

Affix label with Candidate Code
Number here.
If no label, enter candidate
Number if known

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No. 9194



Plumbers,
Gasfitters and
Drainlayers Board

CRAFTSMAN EXAMINATION, NOVEMBER 2007 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, ask the Supervisor for extra sheets. Write your Candidate Code Number and the number 9194 on any extra sheets used, and attach them to this booklet. **NO SEPARATE ANSWER BOOKLET IS TO BE USED.** Write the number of extra sheets used in the box on the last page of this booklet. Write NIL if you have not used any.

All working in calculations must be shown.

Candidates are permitted to use the following in this examination:

Drawing instruments, approved calculators

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 14 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) State the purpose of a fire damper in a ducted heating and ventilation system.

(1 mark)

(b) Explain how a fire damper in a ducted heating and ventilation system operates.

(2 marks)

(c) Name ONE location within a ducted heating and ventilation system where a fire damper would be fitted.

(1 mark)

(d) State how a fire cell is rated.

(1 mark)

(e) Noise can be a problem in ducted heating and ventilation systems. List FOUR separate methods of minimising this.

1

2

3

4

(4 marks)

Total 9 marks

QUESTION 2

(a) Give FOUR reasons for dividing a building into separately controlled zones when the central heating system is being designed.

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

(2 marks)

(b) A commercial hot water central heating system uses water heated at off peak times and stored for use during business hours.

The tank contains 23,000 litres of water and this is stored at 95°C. After completion of a day's heating, the temperature of the water has dropped to 40°C.

To raise 1 kg of water through 1°C requires 4.187kJ.

(i) Calculate in MJ the heat input required to raise the temperature back to the maximum operational level.

(3 marks)

QUESTION 2 (cont'd)

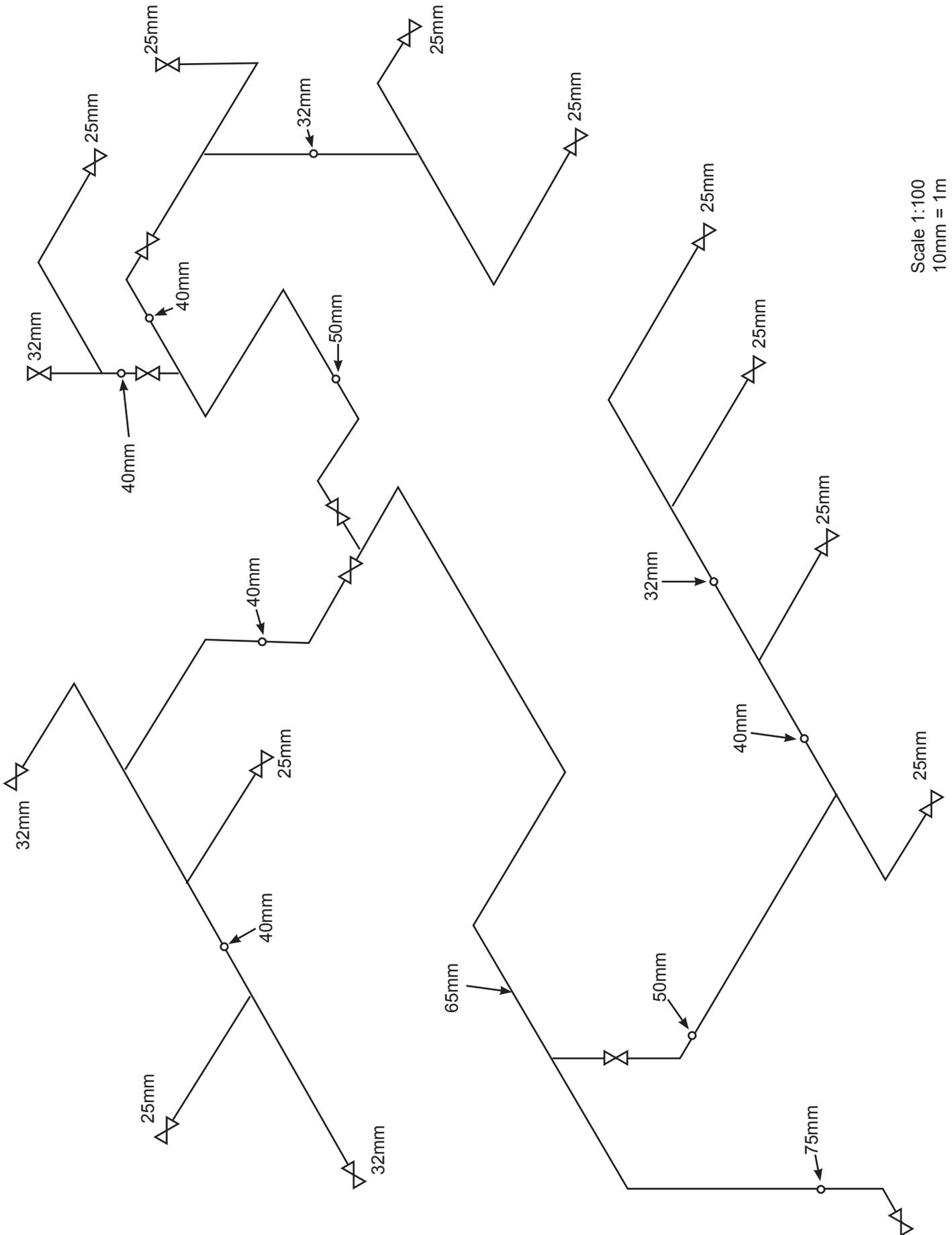
- (b) (ii) If the heat recovery process takes one hour, calculate how many kilowatts would be required.

