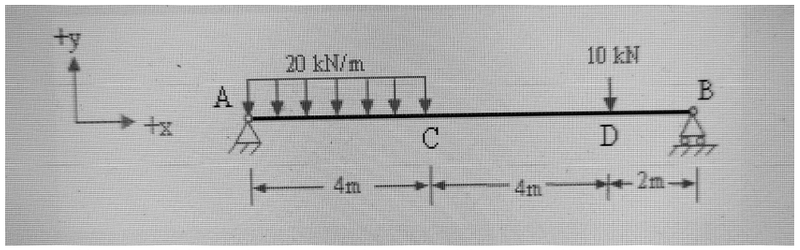
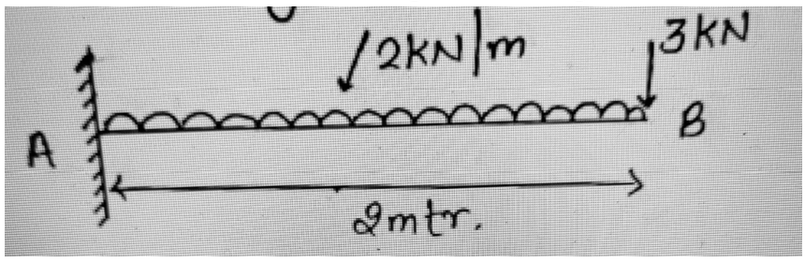
ii. Determine the reaction, shear force and bending moment diagram for the beam shown in figure. **5**



iii. A cantilever of length 2m carries a uniformly distributed load of 2 kN/m over whole length and a point load of 3kN at the free end. Draw the shear force and bending moment diagram of the beam. **5**



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Total No. of Questions: 6 *Total No. of Printed Pages:4*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2019

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. Seasoning of timber is the process of: **1**
(a) Burning timber (b) Adding preservatives
(c) Removing moisture (d) Adding glaze

ii. What is the loading rate used in compressive strength test? **1**
(a) 14 N/mm2 per hour (b) 14 N/mm2 per minute
(c) 20 N/mm2 per minute (d) 40 N/mm2 per hour

iii. The law which states that within elastic limits strain produced is proportional to the stress producing it is known as _____ **1**
(a) Bernoulli's law (b) Hooke's law
(c) Stress law (d) Poisson's law

iv. What is the factor of safety? **1**
(a) The ratio of stress to strain
(b) The ratio of permissible stress to the ultimate stress
(c) The ratio of ultimate stress to the permissible stress
(d) The ratio of longitudinal strain to stress

v. Floor which is slightly lower than the complete flooring is called: **1**
(a) Plinth (b) Sunken floor
(c) Sub floor (d) Hind floor

vi. Which footing is used in load bearing masonry construction? **1**
(a) Isolated (b) Strap (c) Strip (d) Pile

vii. Reciprocal levelling is used when, **1**
(a) Flat terrain (b) Obstacles are there
(c) BM not visible (d) Highway construction

viii. Which is the arithmetic check for the height of instrument method? **1**
(a) ∑FS + ∑BS = First RL + Last RL
(b) ∑BS – ∑FS = Last RL – First RL
(c) ∑FS + ∑BS = Last RL – First RL
(d) ∑BS – ∑FS = First RL – Last RL

ix. What is the bending moment at end supports of a simply supported beam? **1**
(a) Maximum (b) Minimum (c) Zero (d) Uniform

x. Sagging, the bending moment occurs at the _____ of the beam. **1**
(a) At supports (b) Mid span
(c) Point of contraflexure (d) Point of emergence

Q.2 i. What do you mean by lime saturation factor? **2**

ii. List out the Bogue's compound and explain the importance of each compound. **3**

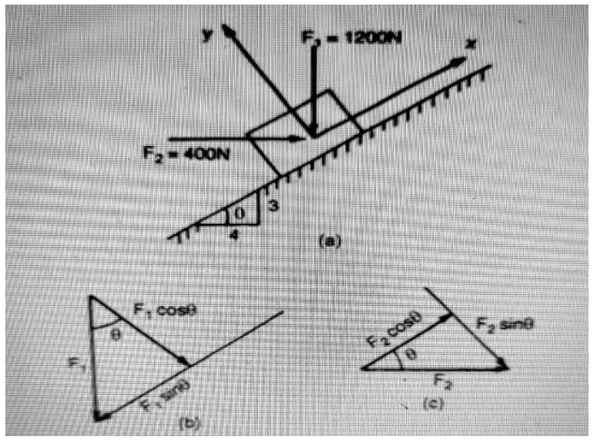
iii. What do you mean by workability? Explain with diagram the procedure of slump cone test. **5**

