Enrollment No: _____   Exam Seat No:_____

C.U.SHAH UNIVERSITY
Summer Examination-2016

Subject Name: Manufacturing Processes – I

Subject Code: 4TE04MPR1   Branch: B.Tech (Auto,Mechanical)

Semester: 4   Date: 12/05/2016   Time: 2:30 To 5:30   Marks: 70
Instructions:
  (1) Use of Programmable calculator & any other electronic instrument is prohibited.
  (2) Instructions written on main answer book are strictly to be obeyed.
  (3) Draw neat diagrams and figures (if necessary) at right places.
  (4) Assume suitable data if needed.

Q-1   Attempt the following questions: 14
  a)   The maximum production of small and slender parts is done by: (i) Multispindle Automatic
       Lathe (ii) Sliding Head Stock Automatic Lathe (iii) Watch Maker's Lathe   (iv) Capastan
       Lathe
  b)   In shaper machine tool, work piece …. and tool …. (i) reciprocates, rotates (ii) remains
       stationary, rotates (iii) remain stationary, reciprocates (iv) rotates, reciprocates.
  c)   In oxidizing flame, the inner core attains a temperature of …. °C.: (i) 2100 (ii) 2800 (iii)
       3150 (iv) 3500.
  d)   When the cutting edge of the tool is dull, then during machining. (i) No Chips are Formed
       (ii) Continuous Chips are Formed (iii) Discontinuous Chips are Formed (iv) Continuous
       Chips with Built-Up Edge are Formed
  e)   The process of chamfering the entrance of a drilled hole is known as…. (i) Counter-boring
       (ii) counter-sinking (iii) counter-fillet (iv) trepanning.
  f)   Reciprocating of cutting tool in shaping machine can be accomplished by: (i) Rack Pinion
       Mechanism (ii) Crank and Connecting Rod Mechanism (iii) Cam and Cam Follower
       Mechanism (iv) Oscillating Leaver Mechanism
  g)   A push broach as compared to pull broach: i) has less number of teeth ii) is short and stocky
       iii) removes less material for each pass of the tool iv)all of the above
  h)   The job reciprocates in: (i) Shaping Machine (ii) Planning Machine (iii) Slotting Machine
       (iv) All of the Above
  i)   The connecting rods of IC engines are manufactured using the process of ………
       (i)extrusion (ii) drop forging (iii) rolling (iv) spinning
  j)   The process of beveling sharp ends of a workpiece is called as _____ (i) knurling
       (ii) grooving (iii) facing (iv) chamfering
  k)   On drilling machine, which process is known as reaming? (i) Enlargement of existing hole
       (ii) Hole made by removal of metal along the hole circumference (iii) Smoothly finishing
       and accurately sizing a drilled hole (iv) All of the above
  l)   The function of taper turning process is to ____ (i) reduce the diameter of a workpiece along
       its length (ii) reduce the diameter by removing material about an axis offset from the axis of

workpiece (iii) remove the material from end surface of a workpiece (iv) all of the above

m) Which of the following is a mechanism for mechanized movements of the carriage along longitudinal axis? (i) Cross-slide (ii) Compound rest (iii) Apron (iv) Saddle

n) A flat surface can be produced by a lathe machine, if the cutting tool moves _____ (i) parallel to the axis of rotation of workpiece (ii) perpendicular to the axis of rotation of workpiece (iii) at an angle of 45^0 (iv) none of the above

Attempt any four questions from Q-2 to Q-8:

Q-2	a)	What is meant by working and auxiliary motions in machine tools? Name common auxiliary motions.	07
	b)	A lathe with a 6 mm pitch lead screw is used to cut inch pitch threads. If the end gear train set is 50 teeth gear on stud driving 63 teeth gear on intermediate shaft and 64 teeth gear on the same intermediate shaft driving 96 teeth gear on the lead screw, what is the t.p.i. cut? Also calculate the error (if any), introduced in the pitch cut by using this gear train?	07
Q-3	a)	List any four differences between Shaper, Slotter and Planer.	07
	b)	One hundred shafts of steel, 75 mm diameter and length 200 mm, are to be turned on a lathe in one cut each using a carbide tool. The suggested speed and feed for the above job are 1.67 m/s and 0.25 mm/rev. Estimate the total time required for the lot allowing 01 min for center hole drilling and 02 min for handling each piece. The Mpi rpa 109spindle speeds available on the machine are 140, 200, 280, 400, 560 and 800 rpm.	07
Q-4	a)	List the methods of Taper turning on lathe. What are the limitations of each?	07
	b)	Calculate the time required to drill a hole 25 mm diameter in a gray cast iron work piece 75 mm thick using a H.S.S drill. The cutting speed and the feed rate for the operation may be assumed to be 0.50 m/s and 0.5 mm/rev of the drill respectively.	07
Q-5	a)	Sketch and describe in brief a Radial drilling machine.	07
	b)	What are the reasons that you cannot use end mill as a drill?	07
Q-6	a)	How is the size of Milling machine specified?	07
	b)	Calculate the time required to mill the 250×100 mm surface of a cast iron block $250 \times 100 \times 75$ mm in one cut. A H.S.S. helical slab mill 100 mm diameter and 125 mm long is to be used. The number of teeth on the cutter is 16. The allowable cutting speed for the operation is 0.5 m/s; feed is 0.25 mm/tooth and depth of cut is 5 mm.	07
Q-7	a)	Classify and list Boring machines. Describe any one.	07
	b)	What is meant by a Universal grinder? How it differs from a Plain grinder?	07
Q-8	a)	How does a Power Hacksaw operate? What are its advantages and disadvantages?	07
	b)	Describe in brief the different operations that can be performed on a Horizontal boring machine.	07