School of Aeronautics (Neemrana)
I-04, RIICO Industrial Area, Neemrana, Dist. Alwar, Rajasthan
Approved by Director General of Civil Aviation, Govt. of India, All India Council for Technical Education
Ministry of HRD, Govt of India & Affiliated to Rajasthan Technical University, Kota & BTU, Bikaner Rajasthan

Question Paper For Internal Assessment Examination (Theory) - Credit 2 / 149

Instructions for Students / Faculty

Mid Term I (Total 40 Marks, 1.5 HRS., Syllabus from Unit-1)

- Part A: Total number of questions to be given are four (2 from CO1 and 2 from CO2), each carrying 2 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words for Both Question & Answer**), no objective type or fill in the blanks. Total 8 marks.
- Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student has to answer four (2 from CO1 and 2 from CO2). They are long answer type (**Not More Than 50 Words for Question Only**), each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are four (2 from CO1 and 2 from CO2), out of which student has to answer two (1 from CO1 and 1 from CO2). They are numerical answer type / fully elaborative type* (**Not More Than 70 Words for Question Only**), each carrying 8 marks. Total 16 marks.

Mid Term II (Total 60 Marks, 2 HRS., Syllabus from Unit- 2)

- Part A: Total number of questions to be given are ten (5 from CO3 and 5 from CO4), each carrying 2 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words for Both Question & Answer**), no objective type or fill in the blanks. Total 20 marks.
- Part B: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student has to answer four (2 from CO3 and 2 from CO4). They are long answer type (**Not More Than 50 Words for Question Only**), each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are four (2 from CO3 and 2 from CO4), out of which student has to answer any two (1 from CO3 and 1 from CO4). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question Only**) *, each carrying 12 marks. Total 24 marks.

Mid Term III (Total 60 Marks, 2 HRS., Syllabus from Unit- 3)

- Part A: Total number of questions to be given are ten (5 from CO5 and 5 from CO6), each carrying 2 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words for Both Question & Answer**), no objective type or fill in the blanks. Total 20 marks.
- Part B: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6). They are long answer type (**Not More Than 50 Words for Question Only**), each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are four (2 from CO5 and 2 from CO6), out of which student has to answer any two (1 from CO5 and 1 from CO6). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question Only**) *, each carrying 12 marks. Total 24 marks.

* LIST OF ELABORATIVE THEORY QUESTION SUBJECTS: 1 FY1 - 04 Communication Skills (Cr 2), 1 FY1 - 05 Human Values (Cr 2), 2 FY1 - 04 Communication Skills (Cr 2), 2 FY1 - 05 Human Values (Cr 2), 3 AN1 - 02 Technical Communication (Cr 2), 4 MH1 - 02 Technical Communications (Cr 2), 4 MH1 - 03 Economics and Financial Accounting (Cr 2), 5 AN5 - 12 Aircraft Maintenance Practices (Cr 2), 6 AN3 - 01 Mechanics of Composite Materials (Cr 2), 6 AN5 - 12 Aircraft Rules and Regulation (Cr 2), 6 MH3 - 01 Automobile Engineering (Cr 2).

Instructions For Faculties:

There should be total 6 Course Outcomes (COs) for each subject.

- Mid Term Question Papers are to be submitted as per Course Outcomes (COs) which should be divided equally in Part A, Part B and Part C according to Mid Term Examination and Credit Point.
- In Mid Term-1, the questions are to be given from CO1 and CO2. In Mid Term-2, the questions are to be given from CO3 and CO4. Similarly, in Mid Term-3, the questions are to be given from CO5 and CO6.
- **FACULTY MEMBERS, PLEASE ENSURE EXCEPT ABOVE LISTED SUBJECTS, NO THEORITICAL ELABORATIVE QUESTION SHOULD BE GIVEN IN PART 'C' OF QUESTION PAPER**

INSTRUCTION FOR STUDENTS

- **STUDENT IS ALLOWED TO ENTER LATE NOT MORE THAN 15 MIN AFTER STARTING OF EXAM, AND MAY LEAVE THE EXAM HALL ON EXPIRY OF ATLEAST OF 1 Hr FROM THE STARTING TIME OF EXAMINATION.**

Question Paper & Student Details

Type of Exam	Mid Term 3	Date of Submission	18/08/2021
Name of Faculty	Mr. Rahul Dev Bairwan	Date of Examination	24/08/2021
Course	B.Tech (Mechatronics Engineering)	Semester	SEMESTER : 4
Batch	Fifth (5)	Subject	4 MH3 - 04 Measurement and Metrology (Cr 2)

COURSE OUTCOMES FOR REFERENCE TO FRAME QUESTION PAPER
(Faculties are required to mention relevant Course Outcome number against the respective question in QP)

Course Outcome	CO5. Apply the knowledge of finishing in measurement. CO6. Make use of technology in practical fields of metrology.		
Email I'd	rahuldevbairwan@soaneemrana.org	Phone No.	945-634-1170
Student Name		Student Reg No.	

