

Affix label with Candidate Code
Number here.
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Number if known

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No. 9194



Plumbers,
Gasfitters and
Drainlayers Board

CRAFTSMAN EXAMINATION, JUNE 2008 COMMON

QUESTION AND ANSWER BOOKLET

Time allowed THREE hours

INSTRUCTIONS

Check that the Candidate Code Number on your admission slip is the same as the number on the label at the top of this page.

Do not start writing until you are told to do so by the Supervisor.

Total marks for this examination: 100.

The pass mark for this examination is 60 marks.

Write your answers and draw your sketches in this booklet. If you need more paper, use the blank pages at the back of this booklet. Clearly write the question number if any of these pages are used.

All working in calculations must be shown.

Candidates are permitted to use the following in this examination:

Drawing instruments, approved calculators, ruler.

The following are NOT permitted in the examination room:

Any publications, Acts, Regulations, Codes of Practice, or Standards

Check that this booklet has all of 21 pages in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION

QUESTION 1

- (a) A PVC pipe is to pass through a fire rated wall of a building. State the relationship between the fire collar that must be used to seal the penetration through the wall and the fire rating of the wall.

(1 mark)

- (b) NZS 3604 Timber Framed Buildings and the New Zealand Building Code G 12/AS1 allow for a timber platform to be constructed in the roof space to support supply tanks of up to 150 litres.

State in full FOUR requirements that apply to the construction of the platform.

1

2

3

4

(4 marks)

- (c) Notches are to be cut in a stud. State the minimum distance there must be between the notches as specified in NZS 3604 Timber Framed Buildings.

(1 mark)

Total 6 marks

QUESTION 2

- (a) A rectangular hall measures 24.000m long by 12.000m wide, and has an average ceiling height of 5.500m. The hall is to be heated with horizontal ceiling mounted fan heaters containing hot water heating coils. The coils are to be connected to an existing gas water heating boiler. Each heater has an output of 18kW.

Using a heating requirement of 45Watts/m³ of air space, calculate how many heaters will need to be installed.

Show all working.

(4 marks)

QUESTION 2 (cont'd)

- (b) A dangerous goods store measures 10.000m long by 4.000m wide. The store has a ceiling height of 4.000m.

The store requires five air changes per hour. The extractor fan to be used is a propeller fan that will be mounted in the wall at one end of the store. Weather louvres will be fitted at the opposite end of the store to allow natural air ingress. No ducting is required.

Calculate, in litres of air per second, the fan duty required. Do not allow for any ducting resistance losses.

Show all working.

(5 marks)

Total 9 marks

QUESTION 3

State FOUR of the general duties required of an employer to ensure a safe and healthy workplace for employees.

1 _____

2 _____

3 _____

4 _____

Total 8 marks

QUESTION 4

State the purpose of each of the following in relation to tendering for work.

(a) Plans or drawings.

(1 mark)

(b) Specifications.

(1 mark)

(c) Conditions of contract.

(1 mark)

(d) Special conditions of contract.

(1 mark)

(e) Schedule (or bill) of quantities.

(1 mark)

(f) Tender form.

(1 mark)

Total 6 marks

QUESTION 5 (cont'd)

Using the scale shown on the diagram, measure the quantities of galvanised steel pipe from the plan, and determine the number of bends, tees and valves required for the installation.

Using the following schedule of material and labour rates, complete the schedule page below to calculate the total value for the contract exclusive of GST.

Item	Labour rate for installing (\$)	Material rate (\$)
65mm galv. pipe	3.75/m	28.53/m
50mm galv. pipe	2.50/m	20.77/m
40mm galv. pipe	2.50/m	14.76/m
32mm galv. pipe	1.66/m	12.85/m
25mm galv. pipe	1.66/m	9.98/m
65mm galv. bends	15.00 ea	22.63 ea
50mm galv. bends	15.00 ea	9.82 ea
40mm galv. bends	12.50 ea	6.33 ea
32mm galv. bends	6.00 ea	4.57 ea
25mm galv. bends	6.00 ea	2.86 ea

Item	Labour rate for installing (\$)	Material rate (\$)
All galv. tees	15.00 ea	22.00 ea
65mm valve	15.00 ea	217.67 ea
50mm valve	15.00 ea	84.32 ea
40mm valve	14.00 ea	53.86 ea
32mm valve	6.00 ea	35.84 ea
25mm valve	6.00 ea	24.03 ea
Marker tape	0.60/m	0.89/m
Denso tape	2.00/lineal m of pipe	5.97/lineal m of pipe

Item	Description	Qty	Unit	Labour rate	\$	c	Material rate	\$	c
1	Galv. pipe 65mm		m						
2	Galv. pipe 50mm		m						
3	Galv. pipe 40mm		m						
4	Galv. pipe 32mm		m						
5	Galv. pipe 25mm		m						
6	Galv. bend 65mm		ea						
7	Galv. bend 50mm		ea						
8	Galv. bend 40mm		ea						
9	Galv. bend 32mm		ea						
10	Galv. bend 25mm		ea						
11	Galv. tees (all sizes)		ea						
12	Ball-valve 65mm		ea						
13	Ball-valve 50mm		ea						
14	Ball-valve 40mm		ea						
15	Ball-valve 32mm		ea						
16	Ball-valve 25mm		ea						
17	Denso wrapping to pipe		m						
18	Marker tape		m						
19	Trenching and backfill		sum	n/a	n/a		sum	2435	00
20	Sand fill in place		sum	n/a	n/a		sum	987	00
	Sub totals								
	Total labour and materials								
	Profit (margin of 22%)								
	Total excl. GST								

Total 17 marks

QUESTION 6

(a) List FOUR causes of pressure loss when a fluid is flowing in a straight pipe.

