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K. N. I. T., SULTANPUR

(Paper code and roll No. to be filled in your answer book)

Paper code: KME-301

Roll No. 1 3 r 3 6

B. Tech.
Third Semester Examination, 2014-15
Production Processes

Time: 2 Hours **Total Marks: 50**

Note: Attempt all the questions. Assume missing data suitably, if required.

1. **Attempt any two parts of the following:** **(6x2=12)**

(a) Define & differentiate between Jigs & Fixture. Write some advantage of employing jigs and fixture in mass production.

(b) With the help of neat sketch explain 3-2-1 principle of location & also describe different types of locating pins.

(c) Briefly explain the principle of clamping & discuss different types of clamps.

2. **Attempt any four parts of the following:** **[3.5x4=14]**

(a) Are length characteristic for a welding operation is given by V= (20+4L). If the arc length varies between 4 mm to 6 mm and arc current varies between 450 A to 550 A. Assuming linear power sources. Calculate:

(i) Open Circuit Voltage

(ii) Short circuit current

(b) Differentiate between:

(i) Soldering & Brazing

(ii) DC straight polarity & DC Reverse polarity.

(c) Explain four welding defects with neat sketch.

(d) Explain the working principle of Atomic Hydrogen welding with neat sketch.

(e) Sketch the three types of flame used in oxy-acetylene welding process. Write its applications.

(f) Two metallic sheets, each of 2.0 mm thickness, are welded in a lap joint configuration by resistance spot welding at a welding current of 10 kA and welding time of 10 msec. A spherical fusion zone extending up to the full thickness of each sheet is formed. Properties of the metallic sheets are given as: Ambient Temp. - 293K, Melting Temp= 1793°K Density= 7000 kg/m^3, Latent heat of fusion=300kJ/kg. Specific

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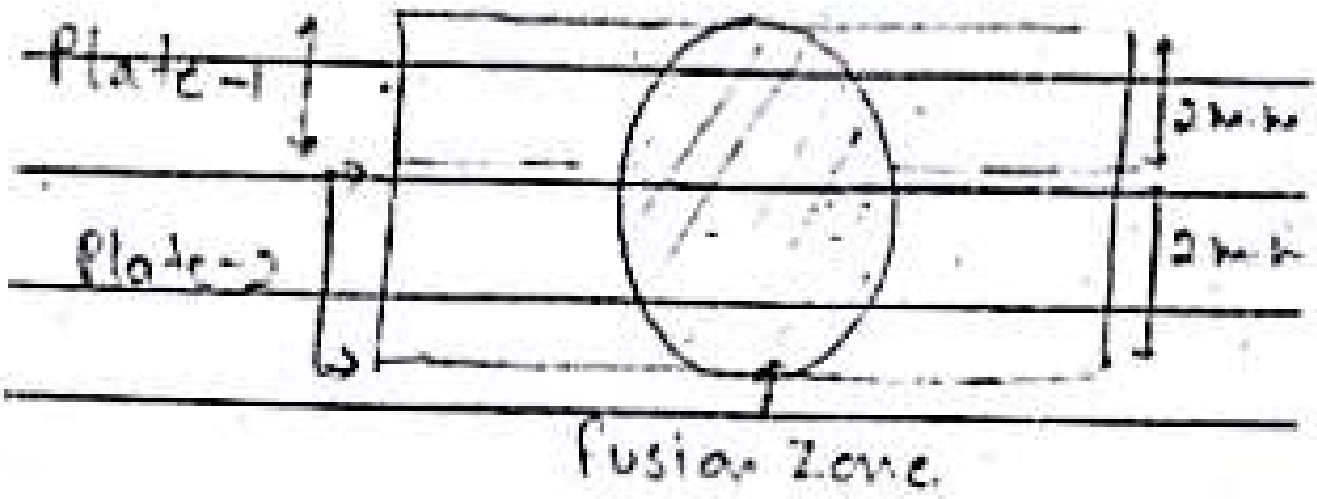
heat=800 J/Kg°K. Contact resistance along sheet-interface is 500μΩ. What is the melting η (in %) of the process.



3. **Attempt any two parts of the following:** **(6x2=12)**

(a) Write short notes on:

(i) Cladding

(ii) Metalizing

(iii) Under water welding

(b) Explain the working principle of Electron Beam Welding process with neat sketch. Write its applications & advantages also.

(c) Differentiate between transferred and non-transferred arc Welding process with neat sketch. Write the applications & advantages of Plasma arc welding process.

4. **Attempt any two parts of the following:** **(6x2=12)**

(a) Define "Powder Metallurgy" process. Write in brief the basic steps of powder metallurgy process. Also write its applications.

(b) (i) Differentiate between thermoplastic & thermosetting plastic.

(ii) Sketch & Explain injection moulding process.

(c) Discuss with neat sketch any two methods of welding of plastics.

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