

Enrollment No.....



Faculty of Engineering
End Sem (Odd) Examination Dec-2022
EN3ES01 Basic Civil Engineering

Programme: B.Tech.

Branch/Specialisation: All

Duration: 3 Hrs.**Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. Age of tree can be determined by counting the- 1
 (a) Heart wood (b) Cambium layer
 (c) Annular rings (d) None of these
- ii. Silica is used in bricks to reduce- 1
 (a) Shrinkage & warping (b) Elasticity
 (c) Moisture content (d) All of These
- iii. If RL of line of collimation of an auto level is 101.945 m. and staff reading at point of known RL and its consecutive point is 1.325 m & 0.995 m respectively, then RL of benchmark is- 1
 (a) 103.270 m (b) 102.275 m (c) 100.620 m (d) 100.950 m
- iv. Gunter's chain is having the length of- 1
 (a) 66 ft (b) 66 m (c) 100 ft (d) 100 m
- v. Foundation used in case of vibration loading is- 1
 (a) Raft foundation (b) Grillage foundation
 (c) Strip foundation (d) None of these
- vi. The foundation in which a beam is provided to join two footings, is known as- 1
 (a) Strip footing (b) Strap footing
 (c) Combined footing (d) Stepped footing
- vii. Nature of bending moment diagram for concentric point load is- 1
 (a) 2° Parabola (b) 3° Parabola
 (c) Straight line (d) Inclined line
- viii. At point of contra flexure- 1
 (a) Bending moment is maximum and shear force is zero
 (b) Bending moment is either zero or changes its sign
 (c) Shear force changes its sign and Bending moment is Maximum
 (d) All of these

P.T.O.

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- ix. If the lines of action of all the forces are acting along the same line then it is called- **1**
 (a) Concurrent forces (b) Collinear forces
 (c) Coplanar forces (d) Non- coplanar forces
- x. If two forces of equal magnitude P acts in same line but opposite in direction, then their resultant will be- **1**
 (a) 2P (b) P (c) P/2 (d) 0

- Q.2 i. What do you understand by the term grading of concrete? **2**
 ii. Discuss the importance of each Bogue's compound with their chemical formula. **3**
 iii. Define the term workability. Explain with diagrams the procedure of slump cone test. **5**
- OR iv. Draw the schematic diagram of cross-section of freshly cut timber. **5**
 Explain in detail the method of its seasoning.

- Q.3 i. Define ranging and enlist its types. **2**
 ii. Calculate the RL of 10 points by rise & fall method, if the staff readings taken at 13 stations are as follows: **8**
 1.234, 1.345, 2.376, 4.120, 0.996, 2.334, 2.789, 0.998, 1.330, 1.580, 1.900, 0.778, 1.980

Note:(a) Reduced Level of known point is given as 500 m.

(b) Auto level has been shifted after 4th, 7th and 10th staff stations.

- OR iii. Find out the corrected fore & back bearings of given lines on the traverse PQRSP by included angle method if observed values are given as follows: **8**

Line	Fore Bearing	Back Bearing
PQ	24° 30'	S 25° 00' W
QR	S 74° 30' E	285° 30'
RS	265° 30'	N 87° 00' E
SP	N 53° 15' W	127° 00'

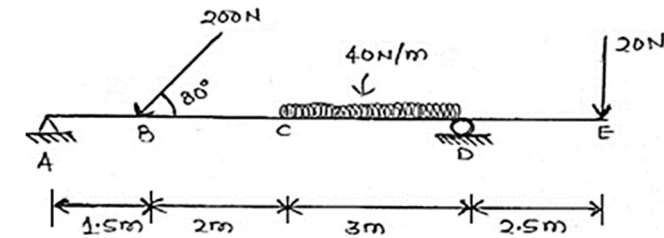
- Q.4 i. Write down the relation between load, shear force and bending moment. **2**
 ii. Enlist various types of loading and beams along with diagrams. **3**

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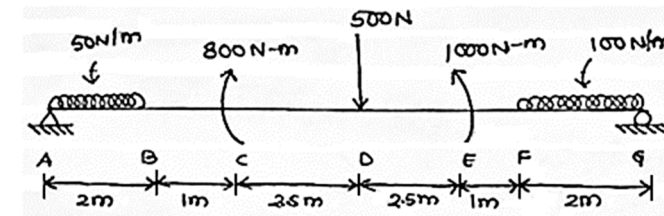
- iii. Define the term negative friction. How can we improve the load bearing capacity of soil using concept of negative friction? **5**

- OR iv. Define and enlist the flooring in detail. **5**

- Q.5 i. Define point of contra flexure & bending moment. **2**
 ii. Draw shear force, bending moment & thrust diagram of following beam section. **8**



- OR iii. Draw shear force, bending moment diagram of following beam section. **8**



- Q.6 Attempt any two: **5**
- i. Explain the following terms- **5**
 (a) Resultant of forces (b) Equilibrant of forces
 (c) Triangle law of forces (d) Poisson's Ratio
 (e) Modulus of Rigidity
- ii. State & derive relations for Parallelogram law of forces. **5**
- iii. State & derive Lami's Theorem. **5**
