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UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER

PROGRAMME: BSC ABE II

COURSE CODE: ABE203

TITLE OF PAPER: ENGINEERING DRAWING

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: BASIC DRAWING INSTRUMENTS

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO OTHER QUESTIONS.

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SECTION I COMPULSORY

QUESTION 1

Choose the correct answers in the questions that follow below: [40 marks]

1. The organized and orderly approach to solving problems is known as the:
   A. Engineering process
   B. Design process
   C. Aesthetic process
   D. Functional process

2. This is formed where three or more surfaces intersect:
   A. Oblique
   B. Line
   C. Edge
   D. Vertex

3. This is the plane upon which the top view is projected:
   A. Horizontal
   B. Frontal
   C. Profile
   D. Base

4. This is a thin solid line directing attention to a note or dimension and starting with an arrowhead or dot:
   A. Dimension line
   B. Extension line
   C. Leader
   D. Specification

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5. In the section view, the areas that would have been in actual contact with the cutting plane are shown with:

   A. A cutting plane line

   B. Section lining

   C. Visible lines

   D. Lines and arrows

6. The _____ is a standard element of a section view in a technical drawing.

   A. Cutting Plane line

   B. Section lines

   C. Material hatch pattern

   D. All of the above

7. In multi-view drawing it is common practice to include three views, the front, the top and the right side. If no dimensions are required on the right side view the drafter can _____.

   A. leave the view as is

   B. eliminate the view

   C. use the left view instead

   D. none of the above

8. Geometric primitives include shapes such as _____.

   A. boxes

   B. cylinders

   C. wedges

   D. all of the above

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9. The principle reason for using an auxiliary view is _____.
   A. to eliminate hidden lines
   B. to create a true projection plane from an inclined plane in one of the primary views
   C. to show cylinders as ellipses
   D. to locate center marks

10. This type of auxiliary view is projected onto a plane that is perpendicular to one of the principal planes of projection:
   A. Primary
   B. Secondary
   C. Revolved
   D. Successive

11. Circular shapes appear in this fashion when viewed at an angle other than 90 degrees:
   A. Circular
   B. Elliptical
   C. Lengthened
   D. Angular

12. These drawings are given to contractors to perform work or manufacture individual parts:
   A. Assembly details
   B. 3D drawings
   C. Working drawings
   D. Skeleton assemblies

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13. The command for converting single lines drawn in 2D drafting into a polyline is _____.

A. combine

B. add

C. join

D. All of the above

14. Baseline dimensions are referenced from a common geometric feature known as a _____.

A. edge

B. corner

C. datum

D. point of reference

15. Given a situation in which the drafter has crossed extension lines in a drawing what can be done to clean up the point of crossing?

A. Use the Modify tool to clean up the extension lines.

B. Use the Tolerance tool to clean up the extension lines.

C. Use the Break tool to clean up the extension lines.

D. Use the stretch tool to clean up the extension lines.

16. Technical drawings require use of standards to communicate worldwide.

A. True B. False

17. Three systems are used to arrange orthographic views: first, second, and third angle projection.

A. True B. False

18. A plane surface always projects either on edge or as a surface in any view.

A. True B. False

19. The depth dimensions in the top and side views do not necessarily correspond.

A. True B. False

20. In orthographic views, dashed lines represent features that would be hidden behind other surfaces.
    A. True B. False

21. Dimension lines should not cross extension lines.
    A. True B. False

22. It is always acceptable to dimension to a hidden feature.
    A. True B. False

23. Hidden lines are typically included in section views.
    A. True B. False

24. When a cutting plane line would obscure important details, just the ends of the line outside the view and the arrows can be shown.
    A. True B. False

25. The visible edges of the object behind the cutting plane are not cross-hatched.
    A. True B. False

26. In AutoCAD the Hatch tool is used to designate what pattern is to be used for a section view.
    A. True B. False

27. When a cutting plane coincides with a centerline, the cutting plane line takes precedence.
    A. True B. False

28. Section views cannot replace the normal top, front, side, or other standard orthographic views.
    A. True B. False

29. Hidden lines are usually included on assembly drawings.
    A. True B. False

30. Assembly drawings are usually not dimensioned.
    A. True B. False

31. Detail drawings contain all of the necessary information to manufacture a part.
A. True B. False

32. A projection plane is an imaginary 2 dimensional plane that needs to be parallel to the surface of the object.
A. True B. False

