61

Exam.Code:0942
Sub. Code: 7063

(31)

1059

B.E. (Mechanical Engineering) Sixth Semester

MEC-606: Non-Conventional Manufacturing

e allowed: 3 Hours

Max. Marks: 50

TE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

a) State hybrid machining process and its industrial application.

b) Can air be used as di-electric in EDM? Justify.

c) In USM, magnetostrictor converts magnetic energy into which type of energy?

d) State principle of material removal in abrasive jet machining.

e) Which types of defects appears in chemical milling process due to excessive flow of chemical reagent. (5x2)

UNIT – I

II. a) A hole is required to be made in a tungsten carbide sheet, 6 mm thick using USM with abrasive 5 slurry consisting of one part of 320 grit (15 micron radius) boron carbide mixed with 1/4 parts of water. Calculate the drilling time if static stress developed in the tool is 1.4×10^2 kg/cm^2, amplitude of tool vibration is 0.025mm, operating frequency of the machine is 20,000 cps, compression fracture strength of tungsten carbide is 225 kg/mm^2, only one pulse out of 100 is effective.

b) What are process parameters of AJM? Explain its effect on MRR. (2x5)

III. a) Explain chemical machining with neat sketch and its process elements.

b) Classify non-conventional machining process and also write its application. (2x5)

IV. a) What is working principle of USM? Explain with diagram and state its industrial applications.

b) What is chemical blanking process? Differentiate chemical blanking and chemical contour machining. (2x5)

UNIT – II

V. a) Calculate machining rate while machining iron electrochemically using copper electrode and sodium chloride solution (specific resistance 5 ohm-cm) as electrolyte, power supply voltage = 20 V and current, 5000 amp. Tool-work gap, 0.5 cm and F=96,500.

b) What is electrochemical grinding? What is difference between ECG and ECM? (2x5)

P.T.O.

VI. a) How plasma formed in PAM? What is the maximum temp. at the central part of plasma? Write its applications.

b) Explain electron beam machining with neat sketch. (2x5)

VII. Define process parameters of EDM. What are different flushing techniques used in EDM? Explain with neat sketch. (10)

x-x-x