higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

CIVIL AND STRUCTURAL STEEL WORK DETAILING
NQF LEVEL 3
(First paper)

16 November 2023

This marking guideline consists of 4 pages.

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QUESTION 1

1.1 A
1.1 K
1.2 D
1.3 M
1.4 G
1.5 C
1.6 A
1.7 J
1.8 L
1.9 O
1.10 B
1.11 E
1.12 N
1.13 I
1.14 H
1.15 F

(15 × 1) **[15]**

QUESTION 2: REINFORCED CONCRETE DETAILING

2.1
- It provides a better estimation of the reinforcement steel requirement
- A bar bending schedule is useful during auditing of reinforcement
- It can be used for reinforcement cutting, bending and making a skeleton
- It provides quality control at site when reinforcement is provided
- It provides better stock management for reinforcement
- It provides benchmarks for quantity and quality requirements for reinforcement
- Cutting and bending can be done at the factory and reinforcement transported to site
- It saves steel reinforcement material (Any 3 × 2) (6)

2.2
- Hot-rolled bars
- Wire mesh
- Welded-wire fabric
- Steel fibre and cold-worked deformed bars (Any 3 × 1) (3)

2.3
- Beam reinforcement
- Floor slabs
- Columns
- Staircases
- Retaining walls
- Foundations (Any 5 × 1) (5)

2.4 R – Mild steel
Y – Higher-yield steel (2)
[16]

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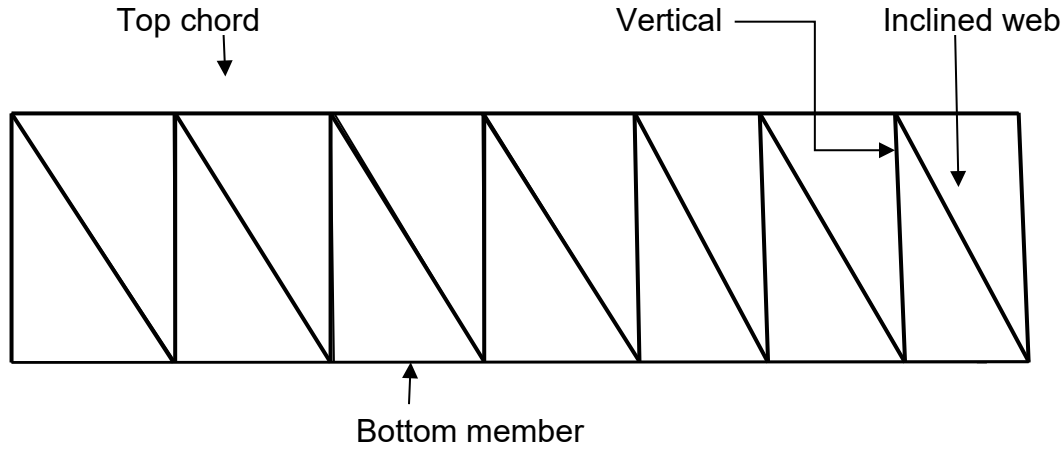
QUESTION 3: STRUCTURAL STEEL WORK DETAILING

3.1
- Corrugated galvanized steel
- A blend of zinc, steel, aluminium and silicon-coated
- Metal tile sheets
- Aluminium
- Copper
- Stone-coated steel (Any 4 × 1) (4)

3.2 N-type or Pratt truss lattice girder



Correctness	Neatness	Labelling
2	1	(2 × 1 mark each)

(5)

3.3
- It can enclose a large area at relatively low cost
- Maintenance is low
- Steel is versatile, strong and relatively cost effective
- No curing time is needed
- Site assembly is easy using quickly trained semi-skilled labour
- Portal frame structure is quicker to fabricate and erect than building walls
- It provides a standard range of manufacturer's systems (Any 3 × 2) (6)

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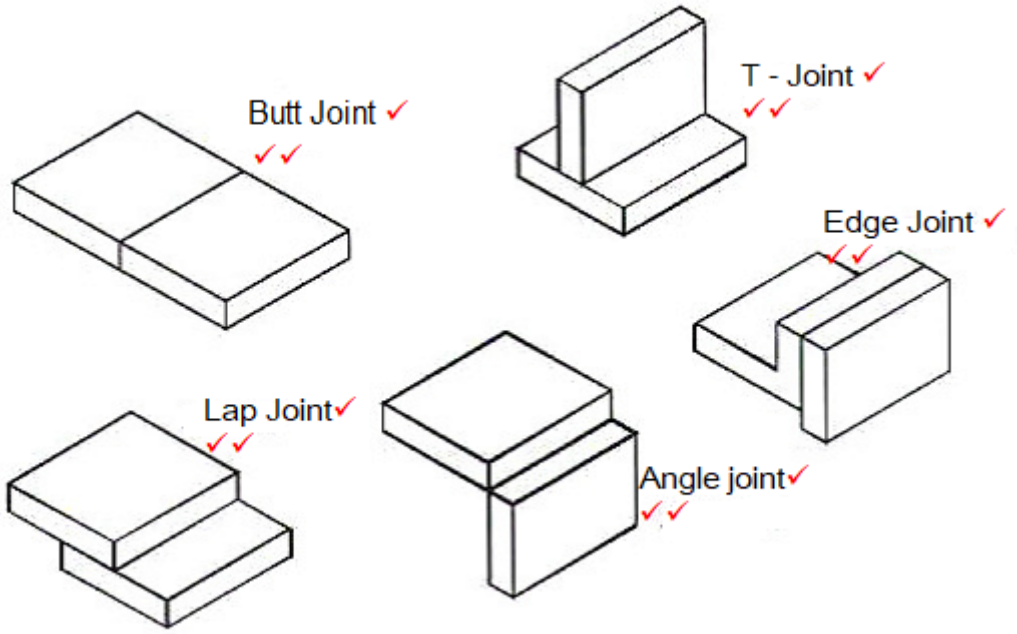
3.4

1 Member	2 Bar mark	3 Type and size	4 No. of members	5 No. in each	6 Total number	7 Length of each bar	8 Shape	
COLUMN								
	1✓	Y20✓	1✓	2✓	2		34/37✓	
	2✓	R10✓	1✓	8✓	8			
PILE CAP								
	3✓	Y20✓	1✓	6✓	6		35✓	
	4✓	Y12✓	1✓	7✓	7		20✓	
PILES								
	5✓	Y16✓	4✓	6✓	24		34/37✓	
	6✓	R8✓	4✓	1✓	4			

(28 ÷ 2) (14)
[29]

QUESTION 4: WELDING



NOTE: TWO marks for each drawing ONE mark for each correct label. **[15]**

TOTAL: 75

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