

FOR OFFICIAL USE



National  
Qualifications  
2025

Mark

**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.

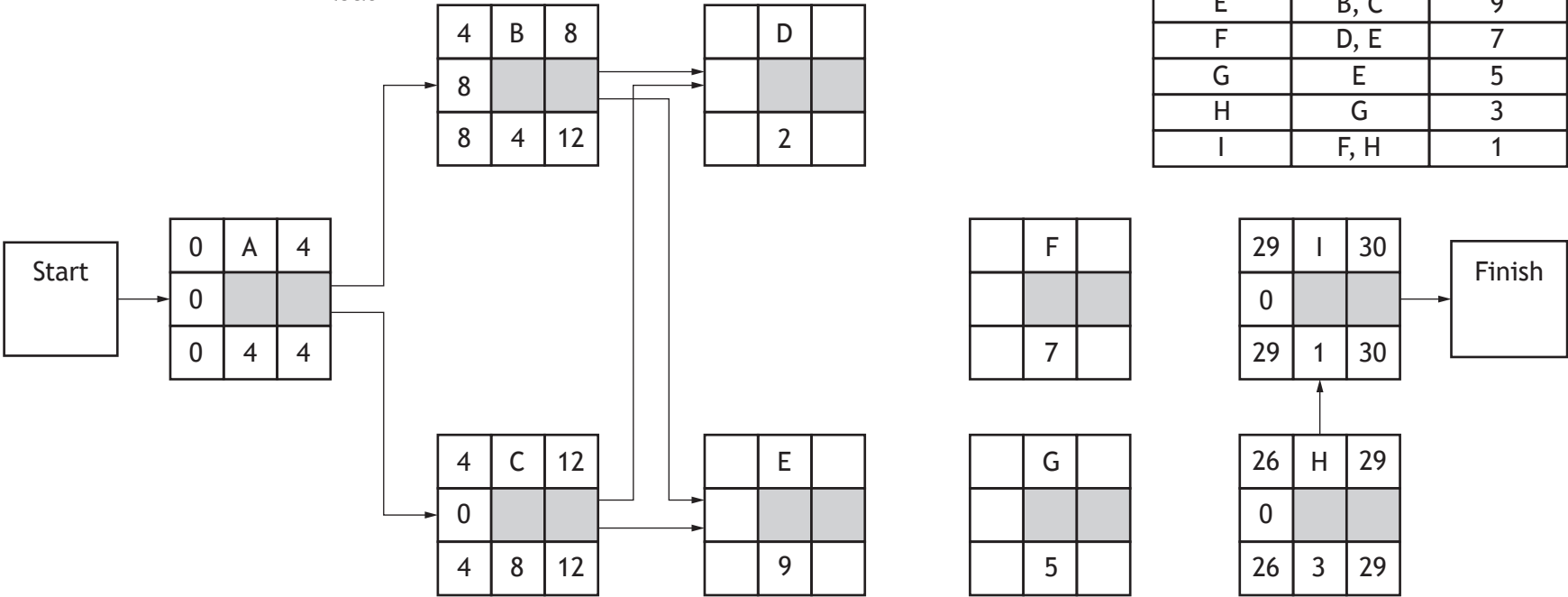


\* X 8 2 3 7 7 0 1 0 1 \*

EST	STG	EFT
FLT		
LST	DUR	LFT

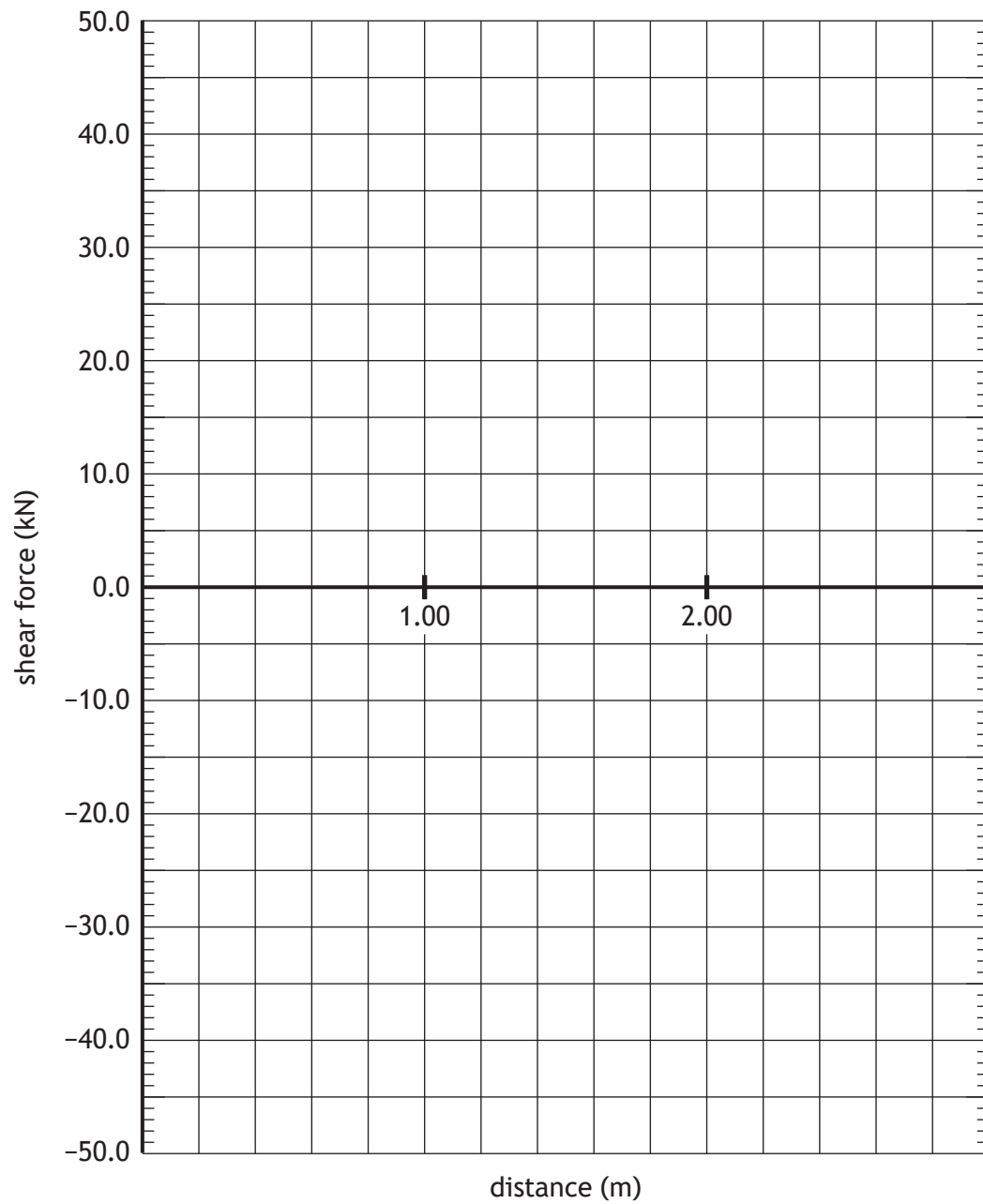
- STG - stage
- DUR - duration
- EST - earliest start time
