MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : PC-ME701 Advanced Manufacturing Technology

Time Allotted : 3 Hours *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following : [1 x 10 = 10]

(I) What is the full form of EDG?

(II) In EDM metal removal rate is proportional to
a)Frequency of charging
b) Energy delivered in each spark
c) Both a and b
d) no e of these

(III) In PAM metal removed by
a) Melting
b) Vaporization
c) Chip formation
d) All of these

(IV) PAM is a
a) Slow process
b) Faster process
c) High mrr
d) All of these above

(V) In USM the rate of penetration is dependent on
a) Action of slurry
b) Action of abrasive grains
c) Reduction of a chemical
d) All of these

(VI) The principles governing the metal removal rate in ECM is
a) Flemings rule
b) Newtons law
c) Faraday law
d) None of the above

(VII) What are the factors on which the overcurrent depends in EDM process?

(VIII) What is the narrowest slot can be made by EBM?

(IX) Name the unconventional machining process which is used to remove minimum material?

(X) For machining of high hardness what will be the material tool selected in EDM ?

(XI) Best application in press tooling in EDM is done by what type of tool and work material

(XII) What is the tolerances obtained in chemical machining?

Group-B (Short Answer Type Question)

Answer any three of the following [5 x 3 = 15]

2. What are the process parameters of AJM process? Draw the curve of MRR vs. mixing ratio and explain it [5]
3. What are the over voltages in ECM process. Classify and Explain them. [5]
4. Why the AJM is not suitable for soft materials? Explain briefly. [5]
5. Write the laws on which the electro-chemical machining depends [5]
6. Explain the orbital AFM process. [5]

Group-C (Long Answer Type Question)

Answer any three of the following [15 x 3 = 45]

7. a) What are the different EDM operations? [7+8]
b) Explain the process of wire drilling.

8. a) What is Plasma ? How it is used in PAM? [8+7]
b) For cutting a 150 micrometer wide slot in a 1mm thick tungsten sheet an electron beam with a 5 KW power is used. Determine the speed of cutting. Specific power consumption of tungsten(C) is 12 $W/mm^3/min$

9. (a) What do you mean by advanced finishing process? Write the names of the different advanced finishing processes. [5]
(b) What are the process variables ? [5]
(c) Write the process performances and applications. [5]

10. (a) Write the characteristics of AFM process [8]
(b) Write the differences between one way AFM and two way AFM process [7]

11. a)Write the characteristics of PAM? https://www.makaut.com [7+8]
b) The composition of monel alloy of workpiece undergoing ECM . The composition is Ni 63%, Cu is 31.7%, Fe 2.5%, Mn 2%, Si=0.5%, ,C 0.3%. The density of alloy is 8.3 gm/cm^3, Ni and Co dissolutes at valency 3 , Chromium dissolutes at valency 6. the current supplied is 1000 amp.Estimate the metal removal rate

*** END OF PAPER ***