UNIVERSITY OF EDUCATION, WINNEBA
INSTITUTE FOR TEACHER EDUCATION AND CONTINUING PROFESSIONAL DEVELOPMENT (ITECPD)
END OF SECOND SEMESTER EXAMINATIONS, OCTOBER, 2024

COURSE CODE: JBH 242

COURSE TITLE: ENGINEERING DRAWING

TIME ALLOWED: 2 HRS

STUDENT'S INDEX NUMBER: _____

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GENERAL INSTRUCTIONS:

- This paper is made up of ONE SECTION.
- *The Section is made up of five essay type questions.*
- *Answer any THREE questions in your answer booklet.*
- *Each question carries equal marks. You are expected to start each question on a new page.*
- *You are expected to hand over your answer booklet to the invigilator before you leave the examination hall.*

Instruction: *Answer any three (3) questions in the answer booklet provided.*

1. Draw the orthographic view of the object shown in **figure 1** in first angle projection.

All dimensions in mm.   **[20 marks]**
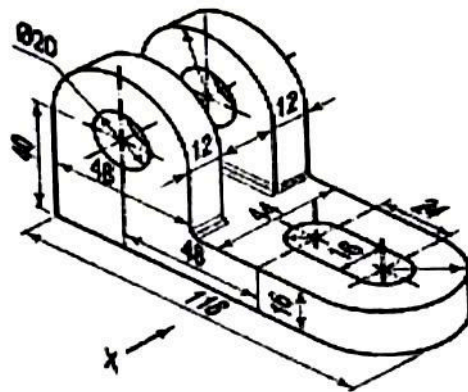
Figure 1.

2. A vertical cone, diameter of base 75 mm and axis 100 mm long, is completely penetrated by a cylinder of 45 mm diameter. The axis of the cylinder is parallel to the H.P. and the V.P. and intersects the axis of the cone at a point 28 mm above the base. Draw the projections of the solids showing curves of intersection.   **[20 marks]**
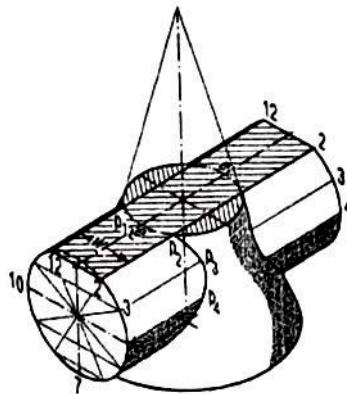

Figure 2.

3. Draw a hypocycloid of a circle of 40 mm diameter which rolls inside another circle of 200 mm diameter for one revolution. Draw a tangent and normal at any point on it.

[20 marks]

4. Draw an involute of a circle with radius of 25mm and draw a normal and tangent to the curve at any point. [20 marks]

5. Design a cam for operating the exhaust valve of an oil engine which is required to give uniform velocity during opening and closing of the valve. Outstroke corresponds to 120° of cam rotation. The valve must remain in the fully open position for next 30° of cam rotation. Return stroke corresponds to 60° of cam rotation. The lift or stroke of the cam is 30mm and minimum radius of the cam is 50mm. the follower is provided with a roller of radius 10mm and its line of stroke passes through the axis of the cam.

[20 marks]