DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION TECHNOLOGY IN CIVIL ENGINEERING

ECE 2101: ENGINEERING DRAWING II

DATE : 20TH SEPTEMBER 2021 **TIME : 11 :30AM-2 :30PM**

INSTRUCTIONS

i. This paper has **FOUR** questions
ii. Sections 1 is compulsory; choose two questions from Section 2
iii. Missing and mismatching dimensions, if any, may be suitably assumed and noted.
iv. Any form of cheating is prohibited and will lead to disqualification
v. TYPE your answers on the provided drawing paper (a max of 7mm letter and number size)
vi. Draw a border line on the provided drawing paper and a Title Block
vii. Type the Question(s) number being answered and underline it

SECTION 1: COMPULSORY

QUESTION 1 (30MARKS)

a) Answer the following questions. **Type-print** the correct choice on your drawing sheet

i) A circle drawn in isometric projection appears as? (1Mark)
ii) Section lines are generally inclined with the base at an angle of? (1Mark)
iii) M in dimension 'Bolt of M25' stands for? (1Mark)
iv) In first angle projection, the order of object, plane, and observer, as viewed from the front is? (1Mark)
v) What is the thread angle in degrees of a Metric thread (1Mark)

b) Draw to **scale 1:1**, the **sectional front view** and **plan view** of **SINGLE RIVETED LAP JOINT**, assume thickness of plates to be 16mm each. Give all the standard dimensions in rivets. (8Marks)

c) Draw to **scale 1:1**, the Top and Front View of the assembly of a **SQUARE HEAD BOLT** (Across Flats) of nominal diameter, d = 30 mm, with a Hexagonal Nut (Across Corners) and a Washer, keeping the axis horizontal. Length of the bolt = 120 mm, threaded portion of bolt = 80 mm and Thickness of washer = 4 mm. Give all the standard dimensions.

(10Marks)

d) Draw to **scale 1:1**, the standard profile of a Metric Screw Thread (external), taking enlarged pitch 50mm. Give the standard dimensions (7Marks)

e) List **FIVE** reducing and enlarging scales that can be used when drawing (hint: Type your answer) (5Marks)

Reducing scales: 1:2, 1:5, 1:100, 1:200, 1:500, 1:1000
Enlarging scales: 50:1, 20:1, 10:1, 2:1, 500:1, 1000:1

SECTION 2: (CHOOSE ANY TWO QUESTIONS)

QUESTION 2 (15MARKS)

Fig. Q2 shows a rectangular rubbish scoop with allowance for lap-seam. Draw the surface development of the scoop. The units are given in mm

(15Marks)

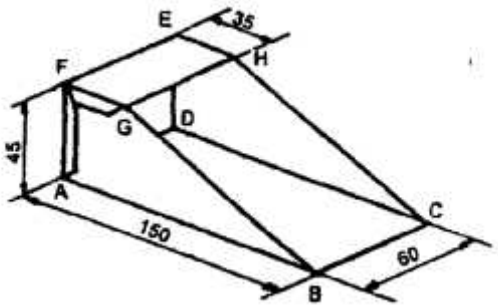

Fig. Q2

QUESTION 3 (15MARKS)

Using a **scale of 1:1**, clearly draw the invert block drain shown in Fig Q3. The units are in mm

