

Total No. of Questions: 6

Total No. of Printed Pages: 2

Enrollment No.....



Faculty of Engineering / Science  
End Sem Examination May-2023  
EN3ES01 / BC3ES04 Basic Civil Engineering

Programme: B.Tech. /B.Sc.

Branch/Specialisation: All

Duration: 3 Hrs.

Maximum Marks: 60

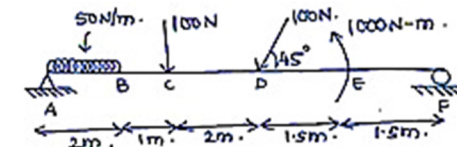
Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

- Q.1 i. Cement sand and aggregate ration for M15 grade of concrete is- 1  
(a) 1:4:8 (b) 1:3:6 (c) 1:5:10 (d) 1:2:4
- ii. Initial setting time of quick setting cement is- 1  
(a) 5 min (b) 10 min (c) 15 min (d) 20 min
- iii. A metric chain of 30m has \_\_\_\_\_ number of links. 1  
(a) 50 (b) 100 (c) 150 (d) 200
- iv. Least count of surveyor compass is- 1  
(a) 1 degree (b) 2 degrees (c) 3-degree (d) 4 degree
- v. Which of the following is not a load carrying member? 1  
(a) Slab (b) Column (c) Beam (d) Wall
- vi. The horizontal component of a step in a stair is called as- 1  
(a) Riser (b) Pitch (c) Landing (d) Tread
- vii. One newton is equivalent to- 1  
(a) 1000000 dynes (b) 100000 dynes  
(c) 1000 dynes (d) 10000 dynes
- viii. The ratio of lateral strain to longitudinal strain is known as- 1  
(a) Poisons ratio (b) Shear modulus  
(c) Young's modulus (d) Bulk modulus
- ix. Diving stand of swimming pool is an example of- 1  
(a) Fixed beam (b) Cantilever beam  
(c) Overhanging beam (d) Simply supported beam
- x. Double differentiation of bending moment gives 1  
(a) Flexure (b) Load (c) Torque (d) Shear force
- Q.2 i. Write about design mix and nominal mix of concrete. 2  
ii. Write about steel as a building material in construction industry. 3

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- iii. Write the role of bogues compound and define initial & final setting time of cement. 5
- OR iv. Classify bricks and write any four characteristics of good bricks. 5
- Q.3 i. Define triangulation and traversing. 2  
ii. The following staff readings were taken during a levelling practice: 8  
2.134, 2.785, 2.685, 0.985, 3.251, 2.598, 0.589, 2.258, 3.254. Calculate the reduced levels of all the stations if the RL of the benchmark is 500.285m and the instrument was shifted after 4<sup>th</sup> and 7<sup>th</sup> staff readings. Apply suitable check.
- OR iii. Define contours, contour interval and horizontal equivalent. Write the characteristics of contour with proper diagram. 8
- Q.4 i. Define sub structure and super structure in a building. 2  
ii. Define foundation with its components and explain shallow foundation with any five types with neat sketches. 8
- OR iii. Explain orientation, utility of space, site selection and building bye laws and regulations in detail. 8
- Q.5 Attempt any two: 5  
i. State and prove Lami's theorem. 5  
ii. Derive a relation to determine the resultant of two forces by parallelogram law. Mention the cases when the forces are overlapped and perpendicular to each other. 5  
iii. Define the following: 5  
(a) Polygon law of forces (b) Poisons Ratio  
(c) Youngs modulus of Elasticity (d) Shear modulus  
(e) Hook's law
- Q.6 i. Define point of contraflexure. 2  
ii. Draw shear force & bending moment diagram with required calculations. 8



- OR iii. A cantilever beam has a fixed end at left side. It carries three-point loads of 300N, 500N and 800N at a distance of 0.5m, 0.7m and 0.8 m from the fixed end respectively. Draw shear force and bending moment diagram of the beam with required calculations. 8

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# Scheme of Marking

## EN3ES01 Basic Civil Engineering

Q.1	i)	d) 1:2:4	1
	ii)	a) 5 min	1
	iii)	c) 150	1
	iv)	a) 1 degree	1
	v)	d) wall	1
	vi)	d) tread	1
	vii)	b) 100000 dynes	1
	viii)	a) poisons ratio	1
	ix)	b) cantilever beam	1
	x)	b) Load	1
Q.2	i.	1 mark for nominal mix and one mark for design mix	2
	ii.	3 marks if definition role and grade of steel written	3
	iii.	3 marks for bouges compound and 2 marks for initial and final setting time.	5
OR	iv.	3 marks for classification and 2 marks for characteristics	5
Q.3	i.	One mark each for triangulation and traversing	2
	ii.	3 marks for 3 definitions and 5 marks for characteristics	8
OR	iii.	3 marks for correct table filling, 4 marks for correct RL calculation and 1 mark for check.	8
Q.4	i.	One mark each for sub and super structure.	2
	ii.	1 mark for foundation, 2 for its components and 5 for its types.	8
OR	iii.	2 marks each for orientation, utility of space, site selection and bye laws	
Q.5	i.	2 marks for definition and 3 marks for derivation	5
	ii.	2 marks for statement of parallelogram law and 3 marks for derivation	5
OR	iii.	One mark for each definition	5
Q.6			
	i.	2 marks for correct definition	2

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| ii.  | 1 mark for FBD, 2 marks for calculation of reactions, 2 marks for shear force calculation and SFD, 3 marks for bending moment calculation and BMD | 8 |
| iii. | 1 mark for FBD, 2 marks for calculation of reactions, 2 marks for shear force calculation and SFD, 3 marks for bending moment calculation and BMD | 8 |

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