BME-008

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING) / (BTMEVI)

Term-End Examination

June, 2018

00943

BME-008 : MACHINING TECHNOLOGY

Time : 3 hours   *Maximum Marks : 70*

Note : *Question no.* **3** *is* **compulsory.** *Answer any* **four** *questions from the remaining. Use of scientific calculator is allowed.*

1. (a) How can you determine the temperature of the chip using Schmidt's calorimetric method during drilling ? What is the expected percent of heat distribution in chip, work and tool ?   *10*

    (b) Differentiate between abrasion wear and adhesion wear.   *4*

2. (a) Briefly explain the special features of creep-feed grinding.   *6*

(b) How are advanced finishing operations different from traditional finishing operations ? Explain the working principles of Honing, Lapping and Super finishing operations. 8

3. During surface grinding, the table speed is kept as 30 m/min, and the grinding wheel peripheral speed is 1800 m/min. The depth of cut is 0·05 mm and active grains density is 2 per mm^2. The wheel diameter is 200 mm. Find out : 14

(a) Spindle speed of the grinding wheel,

(b) Chip length (in mm), and

(c) Chip thickness in microns.

4. (a) What do you understand by Residual stresses, Heat Affected Zone (HAZ), Intergranular attack, Corrosion and μ-cracks ? Explain. 8

(b) With the help of neat sketch, differentiate between waviness and roughness. 6

5. (a) What do you mean by 'cut-off length' ? What cut-off length will you recommend when measuring surface roughness after 7

(i) AJM

(ii) PAC

(iii) ECM

(b) Define the term 'burr' and sketch it along with the finished surface of part. In which of the following processes, can maximum amount of selective deburring be done ?　7

(i) Tumbling

(ii) Barreling

(iii) Electro chemical deburring

(iv) Abrasive flow deburring

6. (a) With neat diagram, explain the principle and working of AJM.　8

(b) Write the functions of Slurry, Horn, Transducer and Oscillator in USM.　6

7. (a) Sketch the effects of following parameters on MRR during EDM using RC circuit :　6

(i) Resistance

(ii) Current density

(iii) Pulse energy

(iv) Capacitance

(b) Derive one single equation for computing IEG (inter electrode gap) during both, zero feed rate as well as finite feed rate. Write the assumptions clearly.　8