Code No.: 50338 | MR15-(2015-16 Batch)

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

IV B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, NOVEMBER-2019

Subject: METROLOGY & INSTRUMENTATION

Branch: ME

Time: 3 hours **Max. Marks: 60**

PART – A

Answer ALL questions of the following **5x2M=10 M**

1. Write the differences between the unilateral and bilateral system.
2. What are the typical applications of sine bar with slip gauges?
3. How can you eliminate calibration errors?
4. Explain piezo electric transducer.
5. Define unbounded resistance strain gauge.

PART-B

Answer any FIVE questions of the following **5x10 M= 50M**

1. A 50 mm diameter shaft and bearing are to be assembled with a clearance fit. The tolerance and allowance are as: Allowance = 0.035 mm, Tolerance on hole = 0.025 m, Tolerance of shaft = 0.017 mm. Find the limits of size for the hole and shaft if
   i) Hole basis system is used ii) Shaft basis system is used
2. Explain briefly about optical projector with a neat sketch.
3. a) What is bevel Protractor? [3]
   b) Explain in detail the various components of bevel protector with a neat sketch [7]
4. a) How CLA index number is determined? [2]
   b) Explain why CLA Index number alone is not sufficient to specify the surface texture required and to make the information complete what else to be specified ? [4]
   c) How the required texture is specified on drawing? [4]
5. a) Explain in brief the working principle of Thermistor and Pyrometer
   b) Explain in brief the working principle of Thermocouple
6. a) Explain position control with block diagram.
   b) How can you measure strain with capacitance type strain gauge?
7. Sketch and explain working principle of total radiation pyrometer.
8. Write short notes on any two of the following
   a. Taylor's principle
   b. Angle slip gauges
   c. Semi conductors strain gauges.

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IV B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS, NOVEMBER-2019

Subject: UNCONVENTIONAL MACHINING PROCESSES

Branch: ME

Time: 3 hours **Max. Marks: 60**

PART – A

Answer ALL questions of the following **5x2M=10 M**

1. What are the various types of energy sources used in non-traditional machining techniques? Give examples for each?
2. How is electrochemical grinding superior to conventional grinding?
3. What are the principle components of EDM process?
4. What are the advantages of electron beam machining?
5. What is the principle of chemical machining

PART-B

Answer any FIVE questions of the following **5x10 M= 50M**

1. Define ultrasonics and describe the process in which these are used to machine the material.
2. a) Discuss why the AJM technique, when applied to ductile materials, leads to a low rate of metal removal.
   b) Describe the chemistry involved in the ECM process.
3. a) State the procedure for electro chemical grinding along with it applications.
   b) Explain in detail the process parameters of MRR in water jet machining.
4. Explain the need of EDM in industrial applications.
5. a) What type of laser is best for welding metals? Why is it best?
   b) State the merits, limitations and applications of electron beam machining processes.
6. Explain the principle and operation of Plasma Arc Machining
7. Explain the functions of abasing medium used in MAF.
8. Write short notes on any two of the following
   i. Abrasive used in USM.
   ii. Characteristics of Cut and Peel Maskants
   iii. Process variables of AJM.