

UNIVERSITY OF SWAZILAND

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCE

MAIN EXAMINATION PAPER DECEMBER 2018

TITLE OF PAPER : BUILDING CONSTRUCTION
 TECHNOLOGY II

COURSE CODE : EHS 305

DURATION : 2 HOURS

MARKS : 100

INSTRUCTIONS : ANSWER ANY FOUR QUESTIONS

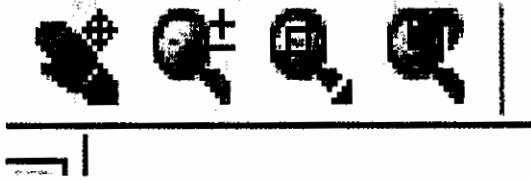
 : EACH QUESTION CARRIES 25 MARKS

 : BEGIN EACH QUESTION ON A
 SEPARATE SHEET OF PAPER

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS
GRANTED BY THE INVIGILATOR**

QUESTION ONE

- a) Name the following CAD commands and state their function.



a

b

c

d

[4]

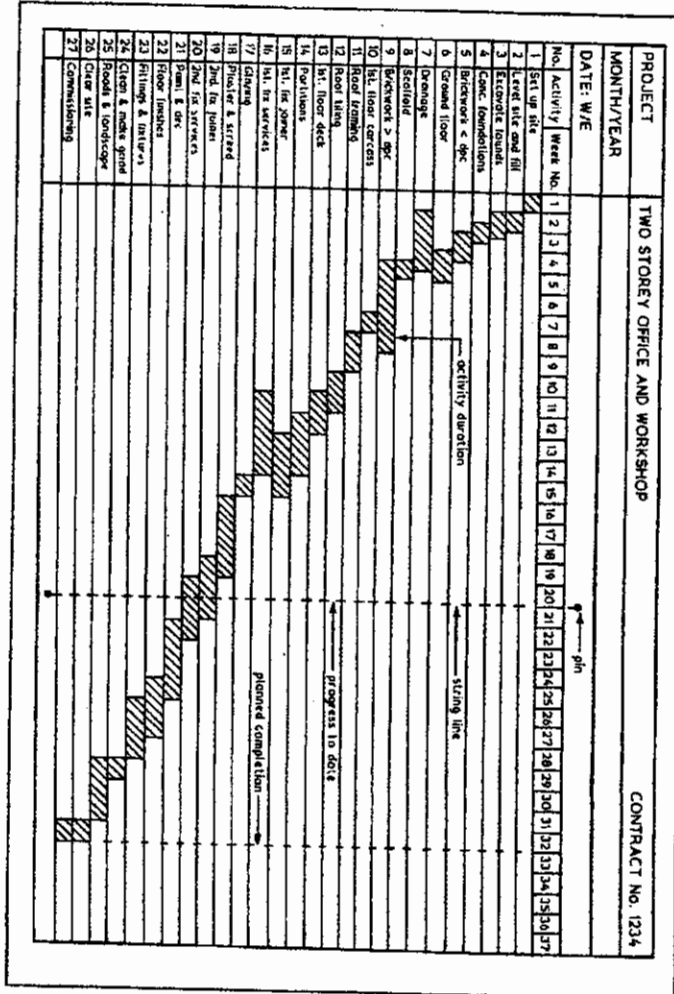
- b) Given the following CAD functions state the utility thereof



[7]

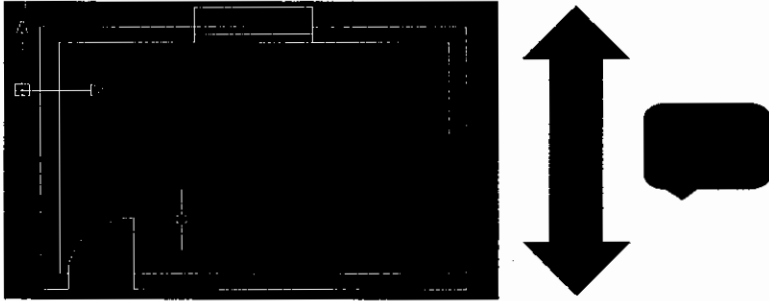
- c) This question is in reference to the attached Gantt chart (**drawing C**) outlining activities 1 to 27 to be done in 37 weeks to construct a two storey office and workshop.
- Give the four types of links in a WBS [4]
 - Specify the links represented by activity 1 to 12 in drawing C [6]
 - In order to come up with the expenditure profile for a building project which two documents can you use? Explain. [4]

