

2502/204

PLANT ENGINEERING DRAWING

June/July 2020

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN MECHANICAL ENGINEERING
(PLANT OPTION)

MODULE II

PLANT ENGINEERING DRAWING

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Drawing instruments;

A3 Drawing paper.

This paper consists of TWO sections; A and B.

Answer questions 1 in section A (Compulsory) and any THREE questions from section B in the answer booklet provided.

Maximum marks for each part of a question are as indicated.

Candidates should answer the questions in English.

This paper consists of 6 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

SECTION A : (Compulsory)

1. Figure 1 shows parts of a blow off cork drawn in first angle projection. Assemble the parts and draw in half size, the following views in first angle projection:
- (a) a sectional front elevation along A-A;
 - (b) end elevation in the direction of arrow B;
 - (c) the plan.

Balance and include a parts list. Show all hidden details and indicate any six leading dimensions.

(40 marks)

easytvvet.com

SECTION B

Answer **THREE** questions from this section.

2. (a) Draw labelled sectional views of the following holding down bolts in assembly:
- (i) tee bolt;
 - (ii) rag bolt.
- (6 marks)
- (b) Draw labelled sectional views of the following:
- (i) chevron seals assembly;
 - (ii) staffing box assembly.
- (6 marks)
- (c) Draw sectional views of the following assemblies:
- (i) anti vibration rubber mount;
 - (ii) spring mount.
- (8 marks)
3. (a) Draw labelled sectional views for the following thread forms:
- (i) buttress;
 - (ii) acme.
- (8 marks)
- (b) Draw sectional views of the following locking devices:
- (i) slotted nut with split-pin locking assembly;
 - (ii) woodruff key assembly.
- (7 marks)
- (c) Draw a labelled cross sectional view of a frictional coupling. (5 marks)
4. (a) Draw labelled sectional views of the following:
- (i) float and lever steam trap;

(ii) cyclonic type steam separator.

(8 marks)

(b) A cam having a knife follower has the following specifications:

Shaft diameter: 15 mm
Direction of rotation: Clockwise
Minimum diameter: 20 mm
Lift: 30 mm

The performance of the cam is described as follows:

$0^\circ - 90^\circ$: Simple harmonic motion to full lift.
 $90^\circ - 180^\circ$: Dwell.
 $180^\circ - 360^\circ$: Uniform retardation.

Draw the following:

- (i) performance graph;
- (ii) the cam profile.

(12 marks)

5. (a) Illustrate the following types of fits indicating the maximum and minimum sizes of the shaft and hole:

- (i) clearance fit;
- (ii) interference fit.

(8 marks)

(b) (i) Using the BS 4500 chart in table 1, determine the maximum and minimum sizes of the hole stated as 100 H9/d10.

(ii) State the type of fit for b(i).

(5 marks)

(c) Draw labelled diagrams of the following:

- (i) Soda acid water portable fire extinguisher (striking type).
- (ii) Chemical foam fire extinguisher.

(7 marks)

