

C.U.SHAH UNIVERSITY
Winter Examination-2019

Subject Name : Manufacturing Process - I

Subject Code : 4TE04MPRI

Branch: B.Tech (Mechanical)

Semester : 4

Date : 17/09/2019

Time : 02:30 To 05:30

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 thickness of layer material removed in one pass of workpiece under the cutter is called as
 1 Single pass cut 2 Depth of cut 3 Width of cut 4 Face cut
- b) Which operation can correct hole location, size or alignment of the hole which is already drilled in workpiece?
 1 Boring 2 Rimming 3 Both a. and b 4 None of the above
- c) In metal cutting operation, maximum heat (i.e. 80-85%) is generated in
 1 The shear zone 2 The chip-tool interface zone 3 The tool-work interface zone 4 None of the above
- d) The cutting tool removes the metal from workpiece in the form of
 1 Solid blocks 2 Powder 3 Chips 4 All of the above
- e) Calculate the power required for machining of a workpiece on lathe having efficiency of 85% on full load, when tangential force required is 1200 N and cutting speed 195 m/min.
 14.59 kW 2275.29 W 33.315 kW 4 insufficient data
- f) Which type of chips form while machining of brittle materials?
 1 Continuous chips 2 Discontinuous chips 3 Built-up chips 4 All of the above with some proportion
- g) In the metal cutting process, when the compression limit of the metal in front of the cutting tool has been exceeded then it is separated from workpiece and flows
 1 Elastically 2 Plastically 3 Rigidly 4 None of the above
- h) Rough grinding process is commonly used for
 1 Removing excess material from casting 2 Cutting materials that are too hard to be machined by other conventional tools 3 Producing surfaces on parts to higher dimensional accuracy 4 Obtaining finer finish
- i) Calculate the cutting speed of drilling operation when diameter of drill is 10 mm and rotational speed of drill is 200 r.p.m.
 16.283 m/min 23.142 m/min 38.362 m/min 410.216 m/min
- j) Which drilling machine is used to perform drilling operation on the workpieces which are too heavy and also maybe too large to mount on worktable?
 1 Portable drilling 2 Sensitive 3 Radial drilling 4 none of the



- machine drilling machine machine above
- k) What does the boring mean?
 1 A Process of making a hole in an object 2 A process of enlarging a hole which is already in an object 3 A process of finishing an existing hole very smoothly and accurately in size 4 None of the above
- l) Which type of mechanism is used in shaper machine?
 1 Indexing mechanism 2 Four-bar chain mechanism 3 Quick return mechanism 4 None of the above
- m) What is swing over carriage?
 1 The maximum diameter of workpiece that can be rotated over the bed ways 2 The minimum diameter of workpiece that can be rotated over the bed ways 3 The maximum diameter of workpiece that can be rotated over lathe saddle 4 The minimum diameter of workpiece that can be rotated over lathe saddle
- n) The centre lathes receive their power through
 1 Headstock 2 Tailstock 3 Both a. and b. 4 None of the above

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

- Q-2 Attempt all questions (14)**
 a) Describe working and auxiliary motions in machine tools with example.
 b) Give classification of machine tools.
- Q-3 Attempt all questions (14)**
 a) How the Apron mechanism of a Lathe works? Explain with the help of a neat diagram.
 b) Explain Upright Drilling machine with neat sketch.
- Q-4 Attempt all questions (14)**
 a) Derive an expression to determine machining time on lathe.
 b) List alignment tests on a drilling machine. Explain any two with neat sketch.
- Q-5 Attempt all questions (14)**
 a) A hole of 100 mm dia, is bored to 110 mm dia, in two passes with a feed of 0.3 mm/rev. The boring machine spindle revolves at 400 rpm. Find the depth of cut, feed per minute and cutting speed.
 b) List the operations that can be done on a milling machine. Explain any one with neat sketch.
- Q-6 Attempt all questions (14)**
 a) What are Form milling cutters? Where are they used? What are the types?
 b) List various Shaping machine operations. Explain any one with neat sketch.
- Q-7 Attempt all questions (14)**
 a) Describe the construction of a Horizontal metal bandsaw machine.
 b) What is the use of surface grinders? Explain the principle of surface grinding.
- Q-8 Attempt all questions (14)**
 a) Describe reciprocating sawing machine with neat sketch.
 b) Write a note on manufacture of grinding wheels.

