Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech.**

PEME5306

6th Semester Back Examination 2017-18

MODERN MANUFACTURING PROCESSES

BRANCH : MECH, PLASTIC

Time : 3 Hours

Max Marks : 70

Q.CODE : C221

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) Write the function of slurry in USM.

b) Name the abrasives and carrier gasses used in AJM.

c) What is the function of electron gun in EBM?

d) List the limitations of chemical machining.

e) What is the function of servo-mechanism in EDM?

f) How laser used to machine the material?

g) Why electrolyte is used in ECM?

h) Differentiate PVD and CVD

i) Explain the process rapid prototyping.

j) Name the equipment used in plasma arc spraying?

Q2. **a)** Explain with neat diagram the method of material removal in AJM. **(5)**

b) Describe principle and the equipment used in the WJM. **(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= 7.87×10^6 g/m^3. **(8)**

b) Write the principle of chemical machining. **(2)**

Q4. Discuss the effects of the following parameters on the rate of material removal and surface finish obtainable in ultrasonic machining : **(10)**

(a) Amplitude and frequency of vibration

(b) Abrasive grit size

(c) Static load

(d) Shape of tool

(e) Work material

Q5. Explain the principle of metal removal in EDM. Describe the different generators used in EDM with relative advantages and disadvantages **(10)**

Q6. **a)** Describe with neat diagram the principle of operation, material removal and surface finish in electrochemical grinding process. **(5)**

b) A laser beam with power intensity of $2x10^5$ w/mm^2 is used to drill a 0.2mm diameter through hole in a tungsten sheet of 0.4 mm thickness. If the efficiency of the operation is only 10% estimate the time required. The thermal properties of tungsten are: **(5)**
Melting temp= 3400^0c, thermal conductivity = 2.15W/cm-^{0}C, volume specific heat = 2.71J/ cm^3- ^{0}C.

Q7. **a)** Discuss in detail the micro and nano machining of glasses. **(5)**

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

Q8. **Write short notes on any TWO :** **(5 x 2)**

a) Wire EDM

b) Aching of semiconductor.

c) Concurrent engineering

d) Chemical Blanking.