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2850-254 DECEMBER 2014
Level 2 Certificate/Diploma in Engineering (IVQ)
Principles of maintenance technology

Tuesday 9 December 2014
09:30 – 11:30

You should have the following for this examination
- one answer book
- drawing instruments
- calculator

General instructions
- All intermediate steps in calculations **must** be shown.
- All questions do **not** carry equal marks. The maximum marks for each section within a question are shown.
- Answer **all** questions.

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1 a) Give **two** reasons why it is important to maintain a clean and tidy work area. (2 marks)

b) State which document would be used to confirm safe working arrangements before carrying out maintenance. (1 mark)

c) Name **two** pieces of information that the document stated in part b) should contain. (2 marks)

(Total marks 5)

2 a) State which colour of signage is used to indicate **each** of the following.

i) A hazard.

ii) Prohibition (must **not** do).

iii) Mandatory (must do). (3 marks)

b) Name the **most** appropriate item of Personal Protective Equipment (PPE) that should be worn for **each** of the following activities.

i) Working at height.

ii) Working near vehicular traffic. (2 marks)

(Total marks 5)

3 a) Describe how to confirm that equipment is safe to use before maintenance activities. (2 marks)

b) State **one** action that should be taken if equipment is found to be damaged or defective. (1 mark)

(Total marks 3)

4 Name **three** different sources of information that may be used when carrying out maintenance activities. (3 marks)

(Total marks 3)

5 Describe **each** of the following types of maintenance.

a) Scheduled. (2 marks)

b) Planned preventive. (2 marks)

c) Breakdown. (2 marks)

(Total marks 6)

6 a) Describe why **each** of the following requirements need to be considered when planning a maintenance activity.

i) Materials and replacement parts.

ii) Provision of services. (4 marks)

b) Name **four** factors other than those listed in part a) that may need to be considered when planning maintenance activities. (4 marks)

(Total marks 8)

7 Name **two** absorbent materials that may be used when dealing with a spillage of oil. (2 marks)

(Total marks 2)

8 Describe how **four** different types of human sensory information might be used to assist in fault diagnosis. (8 marks)

(Total marks 8)

9 State **two** types of fault location techniques. (2 marks)

(Total marks 2)

10 a) Describe how to determine if **each** of the following items of access equipment is safe for use.
   i) Ladders.
   ii) Scaffolding. (4 marks)

   b) State **two** necessary pieces of information required to determine the safe use of lifting tackle. (2 marks)

   c) With reference to moving heavy equipment manually across a flat surface.
   i) State the **minimum** number of rollers required. (1 mark)
   ii) Name **two** other pieces of equipment which could be used. (2 marks)

(Total marks 9)

11 a) Describe how to fully prepare a 1.0 mm^2, single core electrical cable for termination (connection) on to a connector rail. (3 marks)

   b) List **three** tools required for the procedure in part a). (3 marks)

(Total marks 6)

12 a) Describe how to perform **each** of the following checks using a multimeter.
   i) Continuity.
   ii) Resistance. (4 marks)

   b) State the unit of measurement for the readings obtained in part a). (1 mark)

(Total marks 5)

13 Describe fully how to remove and replace a
   a) split pin (3 marks)
   b) gasket between two faces. (3 marks)

(Total marks 6)

14 a) State **one** application where **each** of the following lubrication methods would be used.
   i) Mist lubrication.
   ii) Spray or brushed on grease.
   iii) Splash lubrication. (3 marks)

   b) State **three** reasons for lubricating components. (3 marks)

(Total marks 6)

15 Describe the **three** stages of safely isolating a pressurised system in order to remove or maintain the system's components. (6 marks)

(Total marks 6)

16 a) Describe the appropriate procedure for storing components when dismantling equipment. (2 marks)

   b) Describe how to remove a rivet from sheet metal. (2 marks)

(Total marks 4)

17 a) Using a Dial Test Indicator, describe in the correct order the **four** stages of aligning a solid coupling between a pump and an electric motor. (8 marks)

   b) Describe the correct sequence of tightening mechanical fasteners on an eight hole pipe flange. (2 marks)

(Total marks 10)

18 State **six** different pieces of information that should be included on a maintenance report following the completion of a maintenance activity. (6 marks)

(Total marks 6)