33. Multi-view drawings are usually comprised of the projected views which illustrate the height, width, and depth of an object.
A. True B. False

34. Auxiliary views allow principal faces of features that are parallel to the standard planes of projection to appear true shape and size.
A. True B. False

35. An auxiliary view is used on technical drawings to project features on an inclined plane away from one of the primary views in such a way that features such as holes appear correctly.
A. True B. False

36. If an auxiliary view is symmetrical, and to save space or time, a half auxiliary view may be drawn.
A. True B. False

37. A Secondary Auxiliary view is a projection from the first auxiliary view.
A. True B. False

38. Generally, hidden lines should be omitted in auxiliary views.
A. True B. False

39. An auxiliary view is an orthographic view that is not a standard projection.
A. True B. False

40. Any inclined surface can be shown in true shape when the appropriate auxiliary view is used.
A. True B. False

SECTION II ANSWER ANY TWO QUESTIONS

QUESTION 2

a) Figure 1shows a 3D anchor block for a power tool.

i. Complete the orthographic views using the appropriate lines in Figure 1a on page 11. [15 marks]

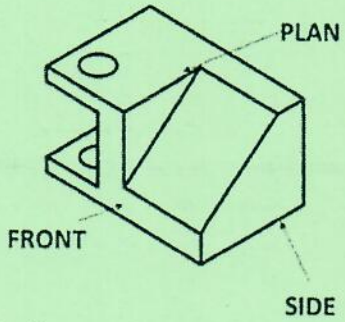

Figure 1 3 dimensional view of an anchor block

ii. Name the angle of projection used for the views for the anchor block in Figure 1a [2 marks]

iii. Sketch the symbol for the angle of projection used in Figure 1a [3 marks]

b) Distinguish between a sketch and a drawing usingthe characteristics graphics production process, its accuracy and appearance. [10 marks]

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QUESTION 3

Figure 2 shows an isometric drawing of a bracket.

a) What elements constitute an engineering drawing? [6 marks]

b) Give one example of each element depicted in Figure 2. [4 marks]

c) Distinguish between size and location dimensions. [6 marks]

d) Name examples of two size and two location dimensions in Figure 2 [4 marks]

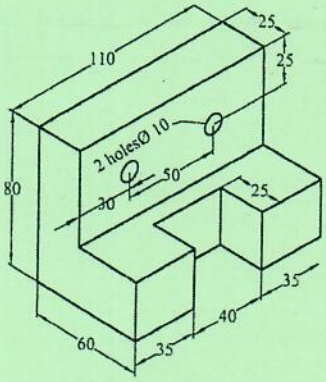

Figure 2 a gasket of a hydraulic oil pump.

e) Figure 3 shows a key used to join a tractor final drive hub to the wheel rim. A cutting plane is shown in the top view of the orthographic projection. Sketch the sectioned front view in figure 3a on page 12. [10 marks]

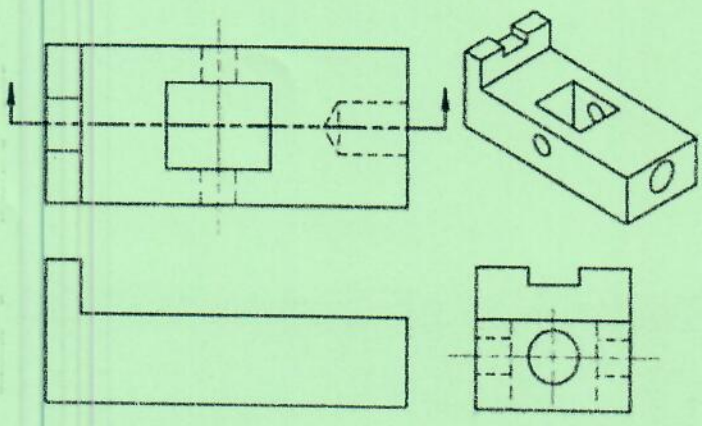

Figure 3 A key for coupling the hub to the rim.

