SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code : BE (13A03701) **Course & Branch**: B.Tech - CE

Year & Sem: IV-B.Tech & I-Sem **Regulation:** R13

UNIT –V

PIERS & ABUTMENTS

1. (a) What are the materials used for piers & abutments mention them.
   (b) Explain briefly about types of piers with neat diagram.
2. (a) What are the various types of piers, explain each with neat diagram?
   (b) Explain the general features of abutments.
3. (a) What are the various forces acting on Abutments?
   (b) Explain the various types of wing walls with diagram.
4. (a) Explain general features of bed block.
   (b) Explain various types of bridge foundation.
5. (a) List out various types of forces acting on piers.
   (b) Explain types of abutments.
6. Write short note on
   (a) Types of piers (b) Forces acting on piers. (c) Stability analysis of piers
   (d) Types of wing walls. (e) Types of bridge foundations.(f) Different types of abutments.
7. Explain briefly for the following forces acting on pier with their design steps
   (a) Water current force (b) Wind forces. (c) Buoyancy
8. (a) Write short notes about the importance of the stability analysis of piers.
   (b) Write any four different forces acting on an abutment. Explain briefly and draw the neat diagrams for the necessary forces.
9. Explain briefly for the following forces acting on the abutments with their design steps.
   (a) Force due to breaking. (b) Active earth pressure.
   (c) Horizontal force due to temperature and shrinkage
10. A) What are the forces acting on abutment?
    B) Write the importance of the stability analysis of piers.
    C) List out various types of bridge foundations.
    D) Write down the general features of a bed block.
    E) What are functions of approach slab?

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1. Minimum grade required for prestressed concrete piers is [ ]
   (A) M_{10} to M_{20} (B) M_{20} to M_{30} (C) M_{30} to M_{40} (D) M_{15} to M_{40}
2. The minimum top width of pier should be-----mm [ ]
   (A) 500 (B) 600 (C) 1000 (D) 1200
3. Cement mortar proportions in course rubble masonry [ ]
   (A) 1:1 (B) 1:2 (C) 1:3 (D) 1:4
4. Height of the abutment equal to [ ]
   (A) 2 times of pier height (C) 0.5 times of pier height
   (B) Pier height (D) 3 times of pier height
5. The breast wall which directly supports [ ]
   (A) D.L&L.L of super structure (C) Earth pressure
   (B) D.L of the super structure (D) L.L of the super structure
6. Top thickness of wing wall is [ ]
   (A) 0.3m (B) 0.5m (C) 0.6m (D) 1.0m
7. Which function is to retain the earth fill without resisting any loads from super structure
   (A) Breast wall (B) Back wall (C) Wing wall (D) all [ ]
8. Generally, the sides of pier provided with a batter of [ ]
   (A) 1/10 to 1/20 (B) 1/15 to 1/20 (C) 1/12 to 1/24 (D) None
9. As per IRC, the approaches should have a minimum straight length of -------m on either side of the bridge [ ]
   (A) 10 (B) 15 (C) 20 (D) 25
10. In shallow foundations maximum compressive stresses developed at base due to [ ]
    (A) Only D.L (B) Only L.L (C) Both D.L&L.L (D) None
11. Back walls are used to prevent [ ]
    (A) Earth fill from flowing into bridge (C) Retains the earth filling on rear side
    (B) Retains the earth fill without any loads (D) All
12. The Bed block over the abutment is kept of _____ thickness. [ ]
    (A) 400 to 600mm (B) 350 to 550mm (C) 480 to 600mm (D) 450 to 600mm
13. The top level of pier is fixed _____ above the H.F.L [ ]
    (A) 1 to 2M (B) 1 to 2.5M (C) 2 to 3.5 (D) 1 to 1.5M
14. Solid type pier used for [ ]
    (A) Road&railways (B) Rivers (C) Both a&b (D) Elevated roadways
15. Trestle type piers are used for [ ]
    (A) Fly overs& elevated road ways (B) River bridges

