Bachelor of Engineering (Mechanical), 2019 (Old)
Fourth Year - First Semester
EXPERIMENTAL METHOD IN FLUID DYMANICS

Time : 3 hours | Full Marks: 100

Answer any 4 [four] questions

1a. Explain the basic functional elements of a measurement system with two suitable examples. 20
b. What do you mean by loading effect? 5

2a. What are the different methods of correcting spurious inputs of a measurement system? Explain two of those with suitable examples. 6+12
b. Write short notes on: active and passive transducer. 7

3a. Explain static calibration and mention the basic steps of the same. 8
b. Distinguish between analog and digital modes of operation. 5
c. The power transmitted by a rotating shaft is given by,

$W=2\pi RFL/t$

where,
R = 1202±2 [rev] is the revolution of shaft during time, t.
F = 45±3% [N] is the force at end of torque arm.
L = 0.397±1% [m] is the length of the torque arm.
t = 60±5 [sec] is the time length of run.
For 95% reliability find the uncertainty in measuring W. 12

4a. Distinguish between modifying input and interfering input of measurement system with suitable examples. 12
b. Write short notes on: null and deflection methods of measurement 8
c. What do you mean by Gimbal suspension? Where is it used? 5

5. Write short notes on:
a. Static sensitivity and linearity
b. Resolution and Threshold
c. Hysteresis and dead space
d. Accuracy and Precision
e. Primary manipulation element 5 x 5