D 70320 (Pages : 2)

Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE EXAMINATION, NOVEMBER 2014

ME/PTME 09 506—METAL CUTTING AND FORMING

TIME : THREE HOURS MAXIMUM : 70 MARKS

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Narrate the function of clapper box in shaping machine.
2. List the basic parameters involved in metal cutting.
3. Distinguish between extrusion and drawing process.
4. List any four types of laser and its characteristics.
5. What are the advantages and limitations of electromagnetic forming ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Differentiate between orthogonal and oblique cutting and specify their application.
7. Discuss about drilling process.
8. Write short note on micro machining.
9. Discuss the main factors that affect the cutting force in milling process.
10. Illustrate the influence of temperature and strain rate in metal forming.
11. A metal has a flow curve with the following parameter : K = 850 MPa and strain hardening exponent (n) = 0.30. A tensile specimen of the metal with the gauge length = 100 mm is stretched to a length = 15.7 mm. Determine the flow stress at the new length and average flow stress that the metal has been subjected during the deformation.

(4 × 5 = 20 marks)

Part C

Answer any **four** *questions.*
Each question carries 10 *marks.*

12. (a) Explain the mechanism of tool wear for a single point cutting tool with a neat sketch.

Or

(b) What are the methods by which cutting forces can be measured during metal cutting ? Discuss in detail about any two methods of measuring cutting force.

Turn over

13. (a) Discuss in detail about the grinding wheel with regard to (i) abrasive materials used ; (ii) bonding materials.

Or

(b) With a neat sketch, explain about broaching process in detail.

14. (a) Explain the process of abrasive jet machining with respect to principle, equipment, process parameters and application.

Or

(b) Classify non-traditional machining process based on type of energy employed. Also state their mechanism of material removal, transfer media and energy sources.

15. (a) Explain with the help of neat sketch about different types of bending in detail.

Or

(b) With a neat sketch, explain the working principle and constructional details of explosive forming process. Also, list the merits and demerits of this process.

(4 × 10 = 40 marks)