Registration no: | | | | | | | | | | |

Total Number of Pages: 02

B.TECH
PEME5306

6th Semester Regular / Back Examination 2016-17
MODERN MANUFACTURING PROCESSES
BRANCH: MECH
Time: 3 Hours
Max Marks: 70
Q.CODE: Z289

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 functions of electrolyte in ECM.
b) List some abrasive material used in USM.
c) In which cases the water jet machining is used successfully.
d) Etchant used for what purpose in chemical machining?
e) What is the dielectric system?
f) Explain the function of electron beam gun.
g) What do you mean by plasma arch surfacing?
h) Explain the principle of PVD.
i) What do you mean by reverse engineering?
j) Differentiate LBM and EBM.

Q2 **a)** Describe in detail with diagram the principle and working of WJM. **(5)**
b) Describe with neat diagram the tool feed mechanism of an ultrasonic machine. **(5)**

Q3 **a)** Describe the different generators used in EDM with relative advantages and disadvantages. **(6)**
b) Discuss the factors influencing the choice of electrode material in EDM. **(4)**

Q4 In an ECM operation a pure copper block is being machined if a current of 5000amp is used, determine the volume rate of material removal from the copper block. The gram atomic weight of copper is 63.57, valency is 1, density is 8.96 g/cm^3 and F=96500 coulombs. **(10)**

Derive the formula used for solving the problem.

Q5 With neat diagram explain the principle of Laser beam machining. State its advantages, limitations and application. **(10)**

Q6 **a)** Discuss about the different parameters that governs the performance of plasma arc machining. **(5)**

b) A 100μm wide slot is to be cut in 2mm thick tungsten steel, using an electron beam with a power of 8kW. What will be the speed of cutting? The thermal properties of tungsten are: Melting temp= 3400^0c, thermal conductivity = 2.20W/cm-^{0}C, volume specific heat = 2.75J/ cm^3- ^{0}C. **(5)**

Q7 **a)** Describe the coating and electroless forming process. **(5)**

b) Describe the advantages of advance coating on high performance super abrasive grinding wheel. **(5)**

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

a) Explosive forming
b) Concurrent engineering
c) Rapid prototyping
d) Surface engineering