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.
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 mm², 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. (4 marks)
   ii) Resistance.
   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)

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)