DRAWING: C



QUESTION TWO

A) A bathroom must have a minimum area of 3.700 m^2 with the least dimension of 1520mm. Give the dimension of the other side in m^2 [5]



B) AutoCAD uses various cursor modes in trying to execute certain functions. Draw sketches of four of these and indicate the use and meaning thereof. [5]

C) Draw a sketch to illustrate the point “walls in footings are to be centred on the strip foundation” [10]

D) What is the value of Zoom Extents and Osnap in CAD? [5]

QUESTION THREE

a) Given the following scale combinations. State for which construction drawings they are suitable; [3]

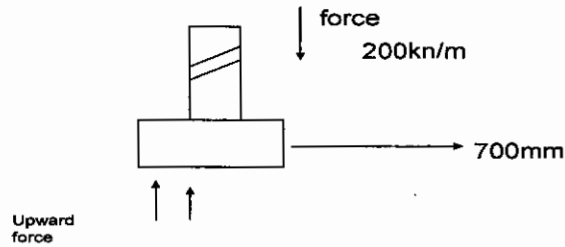
- i. 1:50 , 1:100
- ii. 1:200, 1:500, 1:2500
- iii. 1:5, 1:10, 1:20

b) Calculate the scale factors you can use to design objects in AutoCAD for the following ranges [5]

- i. 1:5
- ii. 1:20
- iii. 1:50
- iv. 1:500
- v. 1:2000

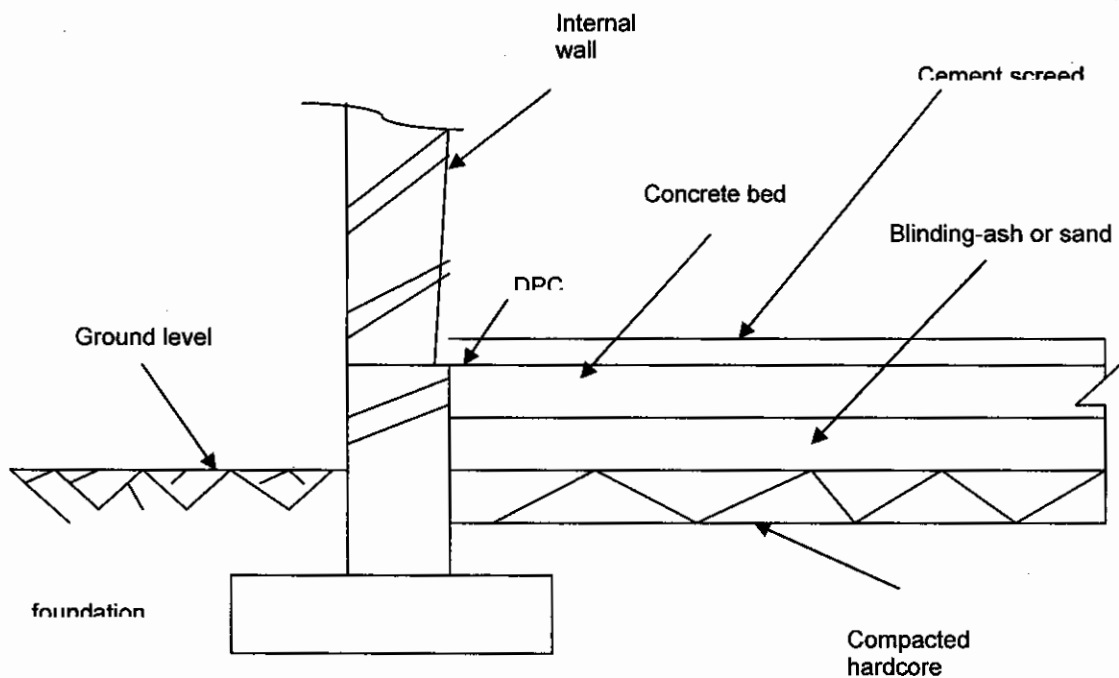
c) Given plans for scrutiny what exactly do you look for? [10]

d) Given the following figure representing a house exerting a force of 200 kn/m^2 calculate for the required soil bearing capacity of the soil [2]



- d) 10mm is the size of a roads driveway leading to a building site. On a scale 1:1000 what is the size of the road? [2]
- e) Using your knowledge on how to design foundations. Calculate the width of the foundation trenches for outside walls below using dimensions as stipulated for minimum building requirements concerning sizes of foundations particularly when the concrete bed thickness is 230mm. You may wish to use the formula $W = TW + 2T$

[3]



