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Total Number of Pages: 02

B.TECH
PEME5306

6th Semester Regular / Back Examination 2015-16

MODERN MANUFACTURING PROCESSES

Branch: MECH

Time: 3 Hours

Max Marks: 70

Q.Code: W425

**Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.**

- Q1** Answer the following questions: **(2 x 10)**
- a) Explain the function of dielectric fluid in EDM
 - b) Name some of the commonly used abrasive particles in USM.
 - c) What do you mean by standoff distance in AJM?
 - d) List the limitations of chemical machining.
 - e) State the role electron gun in EBM.
 - f) What are the equipment used in plasma arc spraying?
 - g) How laser used to machine the material?
 - h) What are the common explosives used in explosive forming?
 - i) Write the function of dielectric in EDM.
 - j) Explain the process rapid prototyping.
- Q2** a) Explain with neat diagram the working of WJM. **(5)**
- b) Describe the advantages, disadvantages and applications of AJM process. **(5)**
- Q3** a) Calculate the machining rate and the electrode feed rate when iron is electrochemically machined, using copper electrode and sodium chloride solution having specific resistance 5 ohm cm. The supply voltage is 18v dc and current is 5000amp. A tool work gap is maintained. Assuming the current density as 100% with sodium chloride electrolyte. For aluminium atomic weight is taken as 56, valency = 2 and density = $7.87 \times 10^6 \text{ g/m}^3$. **(7)**
- b) Explain the principle of chemical machining. **(3)**
- Q4** Describe the functions of tool feed mechanism in USM. Also explain with diagram the different tool feed system in USM. **(10)**

Q5 a) Discuss in details the factors that influence the quality of the cut in PAM. (5)

b) Explain with neat diagram the principle and material removal in LBM process. (5)

Q6 a) Discuss the factors influencing the choice of electrode material in EDM. (5)

b) A 100 μm wide slot is to be cut in 1.5mm thick tungsten steel, using an electron beam with a power of 7kW. What will be the speed of cutting?
The thermal properties of tungsten are:
Melting temp= 3400 $^{\circ}\text{C}$, thermal conductivity = 2.15W/cm- $^{\circ}\text{C}$, volume specific heat = 2.71J/ cm 3 - $^{\circ}\text{C}$. (5)

Q7 a) Explain the advantages of advance coating on high performance modern cutting tool. (5)

b) Describe the process CVD with its application. (5)

Q8 Write short notes on any two (5 x 2)

a) Electro chemical grinding

b) Concurrent engineering

c) Chemical Blanking.

d) Electro discharge grinding