471.27\text{kw}$$

(1 mark)

**Total 6 marks**

### ANSWER 3

Materials	Quantity	Unit	Rate \$	Net cost \$
75mm copper pipe	8.5	m	73.20	622.20
65mm copper pipe	14.6	m	48.60	709.56
50mm copper pipe	18.7	m	46.70	873.29
40mm copper pipe	22.3	m	34.70	773.81
32mm copper pipe	16.7	m	26.80	447.56
25mm copper pipe	34.2	m	15.65	535.23
75mm copper bends	2	Number	88.70	177.40
65mm copper bends	3	Number	39.45	118.35
50mm copper bends	5	Number	14.20	71.00
40mm copper bends	3	Number	9.50	28.50
32mm copper bends	1	Number	7.00	7.00
25mm copper bends	6	Number	6.80	40.80
Total number of copper tees	12	Number	30.20	362.40
75mm valves	1	Number	333.10	333.10
65mm valves	0	Number	207.30	–
50mm valves	2	Number	81.80	163.60
40mm valves	3	Number	51.30	153.90
32mm valves	3	Number	34.20	102.60
25mm valves	10	Number	22.90	229.00
SUBTOTAL				5749.30
Add 12.5% GST				718.66
TOTAL				6467.96

Pipe quantities 1½ marks each = 9 marks

Other quantities ½ mark each = 6½ marks

Nett costs ½ mark each = 8½ marks

Sub total, GST, Total = 1 mark

Pipe quantities must be within + or - 5% for full marks

**Total 25 marks**

#### ANSWER 4

(a)  $Q = V \times A$

$$= 15 \times 0.05 \times 0.05 \times 0.7854$$

$$= 0.02945$$

$$= 0.030 \text{ cubic metres per second}$$

$$= 0.030 \times 1000$$

$$= 30 \text{ litres per second}$$

(2 marks)

(b)

Calculate the discharge power of a 65mm pipe in comparison to a 50mm ID pipe

$$\begin{aligned} \text{Formula discharge Power} &= \sqrt{D^5} \\ &= \sqrt{65^5} \\ &= \sqrt{116029062} \\ &= 34063.039 \quad (2 \text{ marks}) \end{aligned}$$

$$\begin{aligned} \text{50mm pipe} &= \sqrt{50^5} \\ &= \sqrt{312500000} \\ &= 17677.67 \quad (2 \text{ marks}) \end{aligned}$$

$$\begin{aligned} \text{Therefore, comparison} &= \frac{34063.039}{17677.67} \\ &= 1.92689 \\ &= 1.927 \quad (1 \text{ mark}) \end{aligned}$$

A 65mm pipe will discharge 1.927 times the volume of a 50mm pipe.

Accept any form of the answer (eg. percentage).

(5 marks)

**Total 7 marks**

## ANSWER 5

(a) Any TWO:

The velocity of the fluid through the orifice creates a low pressure area and atmospheric pressure forces the secondary fluid to equalise the pressure.

Answer must include change of velocity and change of pressure.

(2 marks)

(b) Used in chemical injection systems.

Used in pumping systems, centrifugal pumps and deep well pumps.

Bunsen burners, shower mixers.

(2 marks)

**Total 4 marks**

## ANSWER 6

(a) To record every occurrence of harm and near misses at work. (1 mark)

(b) 1 As soon as possible notify the Department of Labour (OSH) by phone or fax to advise what has happened, to whom and where.

2 Within 7 days or as soon as possible provide written notification in the required form.

(1 mark each) (2 marks)

(c) Any FOUR:

1 Make sure anyone injured or suspected of injury has received medical treatment if required.

2 Do not interfere with the accident scene unless a Department of Labour inspector has given permission or it is necessary to save someone's life or prevent them from harm or suffering or access for the public to essential services or utilities is required or it is necessary to prevent serious property damage.

3 Advise the local Department of Labour by phone or fax as soon as possible.

4 Carry out or co-operate in any investigation.

5 Send written notice to the nearest Department of Labour within 7 days.

6 Keep the notice (or a copy) in the accident register.

7 Eliminate isolate or minimize any identified hazard, once the Department of Labour gives permission to interfere with the accident scene.

(4 marks)

(d) Any FIVE:

- 1 Foster positive health and safety management practices in the workplace.
- 2 Identify hazards and inform the employer about them.
- 3 Discuss management of hazards with the employer.
- 4 Consult with inspectors on health and safety.
- 5 Promote employers health and safety interests.
- 6 Promote the interests of employees who have been harmed at work.
- 7 Carry out any other functions agreed to.

(5 marks)

**Total 12 marks**

## **ANSWER 7**

(a) That the proposed work will comply with the performance requirements of the NZ Building Code.

(2 marks)

(b) A method by which compliance with the Building Code may be verified.

(1 marks)

(c) 1 By calculation.

2 By laboratory tests.

(2 marks)

(d) Any FOUR:

Issuing building consents.

Inspecting the work for which they granted a consent.

Issuing notices to fix.

Issuing code compliance certificates.

Issuing compliance schedules and amending them where required.

Any other functions listed in the Building Act.

(4 marks)

**Total 9 marks**

## ANSWER 8

- (a)
- 1 A name.
  - 2 1 or more shares.
  - 3 1 or more shareholders.
  - 4 1 or more directors.

(4 marks)

(b) Any FOUR:

- 1 The full name and address of the applicant.
- 2 The full name and residential address of every director.
- 3 The full name and address of every shareholder.
- 4 The number of shares to be issued to every shareholder.
- 5 The registered office of the company.
- 6 The address for service of the company.

(4 marks)

(c) A company is able to pay its debts as they become due in the normal course of business or the value of the company's assets is greater than the value of the liabilities, including contingent liabilities.

(2 marks)

**Total 10 marks**

## ANSWER 9

- (a) To build productive employment relationships through the promotion of good faith in all aspects of the employment environment and the employment history. (2 marks)
- (b) Any THREE:
- 1 Provide to the employee a copy of the intended agreement, or the part of the intended agreement under discussion.
  - 2 Advise the employee that he or she is entitled to seek independent advice about the agreement.
  - 3 Give the employee a reasonable time to seek such advice.
  - 4 Consider and respond to any issues raised by the employee.
- (3 marks)
- (c) They must be treated for health and safety purposes as if they were employees. (1 mark)
- (d) Any FOUR:
- 1 Information about hazards in the work place.
  - 2 Information about hazards that may arise from the type of work being carried out.
  - 3 Steps to be taken to minimise the likelihood that anyone may be harmed by those hazards.
  - 4 Where to find personal protection equipment.
  - 5 How to deal with any emergencies.
- (4 marks)
- (e) (i) The length of the probationary or trial period must be specified in the employment agreement. (1 mark)
- (ii) The employee must be treated as if he were a normal employee and the provisions of employment law applying to dismissal must be fully adhered to. (2 marks)

**Total 13 marks**

## **ANSWER 10**

(a) Any FIVE:

- 1 Negotiate for union members a fair wage via employment agreement.
- 2 Help members maintain fair conditions of employment via employment agreement.
- 3 Negotiate on behalf of members in disputes with their employers.
- 4 Promote the welfare of members through improved conditions via employment agreement.
- 5 Exercise the powers of an industrial union in relation to legislation.
- 6 Represent members in negotiations with Government, ITO, etc.
- 7 Advice is generally available from unions on all industry related issues.
- 8 Unions generally can arrange access to discount group insurance or superannuation schemes for the benefit of members.

**Total 5 marks**

