VTU CAMPUS

Mechanical Measurements & Metrology VTU CBCS Question Paper Set 2018

VTU CAMPUS APP

ANDROID APP ON Google play

Ultimate Guide to Score High In VTU Exams
eBook ₹39/-
Guide to Score High in
ANY VTU EXAM
eBOOK
Download Now

Download latest question papers and notes from
VTU campus app on playstore

CBCS Scheme

USN | | | | | | | | | |

15MEB406/15ME46B

Fourth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Mechanical Measurements and Metrology

Time: 3 hrs. Max. Marks: 80

Note: ***Answer FIVE full questions, choosing one full question from each module.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

VTU EXAMS-DEC-JAN-18 05/01/2018 08:05:17

Module-1

1 a. State the objectives of Metrology. **(04 Marks)**

b. Explain with a neat sketch International Prototype meter. **(06 Marks)**

c. Using M112 set of slip gauges, build the following dimensions :
i) 48.3275 ii) 68.208. **(06 Marks)**

OR

2 a. Four length bars A, B, C & D of approximately 250mm each are to be calibrated with standard calibrated metre bar which is actually 0.0008mm less than a metre. It is also found that bar B is 0.0002mm longer than bar 'A' bar 'C' is 0.0004mm longer than 'A' and bar 'D' is 0.0001mm shorter than bar 'A'. The length of all four bars put together is 0.0003mm longer than the calibrated standard metre. Determine the actual dimension of each bar. **(10 Marks)**

b. Explain with a neat sketch the method of measuring taper angles using sine centre. **(06 Marks)**

Module-2

3 a. Differentiate : i) Clearance fit and Interference fit ii) Unilateral and Bilateral tolerance. **(08 Marks)**

b. Explain Hole basis system and Shaft basis system. **(08 Marks)**

OR

4 a. Illustrate with a neat sketch, the working of a sigma comparator. **(08 Marks)**

b. With a neat sketch, explain the construction and principle of Solex Pneumatic Comparator. **(08 Marks)**

Module-3

5 a. Explain the two wire method to find the effective diameter of screw thread. **(06 Marks)**

b. With a sketch, explain the construction of a tool maker's microscope. What are its applications? **(08 Marks)**

c. What is Best Wire Size? **(02 Marks)**

OR

6 a. Sketch and explain co-ordinate measuring machine. **(06 Marks)**

b. What are Tactile sensors? Explain different types of tactile sensors. **(06 Marks)**

c. Explain the principle of Inferometry. **(04 Marks)**

Module-4

7 a. Explain the working of generalized measurement system with block diagram taking the example. **(06 Marks)**

b. Define the following terms, with reference to measuring systems :
i) Threshold ii) Hysteresis. **(04 Marks)**

c. Distinguish between :
i) Primary & Secondary transducer ii) Active & Passive transducer. **(06 Marks)**

OR

8 a. State and explain any four Inherent problems associated in mechanical systems. **(08 Marks)**
b. State any four terminating devices. Explain any two. **(08 Marks)**

Module-5

9 a. With a neat sketch, describe the Bridgeman gauge used for pressure measurement. **(08 Marks)**
b. How are dynamometers classified? Explain with a neat sketch, Prony brake dynamometer. **(08 Marks)**

OR

10 a. Explain the working principle of radiation pyrometer. **(06 Marks)**
b. Illustrate the working of Electrical resistance strain gauge. **(04 Marks)**
c. Briefly explain the laws of Thermocouple. **(06 Marks)**

* * * * *

VTU EXAMS DEC-JAN-18 05/01/2018 08:05:17

Download latest question papers and notes from
VTU campus app on playstore

CBCS Scheme

USN | | | | | | | | | | |

15ME46B

Fourth Semester B.E. Degree Examination, June/July 2017
Mechanical Measurements and Metrology

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing one full question from each module.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Explain with a sketch, the international prototype meter. **(08 Marks)**

b. Briefly explain: i) Wringing procedure ii) Principle of sine bar. **(08 Marks)**

OR

2 a. Explain the principle of Auto-collimeter with a neat sketch and list advantages of wavelength standards. **(08 Marks)**

b. Show the arrangement of minimum angle gauges required to obtain the following angles.
i) 32°36′24″ ii) 122°30′0″ **(08 Marks)**

Module-2

3 a. Define the terms : i) Limits ii) Fits iii) Tolerance. **(06 Marks)**

b. Illustrate the following types of gauges
i) Snap gauge ii) Ring gauge iii) Plain plug gauge. **(10 Marks)**

OR

4 a. Explain with a neat sketch, the working of SOLEX COMPARATOR. **(08 Marks)**

b. Differentiate measuring instruments, gauges and comparators. **(08 Marks)**

Module-3

5 a. With the setup, explain how effective diameter of a screw thread is measured using 3 wire method. **(08 Marks)**

b. Describe constant chord method to find tooth thickness. **(08 Marks)**

OR

6 a. List the advantages of Lasers and explain in detail any one laser interferometer. **(08 Marks)**

b. Sketch and explain a CMM. What are the various applications of CMM? **(08 Marks)**

Module-4

7 a. Briefly explain the following terms:
i) System response and time delay ii) Accuracy and error iii) Repeatability **(08 Marks)**

b. What is the necessity of modifying devices? Enlist the advantages of electrical modifying devices. **(08 Marks)**

OR

8 a. Explain with a neat sketch Ballast circuit. **(06 Marks)**

b. What are terminating devices? Explain in detail oscillograph. **(10 Marks)**

Module-5

9 a. Explain the working of Pirani gauge with a neat sketch. **(08 Marks)**

b. Explain with neat sketch Analytical Balance to measure unknown faces. **(08 Marks)**

OR

10 a. What is a thermocouple? Explain the Law's of thermocouple. **(08 Marks)**

b. Sketch and explain total Radiation pyrometers. **(08 Marks)**

* * * * *