BTS (C) – VIII – 09 – 004 – AB

B. Tech Degree VIII Semester Examination, April 2009

ME 804 PRODUCTION TECHNOLOGY III

(1999 Scheme)

Time : 3 Hours Maximum Marks : 100

I. A speed box having N_{min} =20 r.p.m. N_{max} = 2000 r.p.m and $\phi = 1.26$ is to be designed. Draw the best possible structural diagram and speed chart if the speed box has
(i) a structure with overlapping steps
(ii) a structure with broken geometrical progression, and
(iii) a combined structure. (20)

OR

II. (a) Give an account of the classification of Speed and Feed boxes. (10)
(b) Explain the hydraulic stepless regulation of speed and feed rates. (10)

III. (a) What is the difference between a jig and a fixture? Briefly explain various types of jigs. (10)
(b) Explain the methods of locating work from a flat surface. (10)

OR

IV. (a) Explain with neat sketches, 'the various types of clamps'. (10)
(b) Explain the purpose of bushing for drill jigs. Briefly explain Leaf or Latch jigs. (10)

V. (a) What are the advantages of hydraulic press drives? Briefly explain how presses are classified. (10)
(b) What is meant by die clearance? Explain angular clearance. (10)

OR

VI. (a) What is spring back in bending? Explain the methods for preventing spring back in wiping dies with neat sketches. (10)
(b) What are the variables that affect metal flow during drawing? Explain. (10)

VII. (a) Distinguish between hydraulic motor and hydraulic cylinder. (10)
(b) Draw and explain oil hydraulic circuit for a drilling machine. (10)

OR

VIII. (a) Explain with a neat sketch 'a spring loaded relief valve'. (10)
(b) With a neat sketch, explain the hydraulic circuit of a surface grinder. (10)

IX. (a) What is costing? What are the constituents of estimation? (10)
(b) Write short note on factors affecting welding cost. Give the procedure of estimating the cost of a wooden pattern for sand moulding. (10)

OR

X. (a) A 15 cm long M.S. bar is to be turned from 4 cm diameter in single cut in such a way that for 5 cm length its diameter is reduced to 3.8 cm and remaining 10 cm length is reduced to 3.4 cm. Estimate the total time required for turning it assuming cutting speed as 30 m/min feed as 0.02 cm/revolution and time required for setting and mounting of the job in a three jaw chuck is 30 sec. Neglect the tool setting time. (12)
(b) An operator is required to cut 2 threads/cm on a 4.5 cm diameter job for a length of 9 cm. This work is done on a lathe with a tool. The lathe spindle is turing at 45 r.p.m. and 10 cuts are required to complete the thread. How much time will be taken to cut the thread? (8)

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