

Registration No:

--	--	--	--	--	--	--	--	--	--

Total Number of Pages: 03

B.TECH
PBC2B102

2nd Semester Regular Examination 2016-17
BASICS OF CIVIL ENGINEERING

BRANCH: ALL

Time: 3 Hours

Max Marks: 100

Q.CODE: Z588

Answer Part-A which is compulsory and any four from Part-B.
The figures in the right hand margin indicate marks.

Part – A (Answer all the questions)

Q1 Answer the following questions: *multiple type or dash fill up type* (2 x 10)

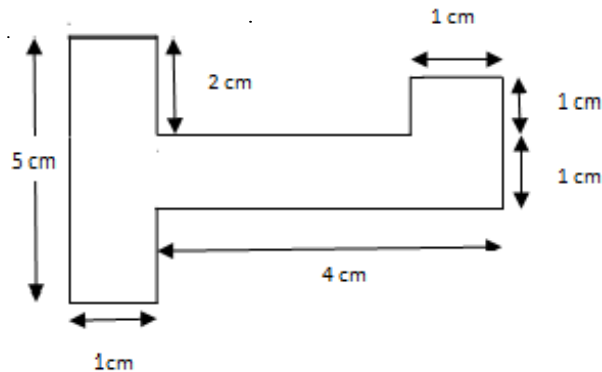
- a) If two equal and opposite forces act on a body, the body can remain under ----- .
- b) The unit of momentum is ----- .
- c) The two methods used for solution of truss problems are ----- and --- ---- .
- d) For a semicircle of radius R , the CG line wrt to the diameter lies at a distance of ----- from the diametric line.
- e) The moment of inertia of a rectangle of base width b and height h wrt its base line is ----- .
- f) The portion of a building between the surface of the surrounding ground and the surface of the floor immediately above the ground is known as.....
- g) The instrument used for centering is called
- h) The nominal size and standard size of brick recommended by BIS areand respectively.
- i) If the fore bearing of a line is $190^{\circ} 30'$, the back bearing will be.....
- j) The term used to denote any influence which prevents the compass needle from pointing to the magnetic north is called as

Q2 Answer the following questions: *Short answer type* (2 x 10)

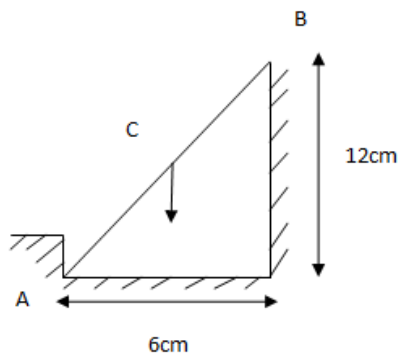
- a) State the conditions of equilibrium for a three dimensional body.
- b) State and explain D'Alemberts principle.
- c) Draw figures and distinguish between *roller support* and *hinged support* wrt the displacements caused.
- d) State Lame's theorem.
- e) If two forces of magnitude, 5 kN and 10 kN act on a body with angle of inclination between two forces as 45 degree, find the resultant force.
- f) Distinguish between *king closure* and *queen closure*.
- g) Differentiate between *english bond* and *flemish bond*.
- h) Explain the difference between *direct ranging* and *indirect ranging*.
- i) Which experiments are conducted to assess the workability of concrete?
- j) Truss members carry what type of forces? Explain.

Part – B (Answer any four questions)

- Q3** a) State Distinguish among CG, Centre of mass and Centroid. (5)
 b) Locate the centroid of the lamina shown below with respect to the extreme bottom line. (10)



- Q4** a) A cantilever beam of span 4 m with left end as fixed, carries a load of 2 kN/m for the left half of the span and carries a point load of 5 kN at the free end. Calculate the support reaction. Find the value of the maximum moment and its location. (10)
 b) Three coplanar forces of 100 N each pull on a small body with their lines of action making equal angle with each other. Calculate the resultant force acting on the body. (5)
- Q5** a) A person of weight, 180 N stands on the middle of a 50 N ladder as shown. Assuming a smooth wall at B and a stop at A to prevent slipping, determine the reactions at A and B. (10)



- b) A ball of 1 kg moving with a velocity of 1 m/sec hits on a ball of mass, 3 kg at rest. If the first ball comes to rest after impact, find the velocity of the second ball and coefficient of restitution. (5)
- Q6** a) Explain the consistency test conducted for cement. (10)
 b) Explain the properties of fresh concrete. (5)
- Q7** a) Discuss the process of chain survey alongwith the required equipments used. (10)
 b) Describe various types of foundations adopted for building structures. Draw the figures for isolated footing and pile foundation. (5)

Q8 a) The following bearings were observed in running a compass traverse. **(10)**

Line	F B	B B
AB	$66^{\circ} 15'$	$244^{\circ} 00'$
BC	$129^{\circ} 45'$	$313^{\circ} 00'$
CD	$218^{\circ} 30'$	$37^{\circ} 30'$
DA	$306^{\circ} 45'$	$126^{\circ} 45'$

Calculate the correct fore and back bearings and the true bearings of the lines, given that, the magnetic declination is 1 degree 40 sec E.

b) Distinguish between magnetic meridian and true meridian. **(5)**

Q9 Write short notes on any **THREE** . **(5x3)**

- a)** Laws of conservation of momentum
- b)** Perpendicular and parallel axis theorem of moment of inertia
- c)** Slump test
- d)** Properties of good stone
- e)** Consistency of cement