Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
200 level 1st Semester Examination – Sept. / Oct. 2015
SCT 265-2 Engineering Workshop Technology

Uva Wellassa University

Instructions to candidates
Duration: 02 hours
Number of questions: 04
Mark allocation: 100 mark

1.

a. Name the parts of the lathe machine shown in Fig.01

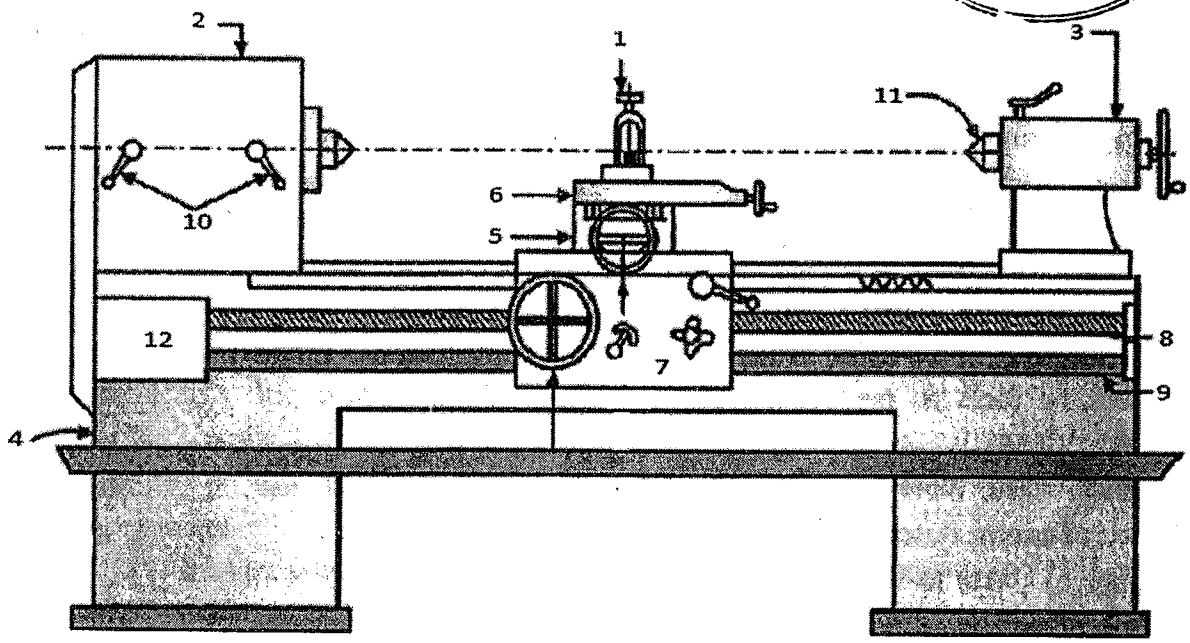

Fig.01

1 ..... 7 .....

2 ..... 8 .....

3 ..... 9 .....

4 ..... 10 .....

5 ..... 11 .....

6 ..... 12 ..... (6 mark)

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b. Name the parts of the milling machine shown in Fig.02

