External assessment 2026

Multiple choice question book

Engineering

General instruction

- Work in this book will not be marked.
- Predicted paper written by Tangent Tuition. Not QCAA material.

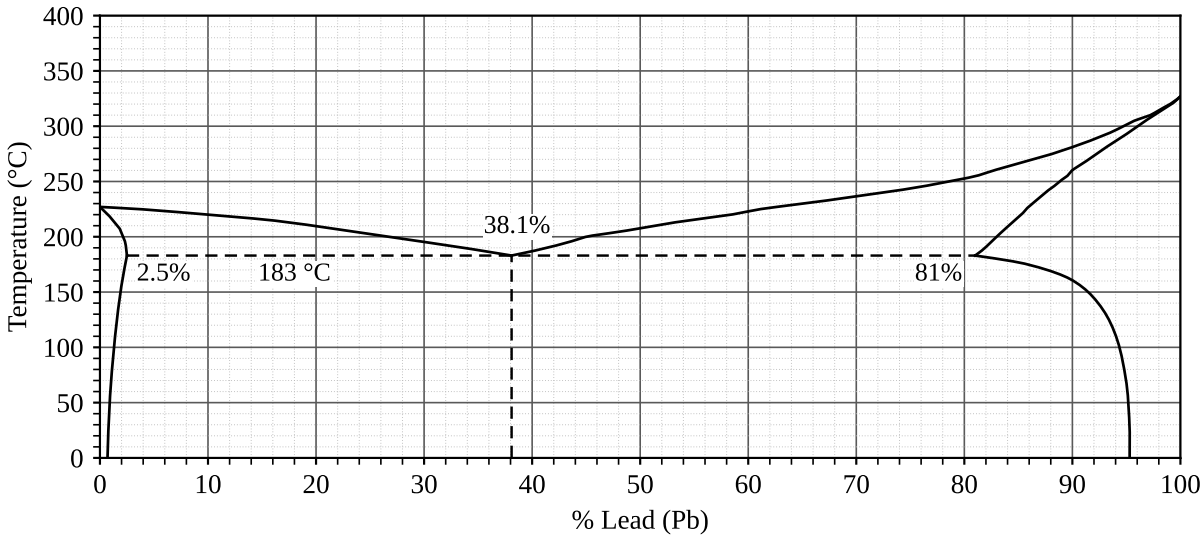
Section 1

Instruction

- Respond to these questions in the question and response book.

QUESTION 1

A lead–tin thermal-equilibrium phase diagram is shown.



What phases would be present in an alloy containing 20% Pb at a temperature of 200 °C?

(A) L

(B) $\alpha + L$

(C) $\alpha + \beta$

(D) $\beta + L$

QUESTION 2

A plain carbon steel contains 0.25% carbon.

Which application is this steel most suitable for?

(A) car body panels

(B) train wheels

(C) cutting tools

(D) springs

QUESTION 3

Which plastic is most suitable for the gears inside a kitchen food mixer?

(A) acrylic

(B) acrylonitrile butadiene styrene

(C) nylon

(D) polycarbonate

QUESTION 4

Low carbon steel wire becomes hard and brittle after it is cold drawn.

Which process restores the ductility of the wire?

(A) hardening

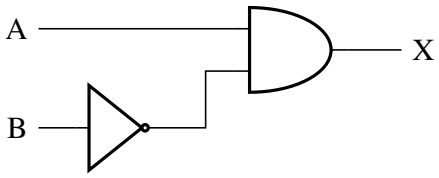
(B) process annealing

(C) tempering

(D) cold rolling

QUESTION 5

A logic gate circuit is shown.



For which combination of inputs is the output X equal to 1?

(A) A = 0, B = 0

(B) A = 0, B = 1

(C) A = 1, B = 0

(D) A = 1, B = 1

QUESTION 6

A rack and pinion is used to open a sliding gate.

Which motion conversion takes place?

(A) rotary motion to linear motion

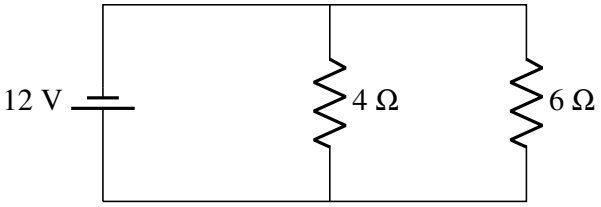
(B) rotary motion to reciprocating motion

(C) oscillatory motion to linear motion

(D) linear motion to rotary motion

QUESTION 7

A circuit containing a battery and two resistors is shown.



What is the total current supplied by the battery?

(A) 1.2 A

(B) 3 A

(C) 5 A

(D) 28.8 A

QUESTION 8

A chain block is used to lift an engine with a weight of 1200 N. The effort force required is 250 N and the chain block is 80% efficient.

What is the velocity ratio of the chain block?

(A) 0.06

(B) 3.84

(C) 4.8

(D) 6

QUESTION 9

A 1200 kg roller coaster car starts from rest and rolls down a section of track. It reaches a speed of 12 m/s at the bottom. Assume friction is negligible.

What is the vertical height that the car descends?

(A) 0.6 m

(B) 7.3 m

(C) 14.7 m

(D) 72.0 m

QUESTION 10

A construction hoist lifts a 250 kg pallet of bricks vertically through 12 m at a constant speed. The lift takes 2 minutes.

What is the power output of the hoist?

(A) 25 W

(B) 245 W

(C) 14.7 kW

(D) 29.4 kW

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