



2013/2014  
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**Answer all the following questions (assuming any missed data):**

**Question 1**

(20 marks)

- (a) What are the requirements must be regarded in cutting tool materials? (5 marks)  
 (b) Write short notes on the following: cutting fluids, types of chips, BUE, tool life (10 marks)  
 (c) It is required to shape a surface 100mm width and 200 mm length. The cutting conditions are as follows: the crank rotates with 30 cycles per minute, the quick return ratio is 3/2, the depth to be cut is 8 mm, the feed per stroke is 0.5 mm and the depth of cut is 0.4 mm. Calculate the following: cutting speed, average speed and machining time. (5 marks)

**Question 2:**

(25marks)

- (a) What are the different operations which can be machined on milling machines? (5 marks)  
 (b) Calculate the number of turns of the indexing crank to cut the following: (5 marks)  
 i) hexagonal nut ii) a gear of 51 teeth.  
 (c) Calculate the machining time in a plain milling operation of a surface 80 mm width and 300 mm length for a depth of cut of 5 mm. The cutting conditions are:  
 Feed per tooth is 0.05 mm, depth of cut is 1 mm width of the cutter is 50 mm, cutting speed is 20 m/min the cutter is 6 teeth and 50 mm diameter. (10 marks)  
 (d) Explain the meaning of the following alphanumeric system of a grinding wheel:  
 200 S 50 J 15 V 500 (5 marks)

**Question 3 :**

(20 marks)

- (a) Define broaching. When is the use of this process recommended? (5 marks)  
 (b) Discuss the advantages and limitations of broaching operations. (5 marks)  
 (c) Why are the permissible cutting speeds in milling four times higher than those for turning? (3 marks)  
 (d) Using sketches, illustrate some of different shapes that can be produced through broaching process. Explain, why most of internal holes is done by pull broaches? (7 marks)

**Question 4 :**

(25 marks)

- (a) What are the main applications of screw threads? (3 marks)  
 (b) What are the main the different methods to produce screw threads? (7 marks)  
 (c) Sketch a diagrammatic representation of screw cutting on a lathe. (5 marks)  
 (d) If lead screw pitch equals 6 mm and Pw equals 1 mm, what are the number of gear teeth required to get this work (Z1, Z2, Z3, Z4)? (5 marks)  
 (e) What are the information must be known before selecting the broaching machine and broach design? (5 marks)

**With our best wishes**

Q. No:	Q. No: 1	Q. No: 2	Q. No :3	Q. No :4
Skill 1( k&u )	a)-a2 b)-a1	a)-b2	a)-a2 b)-a1	a)-a1 c)-a1
Skill 2 ( intell.)	c)-b2	d)-b3	c)-b1	b)-b1 d)-b2
Skill 3 ( profiss.)	-----	c)-c1	d)-c3	d)-c2