

Code No: NR210105

II B.Tech I Semester Supplementary Examinations, November 2006
MECHANICAL AND ELECTRICAL SCIENCES
(Civil Engineering)

Time: 3 hours

Max Marks: 80

Answer any THREE questions from each part

PART-A

1. Explain the characteristics of separately excited DC generator.
2. From the fundamental, derive the expression for the Torque.
3. Draw the general schematic of a single phase transformer and explain its working principle.
4. Derive from first principles the emf equation of an alternator.
5. What are the essential devices in indicating instruments? Explain each of them briefly?

PART-B

- 6.a) Define:
 - i. Bore
 - ii. Stroke
 - iii. Displacement of an I.C. Engine and mention their units.
- b) With neat sketches explain the working of 4-stroke cycle petrol engine.
7. Explain the important components of a simple vapour compression refrigeration system. Also discuss the function of each component.
- 8.a) Explain the advantages of the following equipment used in welding process:
 - i. Head shield
 - ii. Chrome - leather spats
 - iii. Scratch brush
 - iv. Chrome - leather apron
- b) Describe the working principle and operation of gas welding process.
- 9.a) Discuss with a neat sketch the nomenclature and function of the different elements of a drill.
- b) Distinguish between drilling and milling.
- 10.a) Discuss how the power shovels are mounted?
- b) What is the principal advantage of a Conveyor Installation?

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