**METHODIST COLLEGE OF ENGINEERING AND TECHNOLOGY, ABIDS**

**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**VIII Semester CBCS EEE – OU**

**Assignment -I**

**Subject: Utilization of Electric Energy (Code: PC801EE)**

**Max Marks: 5M**

1. A piece of insulating material is to be heated by dielectric heating. The size of the piece is 10 × 10 × 3 cm3. A frequency of 30 mega cycles is used and the power absorbed is 400 W. Determine the voltage necessary for heating and the current that flows in the material. The material has a permittivity of 5 and a power factor of 0.05.

1. Estimate the energy required to melt 500 kg of brass in a single-phase Ajax –Wyatt furnace. If the melt is to be carried out in 3/4 hour, what must be the average power input to the furnace.

Specific heat of brass = 393 J/kg / 0c

Latent heat of fusion of brass = 163 x 103 J/kg

Melting point by brass = 920 0C

Furnace efficiency = 70%

1. Determine the energy required to melt brass at the rate of one tonne per hour in a single phase Ajan Wyatt furnace. Specific heat of brass is 0.094, Latent heat of fusion is 40k cal/kg, initial temperature 24°c, Melting point of brass 920°C, Assume efficiency to be 71 %.

Solve and Submit above Assignment-1 by 20.02.2020

Prepared by Y.Mastanamma