(1 mark)

Total 6 marks

QUESTION 3

The following diagram shows an isometric view of a pipe layout.



Scale 1:100
10mm = 1m

QUESTION 4

- (a) Fluid is discharged from a 50mm ID pipe at a velocity of 15 metres per second. Calculate the volume of fluid discharged per second. Show all working.

Formula: $Q = V \times A \times 1000$

Q = quantity in L/second

V = velocity in m/second

A = area in m²

(2 marks)

- (b) Calculate the discharge power of a 65mm ID pipe in comparison with a 50mm ID pipe. Show all working.

Formula: Discharge Power = $\sqrt{D^5}$

(5 marks)

Total 7 marks

QUESTION 5

The Venturi effect has practical applications.

(a) Describe the Venturi effect.

(2 marks)

(b) Give TWO different practical examples of the Venturi effect.

1

2

(2 marks)

Total 4 marks

QUESTION 6

(a) State the purpose of an accident register in a place of work.

(1 mark)

(b) If an incident of serious harm occurs at work, employers must carry out TWO actions. State these actions.

1

2

(2 marks)

(c) List FOUR duties of an employer when dealing with an accident in a workplace that results in serious harm.

1

2

3

4

(4 marks)

QUESTION 6 (cont'd)

(d) List FIVE functions of a site Health and Safety representative under the Health and Safety in Employment Act.

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

(5 marks)

Total 12 marks

QUESTION 7

(a) State what must be demonstrated to an issuing authority (Territorial Authority) when applying for a building consent and stipulating an alternative solution.

(2 marks)

(b) Define the term verification method as used in the New Zealand Building Code.

(1 mark)

(c) List TWO verification methods given in the New Zealand Building Code.

1

2

(2 marks)

(d) Authorities issuing Building Consents have certain duties. List FOUR of these.

1

2

3

4

(4 marks)

Total 9 marks

QUESTION 8

(a) For incorporation of a company there are FOUR essential requirements that must be met. List these requirements.

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

(4 marks)

(b) An application for registration of a company must contain specific items of information. List FOUR of these items.

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

(4 marks)

(c) The Companies Act requires that companies must satisfy a solvency test. Explain what is meant by the term solvency test.

- _____
- _____
- _____
- _____

(2 marks)

Total 10 marks

QUESTION 9

(a) State the principal object of the Employment Relations Act.

(2 marks)

(b) When negotiating an individual employment agreement with an employee, the employer has certain duties. List THREE of these duties.

1

2

3

(3 marks)

(c) In relation to the Health and Safety in Employment Act, state what the employer's obligations are to persons getting unpaid work experience on a job site or in a workshop.

(1 mark)

QUESTION 9 (cont'd)

(d) Under the Health and Safety in Employment Act, employers are required to provide employees with specific information in regard to hazards. List FOUR items of this information that must be given.

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

(4 marks)

(e) (i) Where the parties to an employment agreement agree that an employee will serve a probationary or trial period after the commencement of the employment, state what must be included in the terms of the employment agreement.

(1 mark)

(ii) State TWO effects an employee's probationary or trial period has if the employer wishes to dismiss the employee during this period.

- 1 _____
- 2 _____

(2 marks)

Total 13 marks

QUESTION 10

List FIVE advantages of being a member of a registered union.

- 1 _____

- 2 _____

- 3 _____

- 4 _____

- 5 _____

Total 5 marks

For Candidate's use

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|---|--|
| Number of EXTRA sheets used (write NIL if none have been used). | |
|---|--|

For Examiner's use only

| Questions Answered | Marks | Marks |
|--------------------|-------|-------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| Total | | |