Printed pages: 2	**ME503/EME503**
(The paper code and roll No. to be filled in your answer book)	
Roll No.	

B TECH
(SEM V) THEORY EXAMINATION 2016-17
MANUFACTURING SCIENCE-II

TIME: 2 Hours **Total Marks: 50**

Note: ***Question 1 and 2 are compulsory. Attempt any three others. A total of five questions are to be answered.***

Q1 Determine the shear plane angle, resultant force on the tool and cutting force components for orthogonal cutting operation on a material with ultimate shear strength of 200 N/mm^2. The machining data is as follows: [20]

Uncut chip length = 100 mm
Length of cut chip = 50 mm
Width of cut = 1.5 mm
Rake angle of tool = 10^o
Uncut chip thickness = 0.2 mm
Coefficient of friction = 0. 8

Q2 Estimate the metal removal rate in an ECM process, of an alloy consisting of 18% Cobalt, 62% Nickel and 20% Chromium with a current of 500 amp. The density of the alloy is 8.28 gm/cc. Cobalt, Nickel and Chromium have an absolute weight of 58.93, 58.71 and 51.99 respectively and their respective valencies are 2, 2 and 6. Metal removal rate may be indicated in m^3/hour. [20]

Q3 A plane surface is to be machined on a mass scale. The machines available to do this job are shaper, grinding, horizontal milling, vertical milling and planning machines. The most appropriate choice of a machine will depend upon a number of factors. In your opinion what will be the factors of considerations. Discuss how these factors would influence your final decision of choosing the most appropriate machine to do the job.[20]

Q4 Write a brief note on the LASER beams for welding and machining of metals. In what respects is laser beam working superior to working with electron beam for machining and welding? [20]

Q5 Why is balancing, dressing and truing of a grinding wheel required? Mention briefly how truing and dressing is done. [20]

Q6 What is meant by ERW process? Describe the essential features of SPOT welding. What is the difference between spot welding and projection welding? [20]

Q7 Describe the process of MIG welding. What are its main advantages over SMAW? Why is a constant potential power source used in MIG welding whereas a constant current power source used in SMAW? [20]