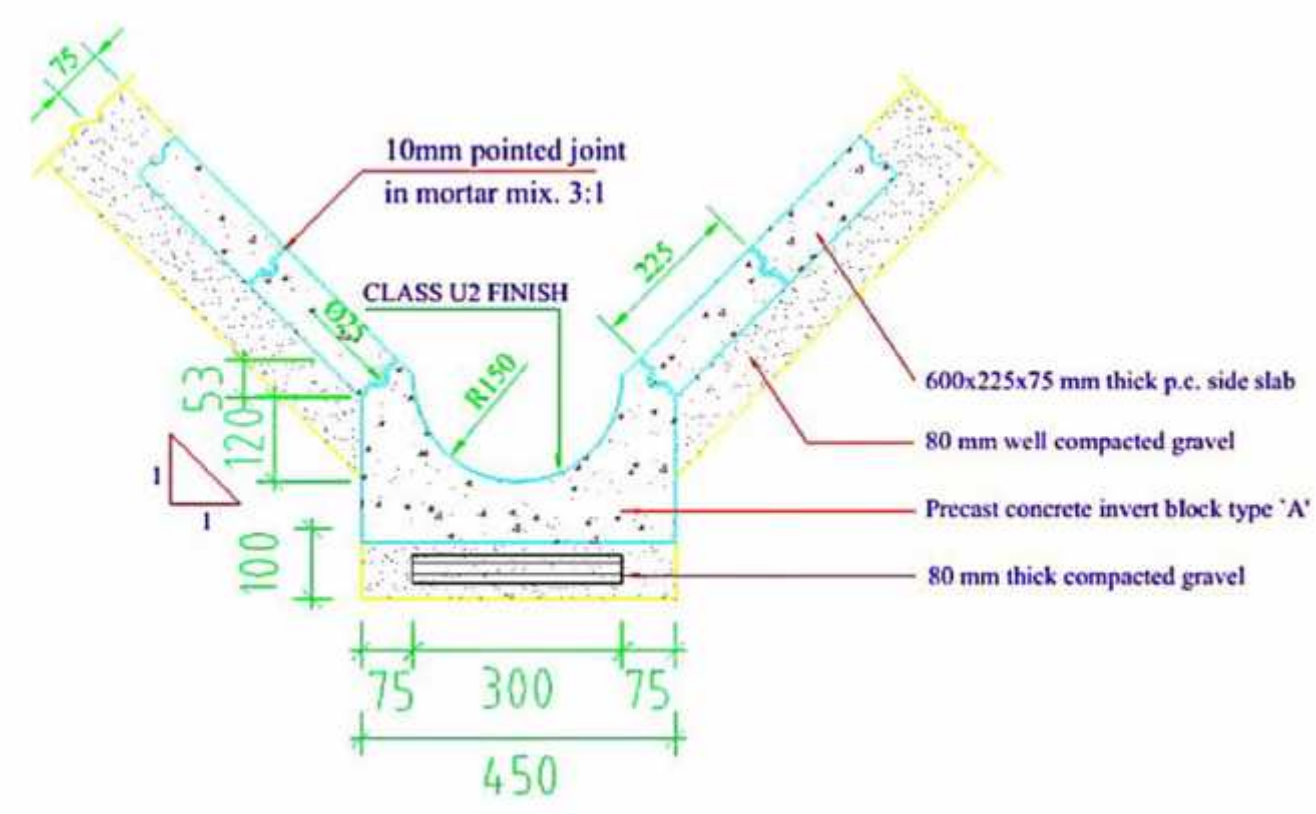

Fig Q3

QUESTION 4 (15MARKS)

Fig. Q4 shows a section of a truss. The truss has a pitch of 21^0 and connected by plates and bolts at the joints. The size of the members are as follows:

Clear span	-	5000mm
Nominal Span	-	5300mm
Wall plate	-	150x50mm (section)
Tie Beam	-	100x50mm (section)
Rafters	-	100x50mm (section)
Purlins	-	75x50mm (spacing 750mm C/C)
Brandering	-	50x50mm (spacing 450mm C/C)
Nail plate	-	100x75mm (section)
Splice	-	150x250mm long
Webs	-	75x50mm (section)
Web runners	-	50x50mm (section)

Using appropriate scale draw, dimension and detail the truss appropriately

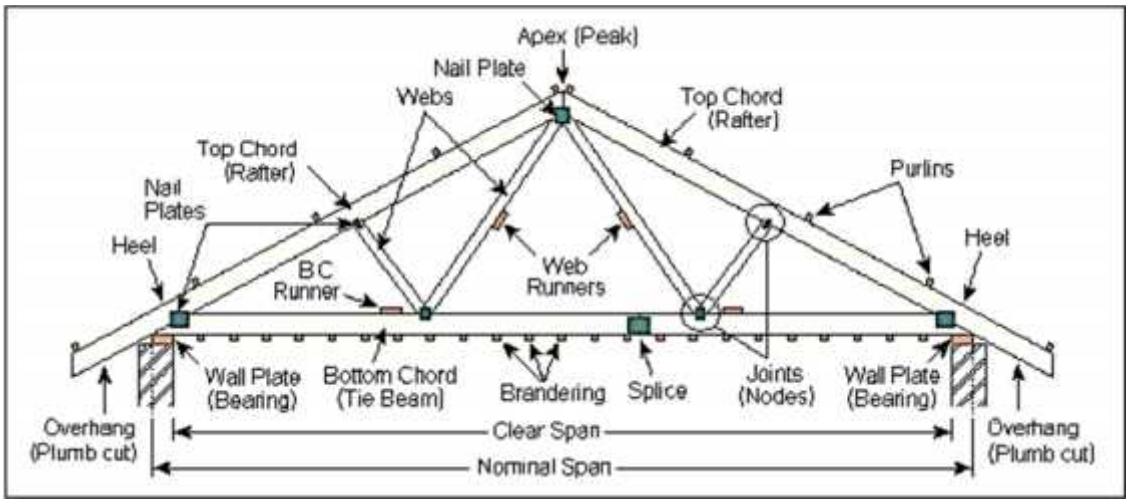

Fig. Q4