Code : 021617

B.Tech 6th Semester Exam., 2016

NON-CONVENTIONAL MANUFACTURING

Time : 3 hours *Full Marks* : 70

Instructions :

(i) The marks are indicated in the right-hand margin.

*(ii) There are **NINE** questions in this paper.*

*(iii) Attempt **FIVE** questions in all.*

*(iv) Question No. **1** is compulsory.*

1. Choose the most appropriate option of the following (any *seven*) : 2×7=14

(a) Ultrasonic machining is based on

(i) uniform heating

(ii) uniform grinding

(iii) vibration waves of high frequency

(iv) uniform machining

(b) In ultrasonic machining, the rate of penetration is dependent on

(i) flow path

(ii) slurry

(iii) area of tool tip

(iv) All of the above

(c) Slurry used in USM is

(i) alkaline only

(ii) alcohol based

(iii) mercury based

(iv) water based

(d) Erosion of metal in EDM is

(i) proportionate to the number of sparks

(ii) continuous

(iii) Either of the above

(iv) None of the above

(e) AJM is used for

(i) plastic only

(ii) ductile materials only

(iii) brittle materials only

(iv) Any of the above

(f) Abrasive jet machining uses a jet of

(i) abrasive particles suspended in oil

(ii) fine-grained abrasive particles mixed with air or some other carrier gases at high pressure

(iii) abrasive particles suspended in water

(iv) None of the above

(g) In abrasive jet machining (AJM), metal removal takes place due to

(i) machining

(ii) grinding

(iii) metal erosion

(iv) All of the above

(h) In EDM, the required property of tool is

(i) resistivity

(ii) dielectric strength

(iii) conductivity

(iv) None of the above

(i) LASER welding finds wide application in

(i) electronic industry

(ii) heavy industry

(iii) structural work

(iv) None of the above

(j) LASER is produced by

(i) aluminium

(ii) ruby

(iii) diamond

(iv) graphite

2. (a) Explain, why conventional machining processes are used. 7

(b) List the important characteristics of EDM. 7

3. Explain, with a neat sketch, the principle and working of electrochemical machining (ECM) process. 14

4. What is the working principle of electron beam welding with neat sketch? What are its advantages, limitation and applications? 14

5. Explain clearly, with a neat diagram, abrasive jet machining (AJM). State also its advantages, disadvantages and application. 14

6. Explain the working principle of electric discharge machining (EDM) with neat sketch and explain the effects of EDM on metal surfaces. 14

7. Write short notes on any *two* of the following : 7×2=14

(a) Plasma-arc welding

(b) Laser-beam welding

(c) Underwater welding

8. Describe the explosive forming and magnetic forming processes with neat sketch. 14

9. Explain briefly, with a neat sketch, the principle and working of ultrasonic machining (USM). List also its advantages, limitation and applications. 14

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