S.B. Roll. No……

METROLOGY AND INSTRUMENTATION
6th Exam/Mech./RAC/5319/Jun'2022

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Give answer in one line. **15x1=15**

a. Define 'Repeatability' of a measuring instrument.
b. Explain the concept of interchangeability of parts in manufacturing.
c. Define 'Error' in measurement. (page 8)
d. Write the formula for calculating least count of a micrometer.
e. Define 'Module' of a gear.
f. Which measuring instrument is used for checking clearance between two mating parts?
g. List different types of callipers.
h. Define CLA method of measuring surface roughness.
i. List different tools used for TQM.
j. Which are the different materials that can be used to manufacture Surface plates?
k. With the help of figures explain different types of 'Lays' (surface pattern). (page 96)
l. Define 'Pitch' of a thread.
m. Define 'Statistical Quality Control (SQC)'.
n. List the different elements of a measurement system.
o. List the two different types of coils in L.V.D.T.

SECTION-B

Q2. Attempt any six questions. **6x5=30**

i. Write a short note on 'KAIZEN'.
ii. Explain the procedure of wringing of slip gauges with the help of diagrams.
iii. Differentiate between Precision and Accuracy of a measuring instrument.
iv. Explain the concept of Primary texture and Secondary texture of a material with reference to surface roughness.
v. Explain the method of using Angle gauges for angle measurement.
vi. Explain the method of using Stroboscope for measurement of rotational speed of a shaft.
vii. Describe any one method of measuring External or Major diameter of a screw thread.
viii. Write a short note of Spur gears and helical gears.

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Explain the construction and working principle of External Micrometer. List different types of micrometers.
b. Explain the principle and operation of Taylor Surface Talysurf roughnesstester.
c. With the help of a diagram explain the method of measuring chordal thickness of a gear tooth using Vernier Calliper.
d. Explain the process of measurement of torque using strain gauges.
e. Explain the working principle of Dial Indicator with the help of a diagram.