Part A

INSTRUCTIONS FOR PART A: ALL THE QUESTIONS ARE COMPULSORY TO ATTEND

1. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			5

Question : 1	Define angular measurement.		
Lesson Plan No. - 17	Topic - Angular measurement and surface finish	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 2	Define optical measurement.		
Lesson Plan No. - 18	Topic - Angular measurement and surface finish	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 3	Define surface roughness.		
Lesson Plan No. - 19	Topic - Angular measurement and surface finish	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 4	Define root mean square value.		
Lesson Plan No. - 20	Topic - Angular measurement and surface finish	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 5	Define the working principle of Taylor–Hobson talysurf.		
Lesson Plan No. - 21	Topic - Angular measurement and surface finish	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

2. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			6

Question : 6	Define automated inspection.		
Lesson Plan No. - 22	Topic - Advances in Metrology	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 7	Define the shape of work volume in CMM.		
Lesson Plan No. - 23	Topic - Advances in Metrology	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 8	Define a probe.		
Lesson Plan No. - 24	Topic - Advances in Metrology	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 9	Define a machine vision.		
Lesson Plan No. - 25	Topic - Advances in Metrology	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 10	Define on-line/in-process inspection.		
Lesson Plan No. - 26	Topic - Advances in Metrology	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Part B

FOR MIDTERM 1 - Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student has to answer four (2 from CO1 and 2 from CO2).
FOR MIDTERM 2 - Part B: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student has to answer four (2 from CO3 and 2 from CO4).
FOR MIDTERM 3 - Part B: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6)

3. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			5

Question : 1	Give specifications of sine bar.		

Lesson Plan No. - 17	Topic - Angular measurement and surface finish	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 2	With the help of an illustration, explain roughness.

Lesson Plan No. - 19	Topic - Angular measurement and surface finish	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 3	List out the major features of the stylus system of measurement.

Lesson Plan No. - 21	Topic - Angular measurement and surface finish	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

4. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.	6

Question : 4	Mention the five basic configuration types of CMM.

Lesson Plan No. - 23	Topic - Advances in Metrology	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 5	With a neat sketch, explain probe calibration.

Lesson Plan No. - 24	Topic - Advances in Metrology	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 6	With the help of a a block diagram, explain the four important stages in machine vision.

Lesson Plan No. - 25	Topic - Advances in Metrology	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Part C

FOR MIDTERM 1 - Part C: Total number of questions to be given are four (2 from CO1 and 2 from CO2), out of which student has to answer two (1 from CO1 and 1 from CO2).
FOR MIDTERM 2 - Part C: Total number of questions to be given are four (2 from CO3 and 2 from CO4), out of which student has to answer any two (1 from CO3 and 1 from CO4).
FOR MIDTERM 3 - Part C: Total number of questions to be given are four (2 from CO5 and 2 from CO6), out of which student has to answer any two (1 from CO5 and 1 from CO6).

5. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.	5

Question : 1	With the help of neat sketch, explain the construction details of a tool's makers microscope.

Lesson Plan No. - 18	Topic - Angular measurement and surface finish	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 2	With the help of a neat sketch, explain the working principle of the Tomlinson surface meter.

Lesson Plan No. - 21	Topic - Angular measurement and surface finish	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

6. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.	6

Question : 3	Compare the pros and cons of the five different configurations of a CMM.

Lesson Plan No. - 23	Topic - Advances in Metrology	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Question : 4	Write the advantages of automation inspection system.

Lesson Plan No. - 26	Topic - Advances in Metrology	Source - Engineering Metrology and Measurements by N.V. Raghavendra & L Krishnamurthy	CO No. -

Upload Scanned Document In Case of Numerical or Diagram For Any of The Above Questions. *(Mention question number with relevant fig / numerical / equations. Max 150 KB)*	
I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.	*Rahul*

The message has been sent from 157.38.220.36 (India) at 2021-08-18 18:14:27 on Firefox 91.0
Entry ID: 149