- EFT - earliest finish time
- LST - latest start time
- LFT - latest finish time
- FLT - float

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: \_\_\_\_\_

Worksheet for question 2



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

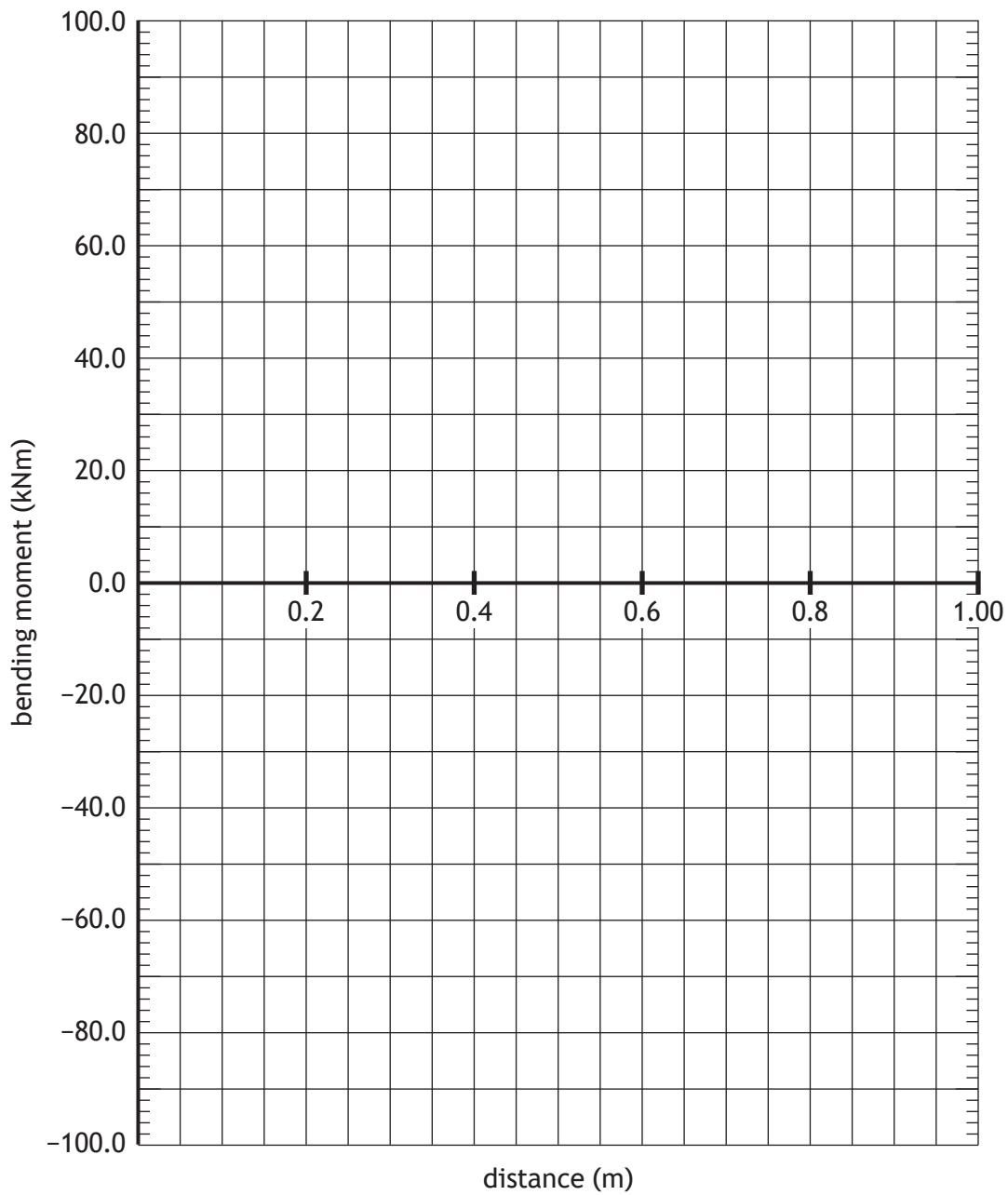
## Worksheet for question 4 (a)

