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Question Paper Code : 11056

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Seventh Semester

Mechanical Engineering

080120059 — UNCONVENTIONAL MACHINING PROCESSES

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the necessity for unconventional machining processes?
2. What is the effect of slurry concentration on metal removal rate in ultrasonic machining process?
3. In what way abrasive grain size influence the material removal rate in AJM?
4. List the abrasive used in USM? What are criteria for selection of an abrasive?
5. Calculate the amount of current required when iron is subjected to electro-chemical process. The material removal rate $5 \text{ cm}^3/\text{min}$. Assume weight of iron 58 kg, valency 2, density of iron 7.78 g/cm^3 .
6. What is the different between ECG and Conventional grinding?
7. List the EDM flushing techniques.
8. What are the reasons for the use of deionized water as dielectric system in wire-EDM?
9. List various types of lasers.
10. List some applications of magnetic abrasive finishing.

PART B — (5 × 16 = 80 marks)

11. (a) Classify the unconventional machining process and explain the process selection parameters.

Or

- (b) Explain in detail about the following USM process parameters :
- (i) Metal removal rate (4)
 - (ii) Tool material (4)
 - (iii) Tool wear rate (4)
 - (iv) Surface finish. (4)

12. (a) (i) Draw the schematic layout of abrasive jet machine and explain its operation characteristics. (12)

- (ii) Write short note metal removal rate and wear rate of nozzle in WJM. (4)

Or

- (b) Explain construction and working of USM. Also compare traditional abrasive machine and USM.

13. (a) Explain the construction and working of ECM with neat sketches. Also discuss about method of masking and metal removal rate.

Or

- (b) With neat sketches explain working of ECG and list the application of ECG. Also Compare EDM and ECM.

14. (a) Explain in detail about process principle, construction and working of EDM. Also explain EDM servosystem for automatic electrode reefered concept.

Or

- (b) Explain in detail about the positioning system, wire drive system, power supply, dielectric system of wire cut EDM. Also discuss its process parameters.

15. (a) (i) Explain in detail about process principle, equipment and working of EBM. (14)

- (ii) List the application plasma in manufacturing industry. (2)

Or

- (b) Discuss in detail about the thermal features of LBM and explain the construction and working of LBM.