Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2017

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. The Unit of strain is **1**

(a) cm/cm (b) m/m (c) N/cm^2 (d) No unit

ii. M 20 grade of concrete approximates **1**

(a) 1:3:6 mix (b) 1:1:2 mix (c) 1:2:4 mix (d) 1:1½:3 mix

iii. The safe bearing capacity of the soil can be improved by **1**

(a) Increasing the depth of foundation

(b) Grouting the soil

(c) Draining the soil if water table is very near the base of footing

(d) All the above.

iv. A grillage foundation **1**

(a) Is provided for heavily loaded isolated columns

(b) Is treated as spread foundation

(c) Consists of two sets of perpendicularly placed steel beams

(d) All the above

v. The force that one surface exerts on another when the two rub against each other is called **1**

(a) Gravity (b) Inertia (c) Friction (d) Acceleration

vi. Terrazzo flooring is obtained **1**

(a) By using marble chips as aggregate in concrete

(b) By spreading the marble chips over ordinary wet concrete

(c) By mixing marble powder in ordinary concrete

(d) None of the above.

P.T.O.

vii. The main principle of surveying is to work from **1**
(a) Part to the whole (b) Whole to the part
(c) Higher to lower level (d) Lower to higher level

viii. Ranging is defined as **1**
(a) Measuring the distance from starting point
(b) Measuring the distance from end point
(c) Establishing intermediate point on a chain line
(d) To take an offset from the chain line

ix. Which of the following is a temporary dam **1**
(a) Gravity dam (b) Earth dam
(c) Rockfill dam (d) Coffer dam

x. The Water fit for drinking is called **1**
(a) River water (b) Rain water
(c) Potable water (d) Ground water

Q.2 i. What is the role of Civil Engineer in construction of buildings? **2**
ii. What are the factors affecting workability of concrete? **8**
OR iii. Enlist various types of cement. Explain properties and uses of white cement. **8**

Q.3 i. Define bearing capacity of soil. **3**
ii. What are the different components of a building? Explain the same with the help of sketches. **7**
OR iii. Explain isolated column footing? In which situation combined footings are required? **7**

Q.4 i. Discuss in brief the principles of surveying. **4**
ii. Compare prismatic compass and surveyor's compass. **6**
OR iii. Define a contour? State the various characteristics of contour lines. **6**

Q.5 i. What do you mean by resolution of a force? **2**
ii. Define poisons ratio. **3**

iii. Find the centre of gravity of the L-section shown in Figure-01. **5**

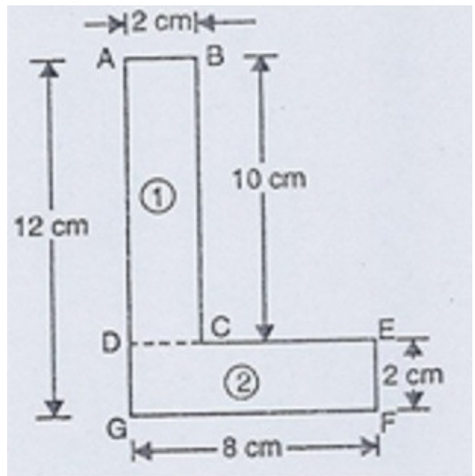

Figure-01

OR iv. Weights of 40 N and 50 N are hung on a string from ceiling as shown in Figure-02**.** Calculate the tension in various portions of the string and inclination of the string. **5**

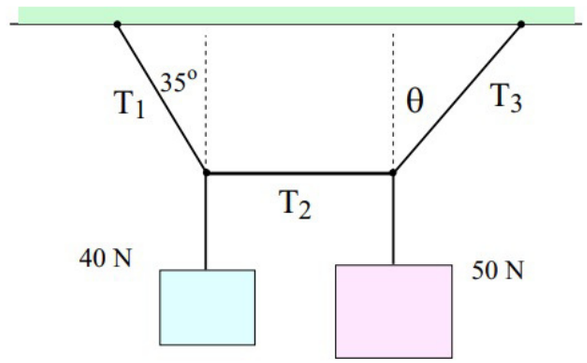

Figure-02

Q.6 Attempt any two:
i. Gravity Dam and its components **5**
ii. Geodetic Surveying **5**
iii. Septic tank and its uses **5**

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EN3ES01 Basic Civil Engineering

