

FOR OFFICIAL USE



National
Qualifications
2025

Mark

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X823/77/01

Engineering Science Answer booklet

FRIDAY, 16 MAY

1:00 PM – 3:30 PM



* X 8 2 3 7 7 0 1 *

Fill in these boxes and read what is printed below.

Full name of centre

--

Town

--

Forename(s)

--

Surname

--

Number of seat

--

Date of birth

Day

--	--

Month

--	--

Year

--	--

Scottish candidate number

--	--	--	--	--	--	--	--	--	--

Write your answers clearly in this answer booklet. You must clearly identify in the margin the question number you are attempting.

Worksheets for questions 1 (a), 2, 4 (a), 10 (c) and 10 (d) are included. Write your answers to these questions clearly in the spaces provided.

Use **blue** or **black** ink. Sketches, diagrams and graphs may be drawn in pencil.

Before leaving the examination room you must give this booklet to the Invigilator; if you do not, you may lose all the marks for this paper.

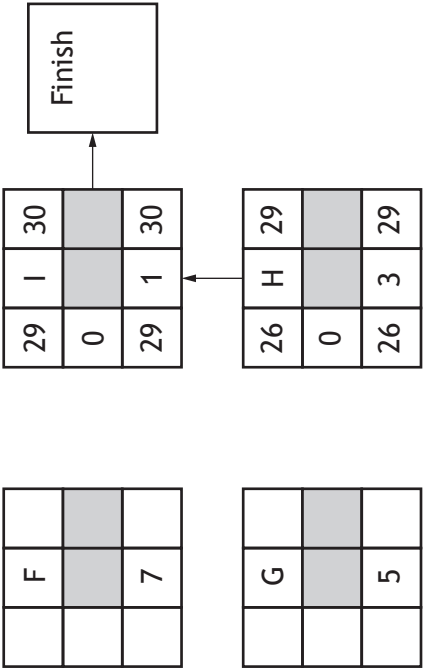
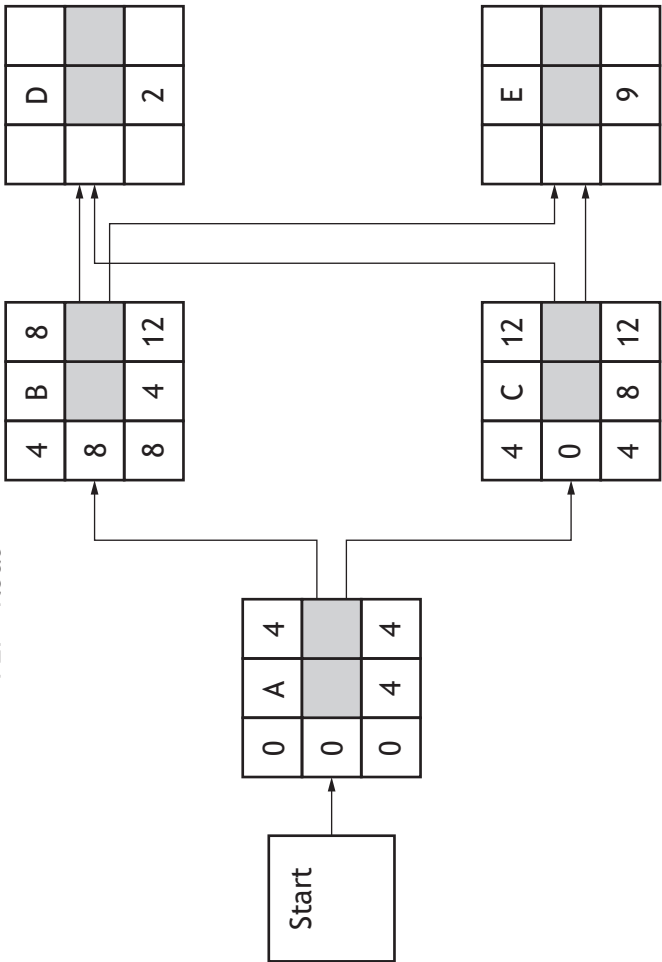


