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Total number of printed pages – 2

B. Tech  
PEME 5306

Sixth Semester Regular Examination – 2014

MODERN MANUFACTURING PROCESSES

BRANCH : MECH

QUESTION CODE : F 275

Full Marks – 70

Time : 3 Hours

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



1. Answer the following questions :

2×10

- Write the function of tubing in WJM.
- What are the functions of electrolyte in ECM ?
- What do you mean by 'horn' in case of ultrasonic machining ?
- Write the important applications of electrochemical honing process.
- Classify the generators for EDM.
- Define the plasma arch surfacing.
- Define electron gun in EBM.
- What is laser ?
- Need of coating on cutting tool.
- What is the concept of reverse engineering ?

- What are the main constituents of abrasive slurry in ultrasonic machining ?  
Write the characteristics of a good suspension media. 5
- Write the advantages and disadvantages of USM. 5

P.T.O.

3. (a) Describe with neat diagram the principle of operation, material removal and surface finish in electrochemical grinding process. 5
- (b) Write the principle of chemical machining process. Describe, in detail, the elements used in the process. 5
4. Discuss, in detail, how different variables influence the material removal rate and accuracy of machining in AJM. 10
5. (a) Describe the mechanism of metal removal in EDM. 5
- (b) What do you mean by flushing in EDM? What are the different methods to achieve flushing in EDM? 5
6. (a) Write the principle of plasma arc machining. Describe with diagram how plasma generated and mechanism of metal removal? 5
- (b) A 100  $\mu\text{m}$  wide slot is to be cut in 1.5 mm thick tungsten steel, using an electron beam with a power of 7 kW. What will be the speed of cutting?  
The thermal properties of tungsten are :  
Melting temp = 3400°C, thermal conductivity = 2.15 W/cm-°C, volume specific heat = 2.71 J/cm<sup>3</sup>-°C. 5
7. (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
8. Write short notes on any **two** of the following : 5×2
- (a) Wire EDM
- (b) Rapid prototyping
- (c) Aching of semiconductor
- (d) Laser beam machining.