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

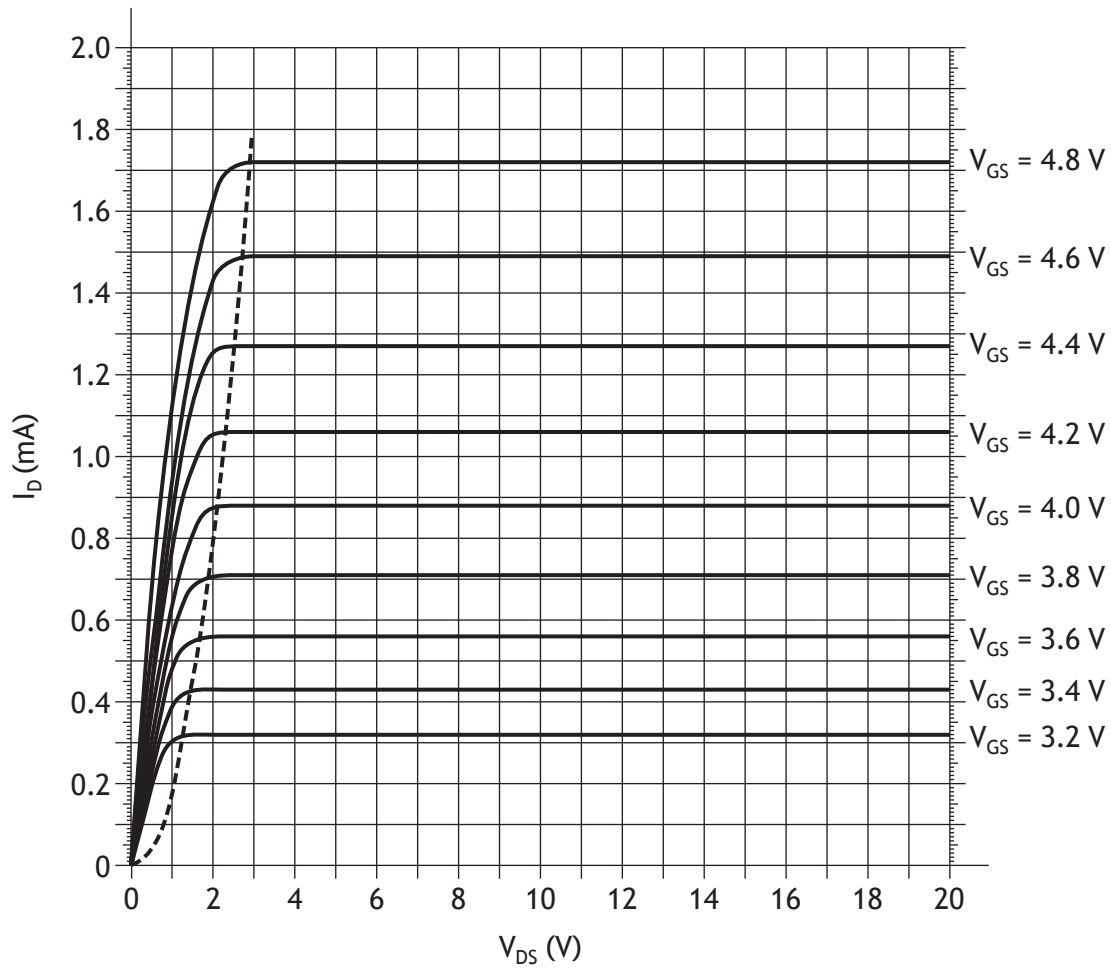


\* X 8 2 3 7 7 0 1 0 4 \*

Worksheet for question 10 (c)



Worksheet for question 10 (d)



[END OF WORKSHEETS]

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