QUESTION 4

a) Figure 4 shows an outline of a drawing of a building. Explain how you would use the Extension tool of AutoCAD 2016 to extend the steps shown to the wall marked 1 [10 marks]

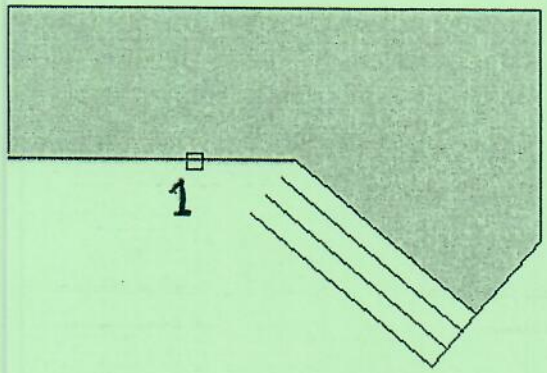

Figure 4 An outline of a building showing steps during drawing

b) Table 1 contains elements one finds on the screen of an AutoCAD 2016 software.
State the location and function of the each element. [15 marks]

	Name	Location	Function
1	Quick access toolbar		
2	Command line		
3	Model tab		
4	View cube		
5	Navigation bar		

c) Explain the procedure to make the ORTHO mode tool available in the STATUS BAR [3 marks]

d) How can one tell that the ORTHO tool in the STATUS BAR is ON or OFF [2 marks]

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QUESTION 2 CANDIDATE NUMBER _____