* X 8 2 3 7 7 0 1 0 1 *

EST	STG	EFT
FLT		
LST	DUR	LFT

- STG - stage
- DUR - duration
- EST - earliest start time
- EFT - earliest finish time
- LST - latest start time
- LFT - latest finish time
- FLT - float

Stage	Precedent	Duration (months)
A	--	4
B	A	4
C	A	8
D	B, C	2
E	B, C	9
F	D, E	7
G	E	5
H	G	3
I	F, H	1

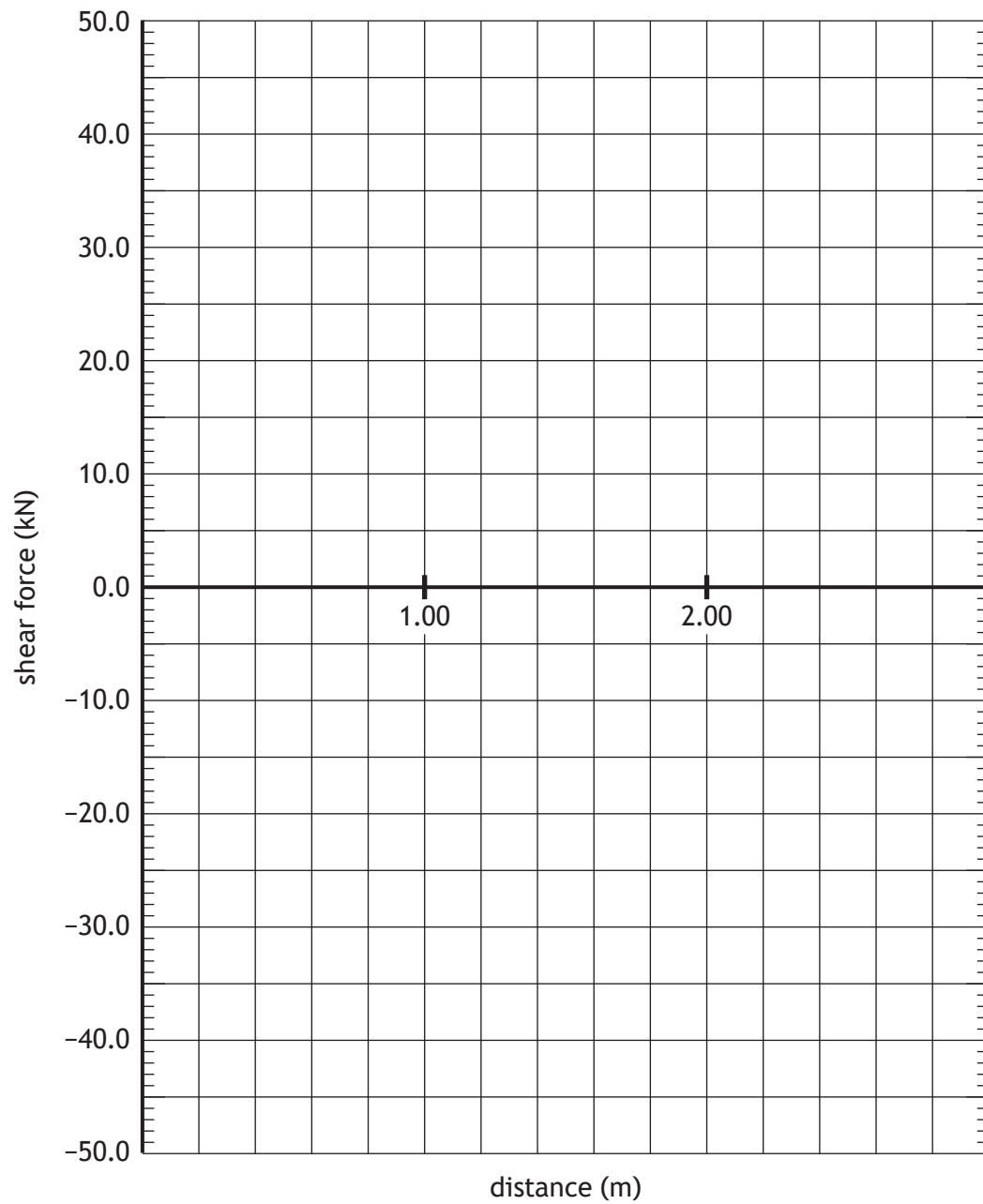


Critical Path: _____



* X 8 2 3 7 7 0 1 0 2 *

Worksheet for question 2



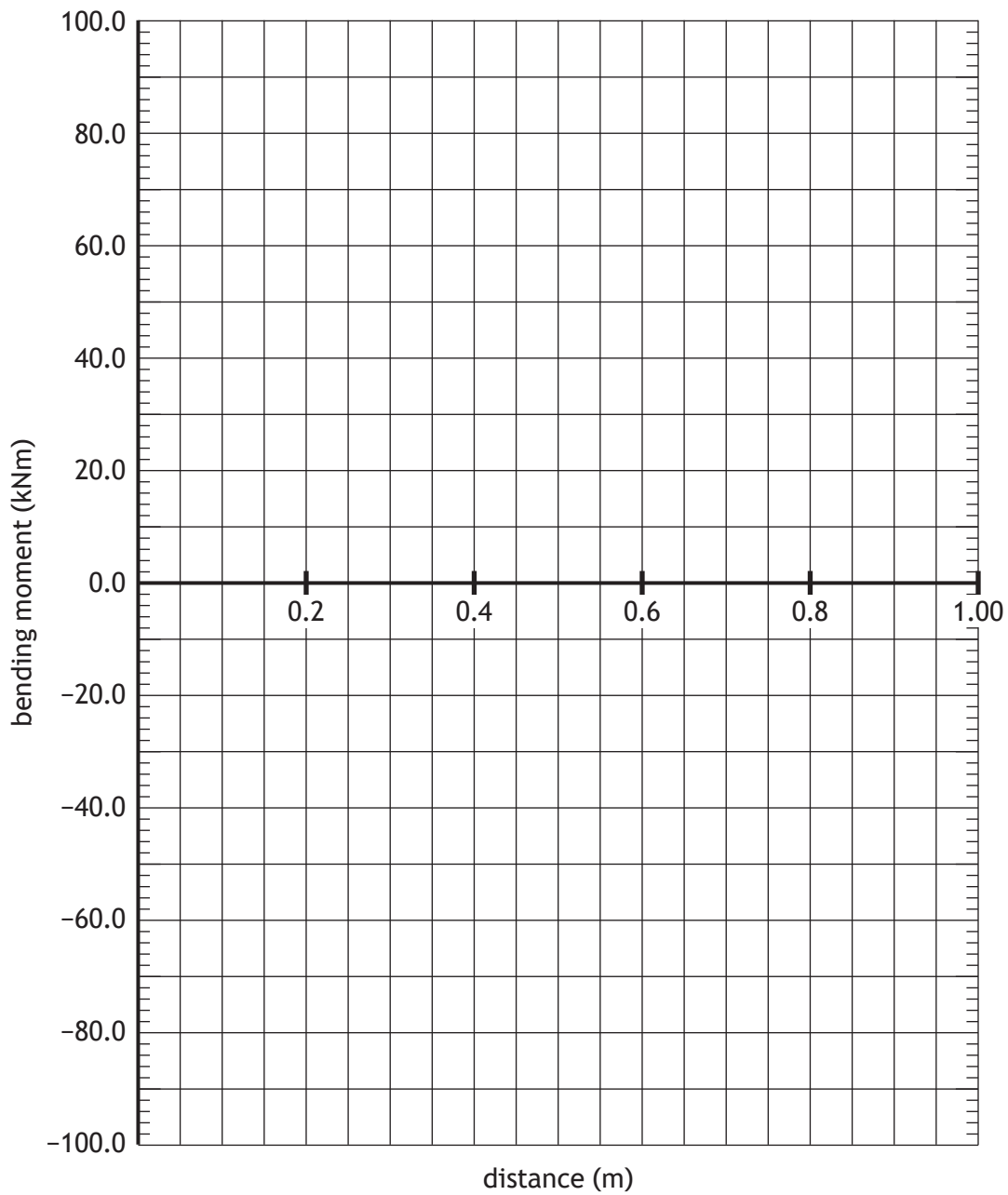
Worksheet for question 4 (a)

