BCEM - RGPV Important Questions with Answers & Diagrams

Q: Discuss the characteristics of good building stones.

Ans: Good building stones should have:

1. High compressive strength to bear loads.

2. Durability to resist weathering.

3. Toughness to withstand impact.

4. Low porosity to resist moisture absorption.

5. Good appearance for aesthetics.

6. Workability for easy shaping and cutting.

[Diagram Suggestion: Sketch of stone in masonry wall]

Q: Explain the manufacturing process of bricks.

Ans: 1. Preparation of clay - removal of impurities.

2. Moulding - shaping using hand or machine moulds.

3. Drying - under sun for 7-14 days.

4. Burning - in clamps or kilns at 900-1100°C.

[Diagram Suggestion: Brick kiln process]

Q: What are the different types of foundations? Explain with sketches.

Ans: 1. Shallow Foundations: Spread footings, combined footings, raft foundation.

2. Deep Foundations: Pile foundation, well foundation.

Shallow foundations are used when soil bearing capacity is good. Deep foundations are used for high-rise buildings or poor soil.

[Diagram Suggestion: Footing and pile foundation sketches]

Q: Differentiate between whole circle bearing and quadrantal bearing systems.

Ans: Whole Circle Bearing (WCB): Bearings measured from 0° to 360° clockwise from north.

Quadrantal Bearing (QB): Bearings measured from N or S towards E or W within 90°.

Example: WCB = 135°, QB = S45°E.

[Diagram Suggestion: Compass with WCB and QB marked]

Q: State and explain Lami's theorem with an example.

Ans: Lami's Theorem: If a body is in equilibrium under three concurrent forces, each force is proportional to the sine of the angle between the other two.

Formula: A/sin(alpha) = B/sin(beta) = C/sin(gamma)

Example: If three forces 30N, 40N, and unknown act at angles 120°, 110°, and 130°, we can find the unknown using the formula.

[Diagram Suggestion: Triangle showing three forces meeting at a point]