- 1 _____
- 2 _____
- 3 _____
- 4 _____

(2 marks)

(b) A room measures 9.400m long by 7.300m wide and has a ceiling height of 2.700m.

The ambient temperature in the room is to be 22°C. The outside temperature is 2.5°C.

To raise 1m³ of air through 1°C requires 1.230kJ of heat.

Calculate in megajoules the amount of heat required to raise the temperature of the room from the outside temperature to the ambient temperature. Give your answer to three decimal places. Do not allow for any heat losses.

(2 marks)

(c) Fluid flows from an open ended pipe at a nominal speed. State the technical term for the speed of flow, and state what determines the exit speed.

(2 marks)

QUESTION 6 (cont'd)

(d) List TWO factors which determine the amount of fluid discharging from an outlet.

1 _____

2 _____

(2 marks)

(e) State the effect on the fluid discharging from a pipe if the pressure in the system remains constant but the pipe diameter is increased.

(2 marks)

Total 10 marks

QUESTION 7

Give the meaning of each of the following terms as used in the Health and Safety in Employment Act.

(a) Accident.

(1 mark)

(b) All practicable steps.

(1 mark)

(c) Harm.

(1 mark)

(d) Hazard.

(1 mark)

(e) Health and safety committee.

(1 mark)

QUESTION 7 (cont'd)

(f) Health and safety representative.

(1 mark)

(g) Serious harm.

(1 mark)

(h) Significant harm.

(1 mark)

Total 8 marks

QUESTION 8

(a) The NZ Building Code and NZS 5261 are described as performance based documents.

State what the term performance based code or standard means.

(2 marks)

(b) A building services engineer has requested that the contractor seek advice on a new type of piping system as an alternative to the piping system specified for a particular contract.

List TEN questions the supplier of the product should be asked prior to a decision being made about whether or not to use the alternative product.

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

9 _____

10 _____

(5 marks)

QUESTION 8 (cont'd)

(c) List SIX documents a plumbing/gasfitting company would expect to receive in order to prepare a tender for a large contract.

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____

(3 marks)

Total 10 marks

QUESTION 9

- (a) A budget is being prepared for a plumbing/gasfitting business to show the business' projected net profit/loss.

State THREE major headings that the budget should contain.

- 1 _____
- 2 _____
- 3 _____

(3 marks)

- (b) State FOUR steps that would be carried out in preparing a budget for a plumbing/gasfitting business that has been in operation for three years.

- 1 _____
- 2 _____
- 3 _____
- 4 _____

(4 marks)

- (c) (i) State the information that cash flow forecasting provides.

- (ii) State how the results of cash flow forecasting can assist with funding.

(2 marks)

QUESTION 9 (cont'd)

(d) Give the meaning of each of the following terms.

(i) Gross profit.

(1 mark)

(ii) Net profit.

(1 mark)

Total 11 marks

QUESTION 10

- (a) For a progress payment claim to be made under the Construction Contracts Act, it must be presented at the end of the periods agreed to (eg monthly).

List FOUR other requirements under the Act regarding the progress payment claim.

1 _____

2 _____

3 _____

4 _____

(4 marks)

- (b) A contractor making payments to a sub-contractor may respond to a payment claim by providing a payment schedule to the sub-contractor.

List TWO requirements of this schedule.

1 _____

2 _____

(2 marks)

QUESTION 10 (cont'd)

- (c) A contractor schedules a lesser payment to a sub-contractor than the amount claimed. The sub-contractor is entitled to be given reasons for the lesser payment.

Give TWO reasons regarding the lesser payment that must be included in the payment schedule.

1 _____

2 _____

(2 marks)

- (d) On a commercial contract, a payment due to a subcontractor has not been made. The amount of the payment is not in dispute.

State the TWO actions available under the Construction Contracts Act that enable the subcontractor to seek redress.

1 _____

2 _____

(2 marks)

Total 10 marks

QUESTION 11

(a) Give the meaning of each of the following terms in relation to employment legislation.

(i) Arbitration.

(ii) Mediation.

(2 marks)

(b) List FOUR circumstances that may lead to an employment related personal grievance claim.

1

2

3

4

(2 marks)

(c) State a document that must contain personal grievance procedures.

(1 mark)

Total 5 marks

For Examiner's use only

Question number	Marks	Marks
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
Total		