Component	Label
Busbar	
Capacitor	
Circuit breaker	
Isolating switch	
Generator	
Pylon	
Step-down transformer	
Step-up transformer	
Transmission line	

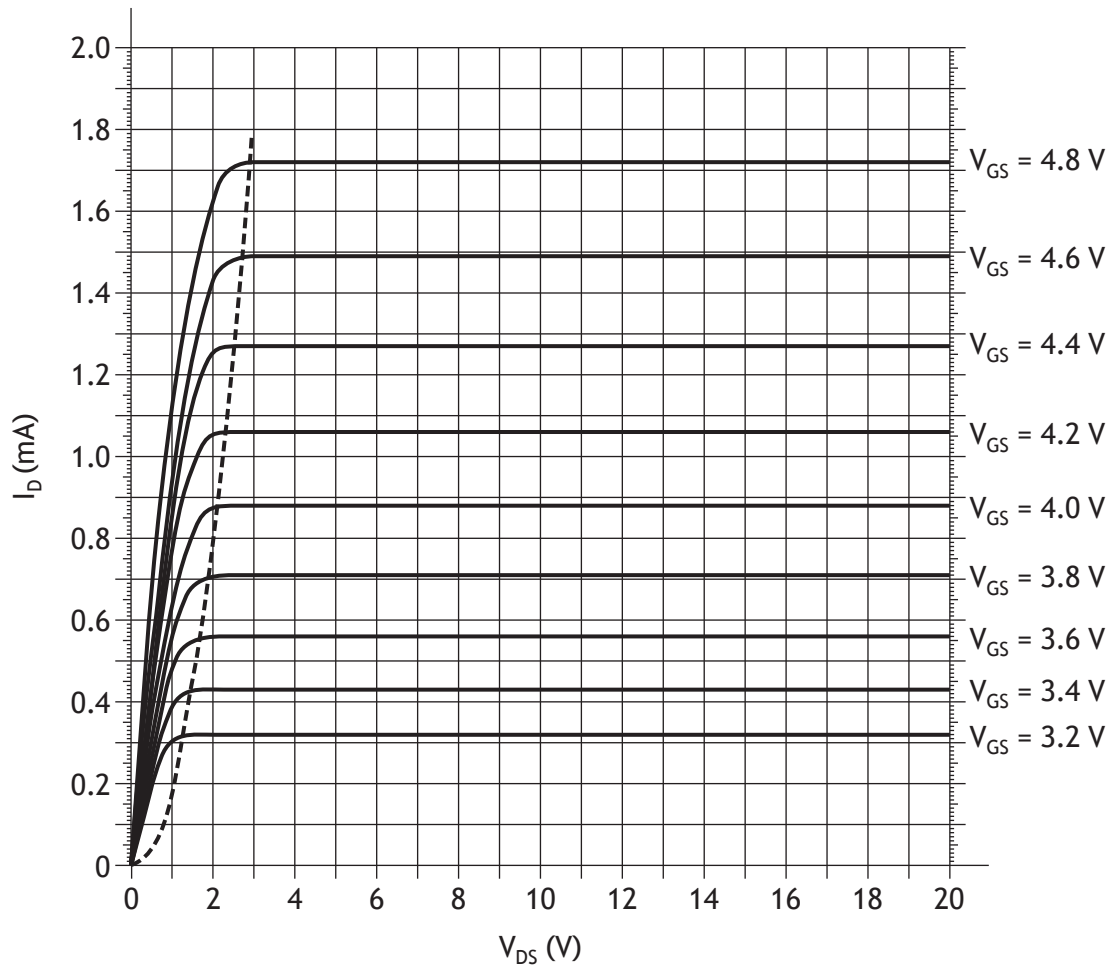


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Worksheet for question 10 (c)



Worksheet for question 10 (d)



[END OF WORKSHEETS]

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