

Past-paper walk-through

Corrosion of metals ■ 9.5

eXercise

Questions in this set

- 0620/21 N25 Q28 ■ 1 mark
- 0620/22 N25 Q27 ■ 1 mark
- 0620/21 J25 Q29 ■ 1 mark
- 0620/22 J25 Q27 ■ 1 mark
- 0620/22 M25 Q27 ■ 1 mark

Question 28

0620/21 N25 ■ Q28 ■ 1 mark

28 Which row identifies methods used to prevent iron from rusting?

	greasing	painting	washing with distilled water
A	✓	✗	✓
B	✗	✓	✓
C	✓	✓	✗
D	✓	✓	✓

key

✓ = yes

✗ = no

Question 28

Solution 28

Answer: **C**

Why

- Rusting needs both oxygen and water, so any method that keeps them out works.
- Greasing and painting both form a barrier over the surface.
- Washing with distilled water adds water rather than excluding it, so it does not prevent rust.

Question 27

0620/22 N25 ■ Q27 ■ 1 mark

27 An iron nail is fully covered with zinc to prevent it from rusting.

Which row describes this method of protection and explains why zinc is used to protect the iron nail?

	method of protection	reason zinc is used
A	barrier method and sacrificial protection	zinc is more reactive than iron
B	barrier method and sacrificial protection	iron is more reactive than zinc
C	sacrificial protection only	zinc is more reactive than iron
D	barrier method only	iron is more reactive than zinc

Solution 27

Answer: **A**

Why

- Covering the nail completely keeps out both air and water – a barrier method.
- Zinc is also more reactive than iron, so it corrodes in preference.
- It is that greater reactivity, not the coating alone, that explains why zinc is chosen.

Question 29

0620/21 J25 ■ Q29 ■ 1 mark

29 Galvanising prevents iron from rusting.

Which statements about galvanising are correct?

- 1 Galvanising involves coating the iron with silver.
- 2 Galvanising prevents oxygen and water from coming into contact with the iron.
- 3 Galvanising works because the metal coating loses electrons more readily than iron.

A 1, 2 and 3 **B** 1 and 3 only **C** 2 and 3 only **D** 2 only

Solution 29

Answer: **C**

Why

- Galvanising coats the iron with *zinc*, not silver – statement 1 is wrong.
- The zinc layer is a physical barrier keeping out air and water – statement 2 is right.
- Zinc is also more reactive, so it protects sacrificially even where scratched – statement 3 is right.

Question 27

0620/22 J25 ■ Q27 ■ 1 mark

27 Zinc is used to galvanise iron to prevent it from rusting.

Which statements are correct?

- 1 Galvanising is an example of a barrier method.
- 2 If the zinc is scratched, the iron will rust very quickly.
- 3 Galvanising is an example of sacrificial protection.
- 4 Zinc is more reactive than iron and so accepts electrons more readily.

A 1, 2 and 4

B 1 and 3

C 2, 3 and 4

D 2 and 3 only

Solution 27

Answer: **B**

Why

- Galvanising coats the iron with zinc, which keeps air and water out – a barrier method, so statement 1 is right.
- Zinc is also *more* reactive than iron, so it corrodes in preference – sacrificial protection, statement 3.
- That is why a scratch does not matter: the exposed iron is still protected, so statement 2 is wrong.

Question 27

0620/22 M25 ■ Q27 ■ 1 mark

27 An example of sacrificial protection is the fitting of zinc blocks to the outside of a ship's steel hull.

Which statement explains why zinc is used to protect the iron in the steel from rusting?

- A** Zinc is more reactive than iron so it loses electrons more easily.
- B** Zinc is less reactive than iron so it loses electrons more easily.
- C** Zinc is more reactive than iron so it gains electrons more easily.
- D** Zinc is less reactive than iron so it gains electrons more easily.

Solution 27

Answer: **A**

Why

- Sacrificial protection works because the protecting metal is *more* reactive.
- Zinc lies above iron in the reactivity series, so zinc loses electrons in preference.
- The zinc corrodes instead of the iron, and is replaced when used up.