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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

V SEMESTER B.TECH. (AUTOMOBILE ENGINEERING)

MAKEUP EXAMINATIONS, NOV/DEC 2018

SUBJECT: MEASUREMENTS & METROLOGY. [AAE -3154]

REVISED CREDIT SYSTEM

(30/12/2018)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitable assumed.

- 1A.** Discuss the role of Standardization and standardizing organizations in an industrial world? **(3M)**
- 1B.** What are the differences between the repeatability of measurement and reproducibility of measurements? **(3M)**
- 1C.** Why it is important to measure the cylindricity of component? Also specify one example of the same. **(4M)**
- 2A.** Explain the principal of measurement by light wave interference method. **(5M)**
- 2B.** Write down the steps involved in assessment of Limits and Fits. **(3M)**
- 2C.** Distinguish between measuring instruments and gauges. **(2M)**
- 3A.** Draw a sketch of 'Progressive type' solid plug gauge. Describe advantages and disadvantages of this type of gauging. **(4M)**
- 3B.** How a Pneumatic comparator works and briefly enumerate the advantages of pneumatic comparator **(4M)**
- 3C.** List different types of dynamometers used in measurement of torque. **(2M)**
- 4A.** State the difference between electrical and mechanical comparators. **(3M)**
- 4B.** State the difference between thermocouple and thermistor. **(3M)**
- 4C.** With a neat sketch explain the Hydraulic and Pneumatic load cells. **(4M)**
- 5A.** Derive equation for the constant chord method used in gear tooth design. **(5M)**
- 5B.** With neat sketch explain the construction, working and applications of gear rolling testers. **(5M)**