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Total Number of Pages: 02

B.Tech
PCME4403

7th Semester Regular / Back Examination 2017-18
MECHANICAL MEASUREMENT CONTROL

BRANCH: Mech

Time: 3 Hours

Max Marks: 70

Q.CODE: B276

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

- Q1 Answer the following questions: (2 x 10)**
- a) What are the stages of measuring system?
 - b) Define sensitivity in measuring system.
 - c) What is the range of (liquid in glass) thermometer?
 - d) Explain the inverted differential manometer?
 - e) What is the range of diaphragm pressure gage?
 - f) What do you mean by Poles and zeros of control system?
 - g) What are the thermocouple materials used?
 - h) Differences between rise time & settling time of second order control system.
 - i) What is phase margin?
 - j) What is strain rosette?
- Q2**
- a) Explain the working principle of Rotameter. (5)
 - b) Describe the working principle of Pirani gauge. (5)
- Q3**
- a) Explain the ballast circuit used for strain measurement. (5)
 - b) How temperature compensation is done in strain measurement, explain. (5)
- Q4**
- a) Explain the strain gauge pressure cell. (5)
 - b) Explain the working principle of McLeod gage. (5)

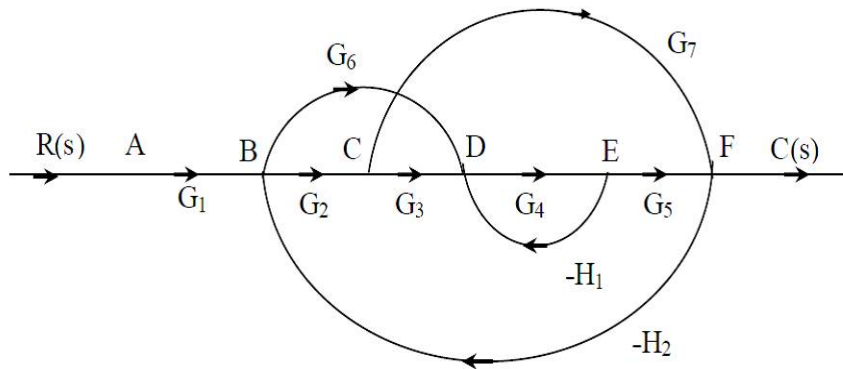
Q5 a) Difference between Seebeck and Peltier effect **(5)**

b) Explain the optical pyrometer and its constructional features. **(5)**

Q6 a) In a closed loop system, forward gain is $K / s (s^2+s+1) (s+4)$ and with (-ve) feedback of 1. What is the range of K, so that the system is stable? **(5)**

b) What is Routh's stability criterion? Explain **(5)**

Q7 Find the overall TF of the following system using signal flow graph **(10)**



Q8 Write short answer on any TWO: **(5 x 2)**

a) Photo emissive transducers

b) LVDT

c) Variable inductive transducer for rotary motion.

d) CRO