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Question Paper Code: AME010



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech V Semester End Examinations (Regular) - November, 2018

Regulation: IARE – R16

MACHINE TOOLS AND METROLOGY

Time: 3 Hours

(ME)

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

1. (a) What is a chip? Describe briefly about forming of chips and Discuss the various types of chips with neat sketches. [7M]
- (b) Explain briefly about the single point cutting tool nomenclature with a neat sketch. [7M]
2. (a) What are the various types of chips developed in metal cutting operation and explain about the stability of build up edges (BUE)? [7M]
- (b) In an orthogonal turning operation, cutting speed is 80 m/min, cutting force is 20Kg, feed force 8Kg, back rake angle is 15° , feed 0.2mm/rev and chip thickness 0.4mm. Determine the following:
 - i) Shear angle
 - ii) Work done in shear
 - iii) Shear strain [7M]

UNIT – II

3. (a) Discuss briefly about the various types of operations performed on a lathe machine with the help of neat sketches. [7M]
- (b) With neat sketches brief out the various work holding devices and tool holding devices used in lathe. [7M]
4. (a) Explain in detail about various thread cutting operation on a lathe machine with help of a neat sketch. [7M]
- (b) Explain with the help of a neat sketch about the planer machine and discuss its applications. [7M]

UNIT – III

5. (a) Explain in detail about the column type milling machine and knee type milling machine with a neat sketch. [7M]
- (b) How does a gang drilling machine differ from multiple spindle drilling machines? Explain it with point wise basis. [7M]

6. (a) What are common operations which can be performed in a drilling machine? Describe any two of drilling machines in brief. [7M]
- (b) Sketch and describe the use of following milling cutters (i) Slab mill (ii) End mill (iii) Face milling cutter [7M]

UNIT – IV

7. (a) Draw the schematic diagram of shaft basis system and hole basis system and define the basic terms. [7M]
- (b) Briefly explain about geometric characteristics and draw their symbols with a neat diagram. [7M]
8. (a) Explain the working principle of dial indicator with neat sketch and mention their suitable applications. [7M]
- (b) Discuss briefly about the interchangeability and selective assembly. [7M]

UNIT – V

9. (a) What is interferometer? Explain the working principle of interferometer with neat sketch. Write its applications. [7M]
- (b) Discuss the measurement of optical projector and what are the advantages of optical projector. [7M]
10. (a) Explain the working principle of Talysurf with schematic layout. Explain their construction diagram with a neat sketch. [7M]
- (b) Discuss the various errors in screw thread measurement. Explain it with a neat sketch. [7M]

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