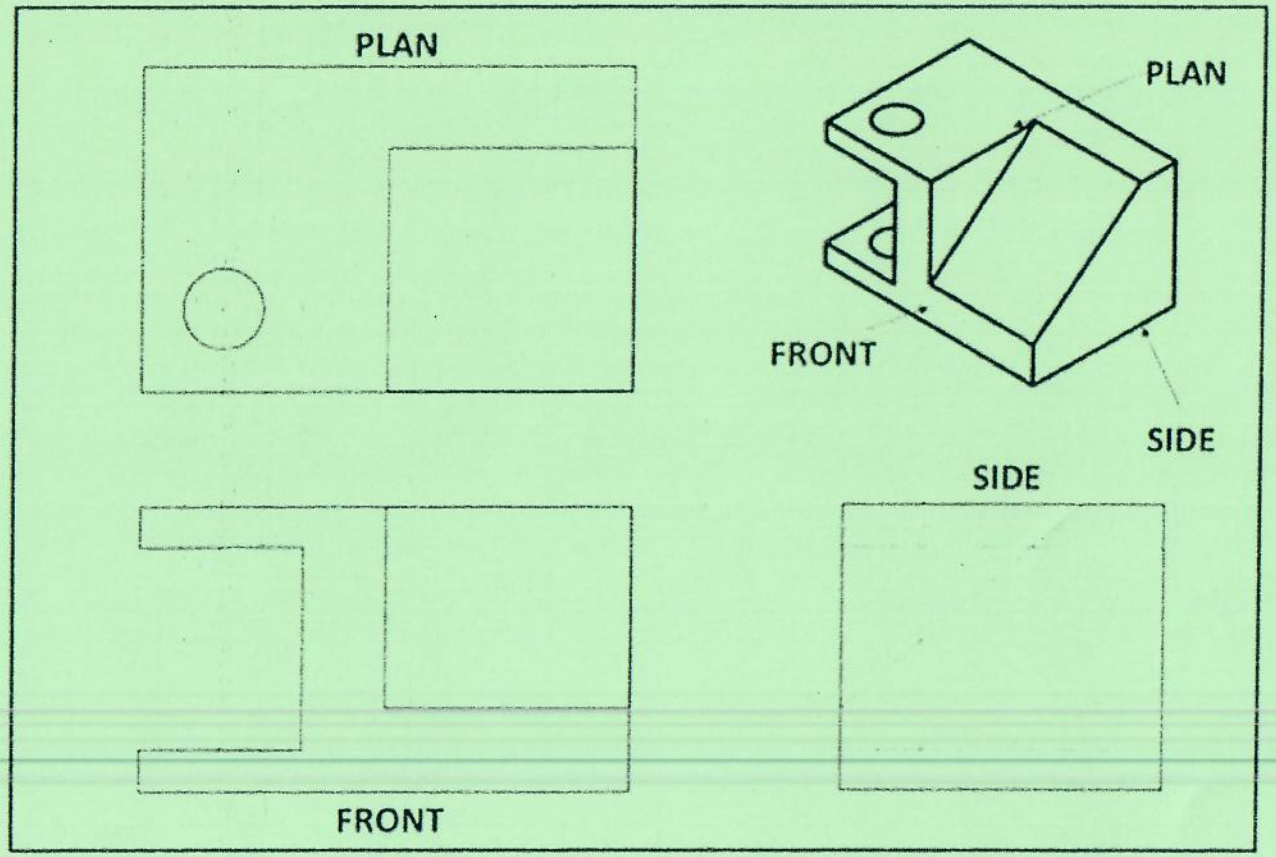
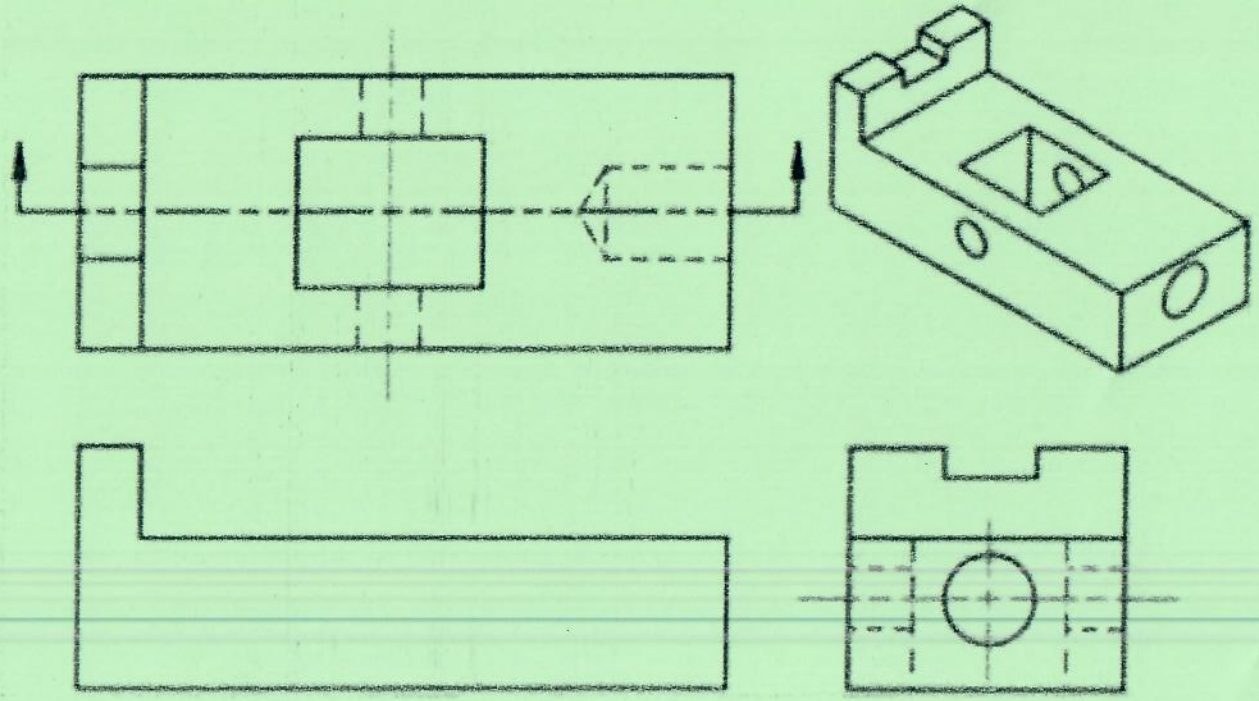


Figure 1a An anchor block of a power tool

QUESTION 3 CANDIDATE NUMBER _____



sectioned view of a key

Figure 3a