QUESTION FOUR

- a) State at least two qualities for symbols in working drawings [2]
 b) Illustrate the following with symbols as used in a drawing office [8]

| | | |
|-------------------------|-----------------------------|--------------------------|
| i. Drain and pipe lines | ii. Sink | iii. Reinforced concrete |
| iv. Soil | v. Single door single swing | vi. Water closet |
| vii. Bed | viii. Mass concrete | |
| ix. Bath | x. Folding doors side hung | |

- c) Outline five standards pertaining drainage layout when scrutinizing building plans [5]
 d) Name these two CAD symbols and explain differences thereof [2]



- e) Name these two CAD symbols and explain the difference thereof [2]

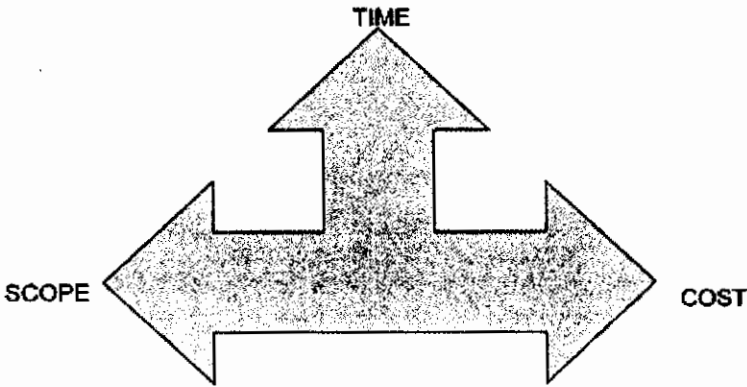


- f) Give five options given by File at the menu bar in CAD [5]
 g) What is meant by *inscribed* and *circumscribed* respectively when drawing polygons in CAD? [1]

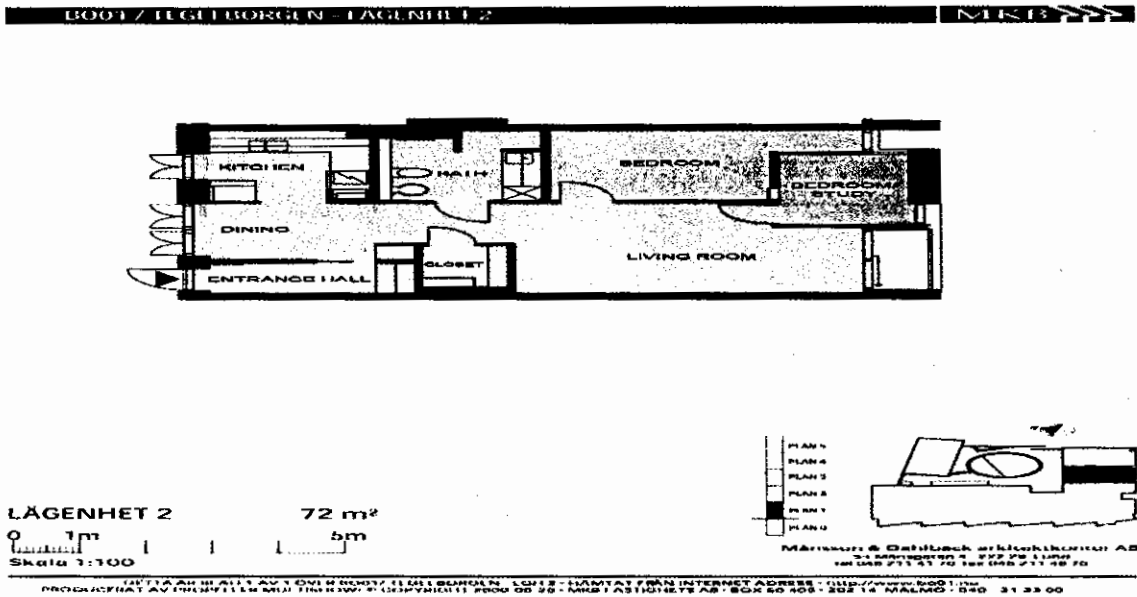
QUESTION FIVE

- a) With the aid of rough sketches illustrate the following types of dimensioning;
- Running [1]
 - Open arrowhead [1]
 - Closed arrowhead [1]
 - Dimensioning circles and arch's [1]
- b) Below is a graphic representing the three project management constraints? Discuss in detail how understanding these is required for a successful construction project. [9]

Project Management Triangle
Triple Constraints



- c) Giving examples discuss five costs related to a project. [5]
- d) In normal drawing plans like the one given below, what principal dimensions must be shown on the plan? [5]



- a) Concerning AutoCAD
 - i. Outline fully the AutoCAD opening sequence. [2]