

COMBINED 1st & 2nd SEMESTER B.TECH EXAM 2015

EN 09 106- BASICS OF CIVIL AND MECHANICAL ENG

Mark : 50

PART - A

Answer any four out of five. (4x5=20)

- 1) Explain the temporary adjustments of levelling?
2. Explain reciprocal ranging?
3. Write the types and functions of the column.
4. Compare Brick masonry and Stone masonry.
5. Define workability of concrete?
What are the factors affecting workability?

PART - B

6. What are the properties and applications of cement mortar and cement concrete?
- or
7. Draw a neat sketch of Engle's bond

(1 brick wall and $1\frac{1}{2}$ brick wall thickness). Explain in brief.

8. What is meant by seasoning of timber? Explain natural and artificial seasoning!

or

9. Explain about the types and functions of the following structural components of the buildings.

1. Foundations 2. Arch & Lintel.

10. What is transportation & Explain different classifications of load!

or

11. Define surveying. Briefly describe about chain and accessories.

(3x10=30)

Answer key.

1) centering, levelling, elimination to parallax.

Crane - 2)

Explanation - 3 marks.

↳ Focusing the eyepiece
→ Focusing the objective

2)

big. 2 mark.

invisible points } 3 marks.

Procedure

5) workability (Def. 2 mark.) : 100% compaction of concrete
Factors affecting (3 marks) : Size, shape, texture, etc.

3). Types: 3 marks

Functions: 2 marks (transfer load from beam to foundation)

↑ Classification Based on slenderness ratio.

1. long column.
2. short column.
3. Inter mediate columns.

ii. Classification based on the shape of the column.

1. Circular column.
2. Square column.
3. Rectangular column, L shaped columns.

iii. Based on material of construction.

- Steel column, R.C.C column, Timbered column, Brick masonry column, Composite column.

iv. Based on position of loading.

- Axially loaded column, column with axial moment, Column with Bifurcal moment.

4. Compositions each - 2.5 marks. 2.5 marks,
Brick masonry: Arrangement: Brick with mortar.
Stone " " Stone with mortar.
Part B.

6. Properties & applications of
Cement mortar - 5 marks.

Properties & applications of
Cement concrete - 5 marks.

Cement mortar: mixture of cement, sand & H₂O
Cement concrete: mixture of cement, sand
aggregate & water

7. English Bond: - consists of alternate
courses of headers and stretchers.

Definition - 1 mark.

2. Diagrams - 2.5, 2.5 marks.

Explanation - 5 marks

8. Seasoning of timber: Def. 2 marks.

The process of drying of timber before
using engineering applications.

Natural seasoning expln. - 4 marks.

Artificial seasoning exp. - 4 marks

9. Foundations: Part of a building below
ground level.

Types: Shallow Foundations.

Deep foundations.

} 2.5 marks

explanations.

big.

Arch - def + type + functions - 2.5 marks
kg.

Lintel - types - functions - 2.5 marks.
kg.

Arch - structure constructed with wedge shaped stones over the openings.

Lintel - Small beam placed across the openings.

timber lintel, stone lintel,

steel lintel, R.C.C lintel.

10. Transportation. Def : 2 marks.

→ process of transporting goods and passengers from one place to another.

Road way, Railway, Air way, Water way, pipe lines.

Classification of road : 2 marks

Explanation : 5 marks.

1) Classification based on the location & function

a) National highway.

b) State highway.

c) District roads. - [major district road
Other district roads]

d) Village roads.

2) Based on material & method.

1) Earth road

b) Gravel road

c) Soil stabilized road.

d) Water Bond macadam road.

e) Bituminous road.

f) Concrete road.

Classification - urban roads.

1. Express ways.

2. Arterial streets.

3. Sub arterial streets.

4. Collectors streets.

5. Local streets.

11. Def. Surveying - 2 mark.

Describe the chain -

2 marks.

List the accessories -

Description → 4 marks.

Signs - 2 marks.

Surveying is the art of determining...

chain, ranging rod, tape, arrows,

Pegs, plumb bob, plasters etc.