OR iv. Explain in detail Seasoning of timber. **5**

Q.3 i. What do you mean by composition and resolution of force? **2**

ii. State and prove Lami's theorem. **8**

OR iii. The body on the inclined in fig. is subjected to the vertical and horizontal forces as shown. Find the component of each forces along x-y axes oriented parallel and perpendicular to the incline. **8**



Q.4 i. What do you mean by bearing capacity of soil and list any four various types of soil along with their bearing capacity? **3**

ii. Define Foundation. Explain any five foundation with neat sketches. **7**

OR iii. What do you mean by stair? Explain different types of stairs with neat sketches. **7**

Q.5 i. Explain the term: **4**
(a) Local attraction (b) Whole circle bearing
(c) Change point (d) Contour gradient.

ii. The following staff reading were observed successively with a level, the instrument having been moved after third, sixth, and eight readings. 2.225, 1.605, 0.995, 2.090, 2.865, 1.265, 0.600, 1.985, 1.045, 2.685 m. Enter the above readings in a page of level book and calculate the reduced levels of all the points by height of instrument method if the first reading was taken with a staff held on bench mark of 135.75 m. **6**

OR iii. A closed compass transverse ABCD was conducted around a lake and the following bearings were obtained. **6**

LINE	FORE BEARING	BACK BEARING
AB	$74^0 20'$	$256^0 00'$
BC	$107^0 20'$	$286^0 20'$
CD	$224^0 50'$	$44^0 50'$
DA	$306^0 40'$	$126^0 00'$

Determine which of the station were suffering from local attraction and give the values of corrected bearing by included angle method.

Q.6 Attempt any two:

i. What do you mean by shear force and bending moment? Write the relation between shear force, bending moment and load. **5**

Marking Scheme
EN3ES01 Basic Civil Engineering

Q.1	i.	Seasoning of timber is the process of: (c) Removing moisture		**1**
	ii.	What is the loading rate used in compressive strength test? (b) 14 N/mm2 per minute		**1**
	iii.	The law which states that within elastic limits strain produced is proportional to the stress producing it is known as _____ (b) Hooke's law		**1**
	iv.	What is the factor of safety? (c) The ratio of ultimate stress to the permissible stress		**1**
	v.	Floor which is slightly lower than the complete flooring is called: (b) Sunken floor		**1**
	vi.	Which footing is used in load bearing masonry construction? (c) Strip		**1**
	vii.	Reciprocal levelling is used when, (b) Obstacles are there		**1**
	viii.	Which is the arithmetic check for the height of instrument method? (b) ∑BS – ∑FS = Last RL – First RL		**1**
	ix.	What is the bending moment at end supports of a simply supported beam? (c) Zero		**1**
	x.	Sagging, the bending moment occurs at the _____ of the beam. (b) Mid span		**1**
Q.2	i.	Lime saturation factor		**2**
	ii.	Bogue's compound	1 mark	**3**
		Importance of each compound	2 marks	
	iii.	Workability	1 mark	**5**
		Diagram	1 mark	
		Procedure of slump cone test	3 mark	
OR	iv.	Seasoning of timber and their types	2 marks	**5**
		Explanation of each type	3 marks	
Q.3	i.	Composition	1 mark	**2**
		Resolution of force	1 mark	
	ii.	Statement of Lami's theorem.	2 marks	**8**
		Diagram	1 mark	
		Proof	5 marks	
OR	iii.	Find the component of each forces along x-y axes oriented parallel and perpendicular to the incline. Stepwise marking		**8**
Q.4	i.	Bearing capacity of soil	2 marks	**3**
		Any four of soil with bearing capacity	1 mark	
	ii.	Definition of Foundation	2 marks	**7**
		Any five foundation with sketches	5 marks	
OR	iii.	Definition of stair	2 marks	**7**
		Types of stairs with sketches	5 marks	
Q.5	i.	Explain the term: 1 mark for each	(1 mark * 4)	**4**
	ii.	Calculate the reduced levels of all the points by height of instrument method. Step wise marking		**6**
OR	iii.	Determine which of the station were suffering from local attraction and give the values of corrected bearing by included angle method.		**6**
		Diagram	1 mark	
		Include angle	1 mark	
		Local attraction	1 mark	
		Corrected bearing	3 marks	
Q.6		Attempt any two:		
	i.	Shear force	1 mark	**5**
		Bending moment	1 mark	
		Relation between shear force, bending moment and load	3 marks	
	ii.	Reaction	1 mark	**5**
		Shear force diagram and calculation	2 marks	
		bending moment diagram and calculation	2 marks	
	iii.	Draw the shear force and bending moment diagram of the beam.		**5**
		Reaction	1 mark	
		Shear force diagram and calculation	2 marks	
		bending moment diagram and calculation	2 marks	

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