(B) Both a&b (D) None

16. Hammer-head type piers are used for [ ]
(A) Fly overs& elevated road ways (C) River bridges
(B) Elevated road ways& river bridges (D) Both a&c

17. Cost of super structure of framed piers is ------then compared to cellular pier [ ]
(A) More (B) Less (C) Equal (D) None

18. In design of abutment, the bottom width is-----times the height of the abutment [ ]
(A) 0.4 to 0.5 (B) 0.1 to 0.3 (C) 1.5 to 3 (D) 5

19. The abutment earth face is provided with a batter of [ ]
(A) 1 in 24 to 1in12 (B) 1in3 to 1in6 (C) 1 in 10 (D) 1in20

20. The end supports of the super structure of a bridge is [ ]
(A) Pier (B) Piles (C) Abutment (D) None

21. Back batter of wing wall is [ ]
(A) 1 in 6 (B) 1in 3 (C) 1in12 (D) 1in9

22. Face batter of wing wall is [ ]
(A) 1in9 (B) 1in6 (C) 1in3 (D) 1in12

23. The quantity of steel in the cutting edge should preferably be not less than [ ]
(A) 90kg/n (B) 40kgn (C) 60kg/n (D) 70kg/n

24. --type of pier consists of a massive single pier with cantilever caps on opposite sides
(A) Trestle (B) Solid (C) Cellular (D) Hammer-head [ ]

25. Raft foundations is an example for [ ]
(A) Shallow foundations (B) Deep (C) Both a7b (D) None

26. The minimum R.F in well curb [ ]
(A) 92kg/m^3 (B) 82 kg/m^3 (C) 72 kg/m^3 (D) 62 kg/m^3

27. In bottom and top plugs the concrete mix have a minimum cement concrete is [ ]
(A) 370 kg/m^3 (B) 350 kg/m^3 (C) 340 kg/m^3 (D) 330 kg/m^3

28. In vertical R.F in the steining area be not less than----- of gross c/s area [ ]
(A) 0.12% (B) 0.143% (C) 0.012% (D) 0.0012%

29. In transverse R.F in the steining should be not less than---of gross c/s area [ ]
(A) 0.002% (B) 0.120% (C) 0.2% (D) 0.012%

30. The minimum dimension of a dredge hole should be not less than [ ]
(A) 4m (B) 2m (C) 6m (D) 8m

31. A reinforced concrete bed block resting over the top of [ ]
(A) Piers (B) abutments (C) both a & b (D) foundation

32. Generally, the sides of pier provided with a batter of [ ]
(A) 1/10 to 1/20 (B) 1/15 to 1/20 (C) 1/12 to 1/24 (D) None

33. The end supports of the super structure of a bridge [ ]
(A) Abutment (B) Pier (C) Piles (D) None

34. The intermediate supports of the super structure of a bridge [ ]
(A) Abutment (B) Pier (C) Piles (D) None

35. The abutment earth face is provided with a batter of [ ]
(A) 1in24 to 1in12 (B) 1in3 to 1in6 (C) 1in10 (D) 1in20

36. In the design of Abutment, the bottom width is _____ times the height of the abutment.
(A) 0.4 to 0.5 (B) 0.1 to 0.3 (C) 1.5 to 3 (D) None [ ]

37. Brick masonry in cement mortar of proportions [ ]
(A) 1:6 (B) 2:6 (C) 1:10 (D) Both B&C

38. Generally, the wing wall thickness at bottom [ ]
(A) 0.3h (B) 0.45-0.5h (C) 0.6h (D) 1.0-2h

39. As per IRC, the approaches should have a minimum straight length of ____m. on either side of the bridge. [ ]
(A) 10 (B) 15 (C) 20 (D) None

40. _____ Piles are most commonly used in major bridge pile foundation. [ ]
(A) Steel (B) RCC (C) Timber (D) None of these

Prepared by: **M.MANIKANTAN**