

Code No: 09A50304

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD**B. Tech III Year I Semester Examinations, June/July - 2014****MACHINE TOOLS****(Mechanical Engineering)****Time: 3 hours****Max. Marks: 75****Answer any five questions****All questions carry equal marks**

- - -

- 1.a) What are the various types of chips formed during machining? Under what conditions is each formed?
- b) A carbide tool with mild steel work piece was found to give life of 2 hours while cutting at 0.50 mpm. Compute the tool life if the same tool is used at a speed of 25% higher than the previous one. Also determine the value of cutting speed if the tool is required to have tool life of 3 hours. Assume Taylor's exponent 'n' = 0.27.
- 2.a) Explain any three methods of taper turning on a lathe.
- b) What is the field of application of turret lathe? How does it differ from engine lathe?
- 3.a) Describe the principal parts of a shaper with a neat sketch.
- b) Calculate the time to machine 250 mm long plate, 100 mm wide. Tool clearance at each end of stroke is 30 mm and 20 mm respectively. Cutting speed is 10 m/minute and return speed is 20 m/minute. Feed is 1 mm per cycle and distance the tool moves on either side of the work in width direction is 10 mm each.
- 4.a) Describe the various elements of a twist drill with a neat sketch.
- b) Describe the vertical boring machines. Where they are preferred and why?
- 5.a) Name the various milling attachments? Explain universal milling with neat diagram.
- b) What is indexing? Describe direct indexing with example.
- 6.a) What are the different types of grinding machines? Draw and describe the surface grinding machine.
- b) Mention the various types of bonds used in the making of grinding wheel. Also mention their applications.
- 7.a) What is broaching? Describe the continuous type broaching machine with neat diagram.
- b) What is the difference between lapping and honing?
- 8.a) What factors govern the choice of a clamping device to achieve the purpose of clamping? Discuss them in detail.
- b) Write short notes on
 - i) 3-2-1 location principle
 - ii) Advantages of jigs and fixtures.