Marking Scheme

Q.1	i.	The Unit of strain is **(d) No unit**	**1**
	ii.	M 20 grade of concrete approximates **(d) 1:1½:3 mix**	**1**
	iii.	The safe bearing capacity of the soil can be improved by **(d) All of these**	**1**
	iv.	A grillage foundation **(d) All of these**	**1**
	v.	The force that one surface exerts on another when the two rub against each other is called **(c) Friction**	**1**
	vi	Terrazzo flooring is obtained (**a) By using marble chips as aggregate in concrete**	**1**
	vii.	The main principle of surveying is to work from **(b) Whole to the part**	**1**
	viii.	Ranging is defined as **(c) Establishing intermediate point on a chain line**	**1**
	ix.	Which of the following is a temporary dam **(d) Coffer dam**	**1**
	x.	The Water fit for drinking is called **(c) Potable water**	**1**
Q.2	i.	What is the role of Civil Engineer in construction of buildings? **Design , Planning , Execution**	**2**
	ii.	What are the factors affecting workability of concrete? **Full marks for elaborated factors** **4 marks for listing the factors (1 mark for each)** **4 marks for elaboration of the factors (1 mark for each)**	**8**
OR	iii.	Enlist various types of cement. Explain properties and uses of white cement. **4 marks for listing types of cement (minimum 8 listing types)** **2 marks for properties** **2 marks for uses**	**8**
Q.3	i.	Define bearing capacity of soil.	**3**
	ii.	What are the different components of a building? Explain the same with the help of sketches. **5 marks for explaining components** **2 marks for the sketch**	**7**
OR	iii.	Explain isolated column footing? In which situation combined footings are used? **4 marks for explaining isolated column footing (3 marks for explanation + 1 mark for diagram)** **3 marks for explaining situations**	**7**
Q.4	i.	Discuss in brief the principles of surveying. **2 marks each for principle**	**4**
	ii.	Compare prismatic compass and surveyor's compass. **Full 6 marks for 5 comparisons** **2 marks for 2 comparisons**	**6**
OR	iii.	Define a contour? State the various characteristics of contour lines. **2 marks for defining contour** **4 marks for characteristics of contour lines (minimum 4 with diagram)**	**6**
Q.5	i.	What do you mean by resolution of a force?	**2**
	ii.	Define poisons ratio. **1.5 marks for definition** **1.5 marks for formula**	**3**
	iii.	Find the centre of gravity of the L-section shown in Figure-01.	**5**

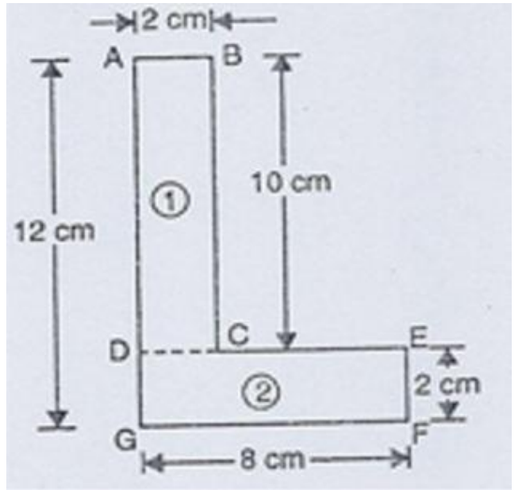

Figure-01

X = 2.33 cm 2.5 marks
Y = 4.33 cm 2.5 marks
2 marks for attempting even if answer is not correct

$A_1 = 20$, $(X_1Y_1) = (1,7)$ & $A2 = 16$, $(X_2Y_2) = (4,1)$

OR iv. Weights of 40 N and 50 N are hung on a string from ceiling as shown in Figure-02**.** Calculate the tension in various portions of the string and inclination of the string. **5**

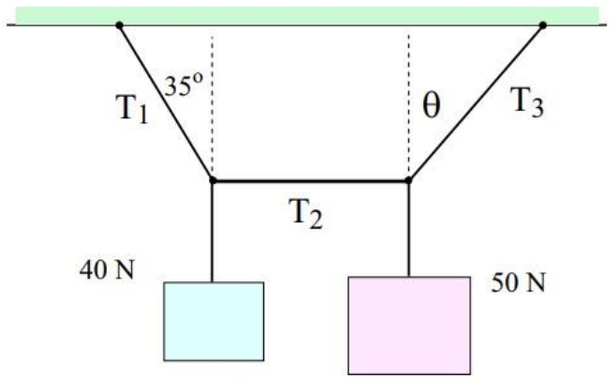

Figure-02

T1 = 48.83 N
T2 = 28.0083 N
T3 = 57.30 N + Q = 29.25

2 marks for attempting even if answer is not correct

Q.6 Write short note on any two **:**

i. Gravity Dam and its components **5**
1.5 marks for defining GD
1.5 marks for diagram
2 marks for Components & explanation

ii. Geodetic Surveying **5**

iii. Septic tank and its uses **5**
1.5 marks for diagram
2 marks for explanation
1.5 marks for uses

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