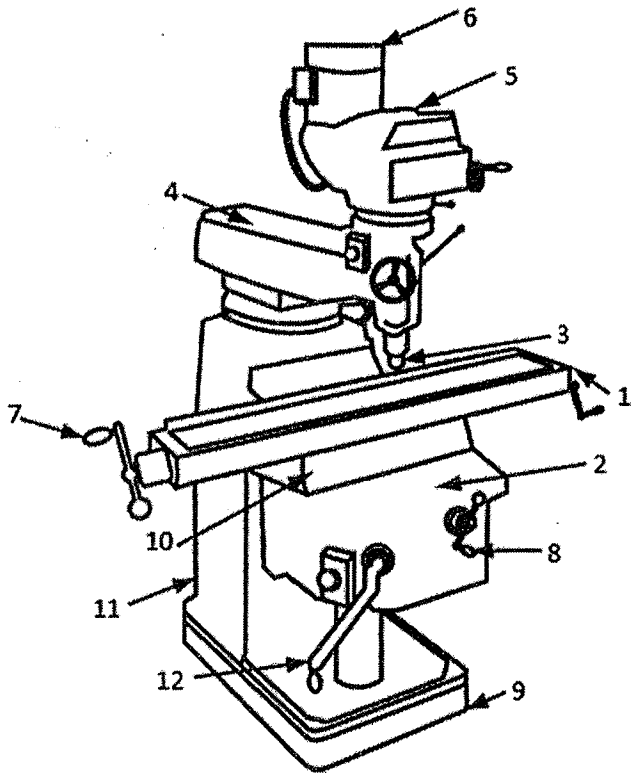

Fig.02

1 ..... 7 .....

2 ..... 8 .....

3 ..... 9 .....

4 ..... 10 .....

5 ..... 11 .....

6 ..... 12 ..... (6 mark)

c. Explain the following

   i. Three-jaw self-centering scroll chuck
   ii. Four-jaw independent chuck
   iii. Collet chuck (3 mark)

d. Name three operations that can be done using the lathe machine and explain using sketches. (5 mark)

e. Discuss about work holding devices used in Lathe, Milling, Drilling, and Welding operations (5 mark)

2.

Welding is a widely used joining process in the industry

a. Write an essay on safety measurement of arc welding. (15 mark)

b. What are the three types of flames associated wtith oxy-acetylene gas welding? Explain using sketches. (10 mark)

3.

a. Calculate the indexing requirement for 127 divisions on a milling machine equipped with a differential indexing head. The index plates available are
   Plate no. 1 15, 16, 17, 18, 19, 20 holes
   Plate no. 2 21, 23, 27, 29, 31, 33 holes
   Plate no. 3 37, 39, 41, 43, 47, 49 holes
   The change gear set available is 24, 24, 28, 32, 40, 44, 48, 56, 64, 72, 86, 100. (5 mark)

b. With a pair of gears or gear sets, power is transmitted by the force developed between contacting teeth. Derive equations for torque and the transmitted power at the point P using Fig. 04, where F_t= transmitted force, F_n= normal force, F_r= resultant force, Φ = pressure angle. (10 mark)

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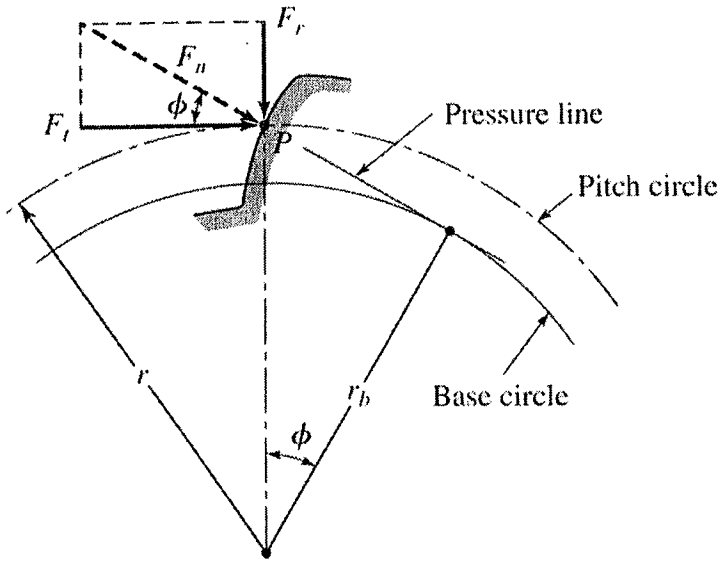

Fig 04

c. What is a gear? Explain. (10 mark)

4.

Draw a sketch of a drill bit and name the parts. (5 mark)

a. What is Built Up Edge (BUE)? How BUE can be decreased? (10 mark)

b. Name the three main modes of tool wear and explain them. (10 mark)