

Code No: NR 210105

II B.Tech. I Semester Supplementary Examinations, November-2005

MECHANICAL SCIENCE AND ELECTRICAL SCIENCE

NR

Time: 3 hours

Max Marks: 80

Answer any Three questions from each part

All Questions carry equal marks

PART-A

- 1.a) What is the function of a flywheel in an I.C. engine. [6]
- b) Draw the outline diagram of a petrol engine and mark different parts on it. [10]
- 2.a) Discuss briefly the factors affecting the choice of refrigerants commonly used in refrigerating plants. [6]
- b) What are the advantages and disadvantages of using air as refrigerant as compared to F-13 and NH_3 . [10]
- 3.a) Describe the typical equipment used by welder in the arc welding process. [8]
- b) With the neat sketch of describe briefly about oxyacetylene torch. [8]
- 4.a) Name the different types of milling machines used in industry and write their applications. [6]
- b) What are the common operations done on a drilling machine? State their uses. [10]
- 5.a) Show with the help of sketches typical dimensions and clearances of a shovel for 45° beam angle. [10]
- b) What types of materials can be handled by roller conveyors? [6]

PART-B

1. Explain the building of the emf in a shunt generator. [16]
2. Discuss the losses in a dc machine. [16]
3. Explain briefly the operation of a transformer and sketch the phasor diagram on no load. [16]

(Contd..2)

4. Define the terms synchronous reactance and voltage regulation of an alternator. Explain synchronous impedance method of determining regulation of an alternator. [16]
5. A moving coil instrument gives full-scale deflection with 20 mA. The resistance of the coil is 4Ω . It is desired to convert this instrument into an ammeter to read up to 2 A. Find the resistance of the shunt to be connected in parallel with the instrument. Also determine the value of series resistance for the above instrument to read up to a voltage of 30 V. [16]

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