



UNIVERSITY OF EDUCATION, WINNEBA  
COLLEGE OF TECHNOLOGY EDUCATION, KUMASI  
FACULTY OF TECHNICAL EDUCATION

DEPARTMENT OF CONSTRUCTION AND WOOD TECHNOLOGY EDUCATION  
END OF SECOND SEMESTER SUPPLEMENTARY EXAMINATION- JANUARY, 2020

PROGRAMME: BSC CONSTRUCTION TECHNOLOGY EDUCATION

YEAR ONE

COURSE TITLE	STRENGTH OF MATERIALS
COURSE CODE	FTE 121 (CONSTRUCTION TECH. EDU.)
DURATION:	TWO HOURS
NAME OF LECTURERS	PAA-KOFI YALLEY
INSTRUCTIONS	<ol style="list-style-type: none"><li>1. Answer all questions</li><li>2. Do not give help</li><li>3. Do not accept help</li></ol>

### Question one.

Sketch the stress-strain curve of a mild steel and indicate the following:

- i.  $T_e$  Elastic limit, yield point and ultimate stress
- ii. Use the curve to determine the toughness and modulus of elasticity

### Question two.

A steel beam spanning 12 m, supports reinforced concrete slab with uniformly distributed load of 24 kN/m and two point loads as shown in Figure 1.z

- i. Determine the reactions
- ii. Determine shear forces and bending moments along the beam.
- iii. Sketch the bending moment and the shear force diagrams

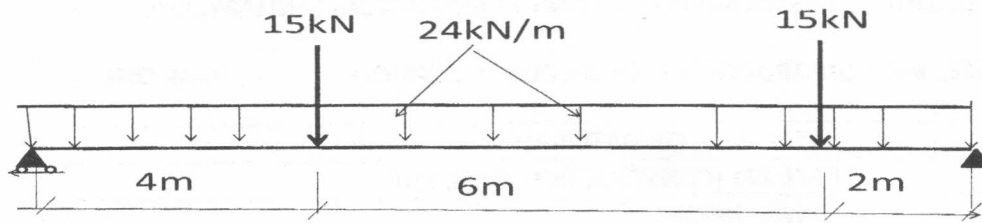


Figure 1

### Question three.

A cantilevered steel beam spanning 10 m, supports uniformly distributed load of 30 kN/m at shown in the figure 2.

- Determine the reactions.
- Determine shear forces and bending moments along the beam.
- Sketch the bending moment and the shear force diagrams

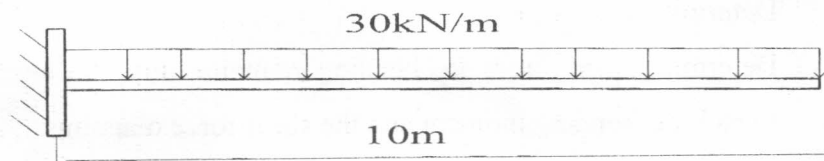


Figure 2