UNIT III

Fill in the blanks

1. Sectional area of earthwork is usually calculated in _____.
   Answer: Square meters (m^2)
2. The _____ method is commonly used for calculating earthwork in roads and canals.
   Answer: Average End Area
3. Another method used for calculating earthwork volume is the _____ formula.
   Answer: Primodial
4. The Average End Area method calculates volume using the areas at _____ sections.
   Answer: Two consecutive
5. The excavation for canals is carried out according to the _____ section.
   Answer: Designed cross
6. The side slope of an earth canal depends on the _____ condition.
   Answer: Soil
7. Formation width is the width of the _____ after completion of earthwork.
   Answer: Road
8. In road work, the embankment is constructed using _____ soil.
   Answer: Compacted
9. Earthwork quantities are generally calculated at regular _____ intervals.
   Answer: Chainage
10. In canal excavation, the bottom width is known as the _____ width.
    Answer: Bed
11. The depth of excavation is measured from the existing ground level to the _____ level.
    Answer: Formation
12. The prismoidal formula gives more _____ results than the Average End Area method.
    Answer: Accurate
13. Earthwork calculations are based on the _____ sections of the road or canal.
    Answer: Cross
14. The side slopes of road embankments are generally expressed as _____ ratios.
    Answer: Horizontal : Vertical

Part B: Bar Bending Schedule (BBS)

16. BBS stands for _____.
    Answer: Bar Bending Schedule
17. A Bar Bending Schedule is prepared for _____ reinforcement.
    Answer: Steel
18. Reinforcement steel is generally measured in _____.
    Answer: Kilograms (kg)
19. The standard length of a reinforcement bar supplied in the market is usually _____ meters.
    Answer: 12
20. The unit weight of steel depends on its _____.
    Answer: Diameter
21. The formula for the unit weight of steel is _____.
    Answer: d2/162d^2/162d2/162
22. The diameter of reinforcement bars is generally expressed in _____.
    Answer: Millimeters (mm)
23. The extra length provided for bends is called _____ allowance.
    Answer: Bend

MCQs

1. Earthwork excavation is generally measured in:

A) m^2
B) m^3
C) Running meter
D) Kilograms

Answer: B) m^3

2. The most commonly used method for calculating earthwork between two cross-sections is:

A) Center Line Method
B) Average End Area Method
C) Long Wall–Short Wall Method
D) Plinth Area Method

Answer: B) Average End Area Method

3. The formula for the Average End Area Method is:

A) $(A_1 + A_2) \times L$
B) $(A_1 + A_2)/2 \times L$
C) $A \times L$
D) $A_1 \times A_2 \times L$

Answer: B) $(A_1 + A_2)/2 \times L$

4. Which method gives more accurate earthwork quantities?

A) Average End Area Method
B) Center Line Method
C) Prismoidal Formula
D) Plinth Area Method

Answer: C) Prismoidal Formula

5. Earthwork quantities are calculated from:

A) Longitudinal sections only
B) Cross-sections
C) Building plans
D) Elevation drawings

Answer: B) Cross-sections

6. The distance between two cross-sections is called:

A) Span
B) Chainage interval
C) Offset
D) Gradient

Answer: B) Chainage interval

7. The bottom width of a canal is known as:

A) Crest width
B) Formation width
C) Bed width
D) Top width

Answer: C) Bed width

8. The side slopes of canals depend mainly on:

A) Cement content
B) Soil type
C) Road width
D) Traffic volume

Answer: B) Soil type

9. Road embankments are constructed using:

A) Loose soil only
B) Compacted earth
C) Brick masonry
D) Plain concrete

Answer: B) Compacted earth

10. Formation width refers to:

A) Width of the pavement only
B) Finished width of the road formation
C) Width of the shoulder only
D) Width of the drain

Answer: B) Finished width of the road formation

11. The cross-sectional area of earthwork is measured in:

A) m^3
B) m^2
C) m
D) Hectares

Answer: B) m^2

12. The Prismoidal Formula is preferred because it provides:

A) Faster calculations only
B) More accurate volume calculations
C) Lower construction cost
D) Less excavation

Answer: B) More accurate volume calculations

13. BBS stands for:

A) Building Bar System
B) Bar Bending Schedule
C) Beam Bending Standard
D) Basic Bar Specification

Answer: B) Bar Bending Schedule

14. A Bar Bending Schedule is prepared for:

A) Concrete only
B) Reinforcement steel
C) Brick masonry
D) Timber work

Answer: B) Reinforcement steel

15. Reinforcement steel is generally measured in:

A) m^2
B) m^3
C) Kilograms (kg)
D) Litres

Answer: C) Kilograms (kg)

16. The standard commercial length of a reinforcement bar is usually:

A) 6 m
B) 8 m
C) 10 m
D) 12 m

Answer: D) 12 m

17. The unit weight of a steel bar is calculated using:

A) $d/162$
B) $d^2/162$
C) $d^3/162$
D) $d^2/100$

Answer: B) $d^2/162$

18. The diameter of reinforcement bars is expressed in:

A) Centimeters
B) Millimeters
C) Meters
D) Inches only

Answer: B) Millimeters

19. Hooks are provided in reinforcement bars to improve:

A) Appearance
B) Bond with concrete
C) Weight
D) Corrosion resistance

Answer: B) Bond with concrete

20. Bend allowance is included in BBS to account for:

A) Bar painting
B) Additional length due to bending
C) Concrete cover
D) Welding loss

Answer: B) Additional length due to bending

21. Which of the following is included in a Bar Bending Schedule?

A) Bar mark
B) Bar diameter
C) Cutting length
D) All of the above

Answer: D) All of the above

22. The primary purpose of BBS is to:

A) Increase steel consumption
B) Reduce steel wastage and simplify fabrication
C) Measure concrete quantity
D) Design foundations

Answer: B) Reduce steel wastage and simplify fabrication

23. The total weight of reinforcement is calculated by:

A) Total length × Unit weight
B) Total length × Area
C) Diameter × Length
D) Area × Density

Answer: A) Total length × Unit weight

24. Bar marks in a BBS are used to:

A) Identify different reinforcement bars
B) Measure concrete volume
C) Determine excavation depth
D) Measure brickwork

Answer: A) Identify different reinforcement bars

25. Which document helps in estimating steel requirements before construction?

A) Site diary
B) Bar Bending Schedule
C) Completion certificate
D) Soil investigation report

Answer: B) Bar Bending Schedule