

Enrollment No: _____

Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name : Production Technology

Subject Code : 4TE06PTE1

Semester : 6

Date : 19/04/2017

Branch: B.Tech (Mechanical)

Time : 02:30 To 05:30

Marks : 70

Instructions:

- (1) Instructions written on main answer book are strictly to be obeyed.
 - (2) Draw neat diagrams and figures (if necessary) at right places.
 - (3) Assume suitable data if needed.
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Q-1

Attempt the following questions:

(14)

- a) When supported on 3 points, out of 12 degrees of freedom how many degrees are arrested?
 - (A) 3
 - (B) 4
 - (C) 5
 - (D) 6
- b) In blanking operation the clearance is provided on
 - (A) the die
 - (B) the punch
 - (C) both die and punch
 - (D) none of above
- c) A diamond locating pin is used jig and fixtures because
 - (A) diamond is very hard and wear resistant
 - (B) it occupies very little space
 - (C) it helps in assembly with tolerance on centre distance
 - (D) it has a long life
- d) Which of the following processes is most commonly used for the forging of bolt heads of hexagonal shape?
 - (A) Closed die drop forging
 - (B) Open die upset forging
 - (C) Closed die press forging
 - (D) Open die progressive forging
- e) The tool is designated by: 12° , 10° , 7° , 20° , 50° , 30° , 2 (mm). What is side relief angle?
 - (A) 2
 - (B) None
 - (C) 20°
 - (D) 30°
- f) Which system is referred for tool signature?



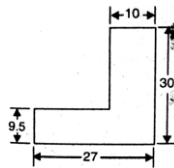
- (A) ASA system
 - (B) American System
 - (C) IS system
 - (D) ASME system
- g)** Metal removal rate is expressed in
- (A) mm^3/min
 - (B) cm^3/sec
 - (C) mm^2/min
 - (D) all of these
- h)** What is the meaning of B. U. E.?
- (A) Continues chips with built up edge
 - (B) Continues chips
 - (C) Discontinues chips
 - (D) None of above
- i)** In sheet metal work, the cutting force on the tool can be reduced by
- (A) grinding the cutting edges sharp
 - (B) increasing the hardness of tool
 - (C) providing shear angle on tool
 - (D) increasing the hardness of die
- j)** Single point thread cutting tool should ideally have
- (A) Zero rake
 - (B) Positive rake
 - (C) Negative rake
 - (D) Normal rake
- k)** Internal gears are made by
- (A) hobbing
 - (B) Shaping with pinion cutter
 - (C) Shaping with rack cutter
 - (D) milling
- l)** The primary tool force used in calculating the tool power consumption in machining is the
- (A) radial force
 - (B) tangential force
 - (C) axial force
 - (D) frictional force
- m)** The following parameters determine the model of continuous chip formation.
 (1) True speed (2) cutting velocity (3) chip thickness (4) rake angle of the cutting tool
 The parameters which govern the value of shear angle would include
- (A) 1, 2 and 3
 - (B) 1, 3 and 4
 - (C) 1, 2 and 4
 - (D) 2, 3 and 4
- n)** In the tolerance specification 25D6, the letter D represents
- (A) Grade of tolerance
 - (B) Upper deviation
 - (C) Lower deviation



- (D) Type of fit
- Q-2** (a) Explain the working principle of ECM. What are the main process parameters? State advantages of ECM. 7
 (b) Explain in brief Taylor's relationship for cutting speed-tool-life. 7
- Q-3** (a) Draw and discuss the principle of location. 7
 (b) Write a short note on V locators. 7
- Q-4** (a) Classify various non-conventional machining processes. 7
 (b) The following equation for tool life is given for a turning operation. 7

$$VT^{0.3} f^{0.6} d^{0.3} = C$$

 A 60 minute tool life was obtained while cutting at $V = 40$ m/min, $f = 0.25$ mm/rev and $d = 2.0$ mm. Calculate the effect on tool life if speed, feed and depth of cut are together increased by 25 % and also if they are increased individually 25 %.
- Q-5** (a) Draw a Merchant's circle diagram and derive expressions to show relationships among the different forces acting on the cutting tool in metal cutting. 7
 (b) Write a short note on milling fixtures. 7
- Q-6** (a) Discuss the various types of tool wears with neat sketches. 7
 (b) Write duties and responsibilities of Production Engineer in any esteemed organization. 7
- Q-7** (a) A washer with a 12.7 mm internal hole and an outside diameter of 25.4 mm is to be made from 1.5 mm thick strip of 0.2 % carbon steel. Considering the elastic recovery of the material, find
 (a) the clearance (b) blanking die size (c) blanking punch size (d) piercing punch size and (e) piercing die-opening size. 7
 (b) Write a short note on gear cutting by milling. 7
- Q-8** (a) Determine the location of center of pressure for the following component. 7



- (b) Discuss with neat sketch the gear hobbing process. 7

