Name :	
Roll No. :	A spanne WE would ge and Excland
Invigilator's Signature :	

CS / B.TECH (AUE) / SEM-4 / AUE-406 / 2011

2011

MEASUREMENT AND INSTRUMENTATION

Time Allotted : 3 Hours

Full Marks: 70

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

GROUP - A

(Objective Type Questions)

- 1. Answer the following questions : $10 \times 1 = 10$
 - A. Choose the correct alternatives :
 - i) Two slip gauges in precision measurement are joined by
 - a) assembling b) sliding
 - c) adhesion d) wringing.
 - ii) Angle deckkor is one type of
 - a) autocollimator b) optical square
 - c) clinometer d) angle gauge.

[Turn over





Answer any *three* of the following. $3 \times 5 = 15$

- 2. Write short note on line standard and end standard. State the differences between them.
- With neat sketch, define the procedure of angle measurement by autocollimator.
- 4. What is precision and accuracy ? What is the difference between them. Explain clearly.
- 5. What do you mean by dynamic characteristics of an instrument ? Explain properly each of those dynamic characteristics of instrument ? 1+4
- 6. What do you mean by error ? How many types of error are there and explain them properly.1 + 4

4260 3 [Turn over

CS / B.TECH (AUE) / SEM-4/ AUE-406 / 2011

Utech

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) A 200 mm sine bar is to be set up to an angle of 30° . Estimate the error in the angle, if the distance between the two rollers is not correct by ± 0.005 mm.

GROUP - C

- b) With a neat sketch illustrate how the effective diameter of a screw thread may be checked using 2-wire system.
- c) Explain briefly how a precision level can be used to determine the flatness and straightness of machine beds.
 5 + 5 + 5
- 8. a) It is required to calibrate a twelve sided reference polygon by mounting it on a rotary table and viewing adjacent faces with two autocollimators T_1 and T_2 positioned very nearly 30° apart as shown in figure.

4260



for each of the twelve faces.

Faces	AB	BC	CD	DE	EF	FG	GH	HI
R1 (in sec)	+3.9	-15.2	-10.7	-9.2	-19.3	-8.6	-10.5	-12.2
R ₂ (in sec)	+6.5	+0.2	+0.4	+0.7	+9·2	0.0	0.0	-2.9



IJ	JK	KL	LM	
-14.0	+0.2	-9.1	-7.1	
0.0	-0.1	0.0	0.0	

10

b) How do you measure the taper angle of the bore by using Two spheres (equal dia), Screw gauge and Slip gauge.
5



4260

[Turn over

CS / B.TECH (AUE) / SEM-4/ AUE-406 / 2011

Utech

9. a) What do you mean by DAS ? How many types of DAS are there ? Draw the simple block diagram of a DAS and explain its operation.

- b) An amplifier has a voltage gain of -120, the feedback ratio is -0.04. Find out the following :
 - i) the voltage gain with feedback
 - ii) the feedback in dB
 - iii) the out voltage of the feedback amplifier for an input voltage of 40 MV
 - iv) the feedback factor
 - v) the feedback voltage. 3 + 2 + 5 + 5
- 4260



11. Write short note on any *three* of the following :
$$3 \times 5 = 15$$

- a) Static characteristic
- b) Resistive displacement transducer
- c) Objective of DAS
- d) Statistical Analysis of Data.

4260

[Turn over

==================