OBJECTIVES

I. To understand the type of inspection procedure will be applied for given process for the manufactured parts for given product to satisfy the functional requirement.

II. To able to select and use of the suitable instruments and inspection process has to adopt to satisfy the requirement of assembly.

III. To be familiar with different type of instruments to support for the production and manufacturing fields as managers to lead the industrial organizations.

IV. To enhance the knowledge to apply scientific methods of inspection to improve the quality and to save the materials to grow in their professional carriers

V. To serve as a link to several other subjects in the background of Mechanical Engineer.

1. Group - A   (Short Answer Questions)

S. No.	Question	Blooms Taxonomy Level	Course Outcomes
	Unit – I		
1	a) Explain the need of limit system b)With the help of suitable diagram explain minimum and maximum metal shaft and hole	Application Evaluation	1
2	a)Why it is necessary to give tolerance on Engineering dimensions b)Give an examples of both a Unilateral and bilateral tolerance	Application Analysis	2
3	a) Explain the relationship between the Cost Vs tolerance b)Draw the conventional diagram of limits and fits and explain the terms: i)Basic size, ii) Upper deviation ,iii) Lower deviation ,iv) fundamental deviation and v) Zero line	Application Comprehensive	2
4	a)Define fit , b)give the complete classification fits and explain them with the help	Comprehensive	1

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	of suitable examples		
5	a)With the help of neat sketches sate the essential conditions for Clearance fit and Interference fit b)With the help of neat sketches sate the essential conditions for transition fit	Analysis	2,4
6	a) Define Allowance b) Explain difference between Tolerance and Allowance	Comprehensive	1
7	a) Differentiate between Hole basis and Shaft basis systems of the fits b) In manufacturing system Hole basis or Shaft basis systems which process is preferable explain why	Application Analysis	3,4
8	a)Discuss about types of Assemblies used in engineering b) Explain about tolerance system with neat diagram	Application Comprehensive	1,4
9	a)Explain about Standard limit systems in order to have universal interchangeability b) Explain the Indian Standard system of limits and fits (IS- 919 and 2709)	Application Synthesis	5
10	a) what are the advantages of Interchangeability b)Explain briefly the difference between the interchangeable manufacturing and selective assembly	Evaluation Analysis	5
UNIT – II			
1	a)Describe with sketch, i) Imperial standard yard ,ii) International prototype metre b)Explain the working mechanism of a dial indicator with neat diagram	Comprehensive Application	1
2	a)Explain the working mechanism of a dial indicator with neat diagram b)Explain the construction and working of bevel protractor with neat diagram	Comprehensive Application	1
3	a)Explain the manufacturing process, calibration , and uses of slip gauges b)What is wringing and explain the procedure for wringing of slip gauges	Synthesis Application	2,4
4	a)Explain the principle of spirit level b) Explain the principle of sine bar	Comprehensive Application	1,2
5	a)Explain the Taylors principle of gauge design b)Give complete classification gauges with the help of neat diagram	Application Evaluation Comprehensive	1,3,4
6	a)Find the values of allowance, and tolerance for hole and shaft assembly for the following dimensions mating parts: Hole $=25^{(+0.05,+0.00)}$ Shaft $= 25^{(-0.02,-0.05)}$ b)A 50 mm diameter shaft is made to rotate in the bush .the tolerance for both shaft and bush are 0.05 mm. determine the dimension of the shaft and the bush a maximum clearance of 0.075 mm with hole basis system	Analysis Evaluation	4,5
7	a) Explain the uses of limit gauges in mass production b) Difference between work shop gauges and Inspection gauges	Comprehensive Application Evaluation	1,3,4
8	a) Distinguish between measuring instrument and a gauge b) what are the essential consideration in selecting materials for gauges	Comprehensive Application	1,4
9	Determine the tolerance on hole and shaft for a precision running fit designed by $40H_7/g_6$,40 mm lies in the diameter step of 30-50 mm $I = 0.45(D)^{1/3} +0.001D$ Microns,	Comprehensive Evaluation Analysis	1,4,5

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	fundamental deviation of the shaft = - 2.5D $^{0.34}$ For hole (H) ,IT 7 = 16i and For shaft IT 6 = 10i state the actual maximum and minimum size of the both hole and shaft and maximum and minimum clearance		
10	Design the general type GO and NO-GO gauge for components having 20H7/f8 fit. I= Microns =0.45(D 1/3) +0.001D ,upper deviation of "f" shaft = -5.5D 0.41 20 mm falls in the diameter step of 18-30 ,IT7 =16i ,IT 8 =25i Wear allowance = 10% of gauge Tolerance	Comprehensive Evaluation Analysis	1,4,5
UNIT – III			
1	a)Explain the construction ,working of tool maker microscope with neat sketch b)List out some applications of a Tool makers microscope	Comprehensive Application	1,4
2	a) Explain the principle of an optical projector. b) Explain the working of an optical projector and applications with neat diagram.	Comprehensive Application	1,4
3	a)What is an Optical flat ? b)Explain about the optical flat working along with neat ketch	Comprehensive Evaluation	1,4
4	a)Describe what are the care to be taken while using optical flat b)Explain optical flat types and its limitations	Comprehensive Application Synthesis	1,3,4
5	a)Explain the principle of interferometer b)What are interferometers and explain their advantages over optical flats	Comprehensive Application	1,4
6	a)Why monochromatic light is used for Interferometry b) Name the various types of interferometers	Comprehensive Analysis	1,2
7	a)Explain about straight edge and its classifications b)How straight edge can be used to measure the straightness	Comprehensive Evaluation	1,3
8	a)What are the material used for surface pate b)Explain the procedure for flatness measurement on a surface plate	Comprehensive Evaluation	1,3
9	a)Explain the method of checking the height of component with the help of optical flat b)By using optical flat and monochromatic light explain the procedure to determine whether the given surface is flat or curved	Analysis Evaluation	2,4
10	a)Sketch and describe N.P.L flatness Interferometer b)How will you test the flatness and parallelism of micrometer anvil surfaces with optical flat	Comprehensive Evaluation	1,3
11	a)Explain the principle of an auto -collimator b)Explain the working and construction of auto-collimator	Comprehensive Analysis	1,5
UNIT – IV			
1	a)What are the surface texture properties b)What are the Factors Affecting Surface Roughness	Comprehensive Analysis	1,2
2	a)What are the reasons for controlling surface texture b) what are orders of Geometrical irregularities of the surface texture	Analysis Evaluation	2,4
3	a)What are the elements of surface texture with neat diagram b)Explain what are the symbols used to indicate the direction of lay along with neat sketch	Comprehensive Analysis	1,3
4	a)Explain about the Primary Texture along with neat diagram b)Explain about the secondary Texture along with neat diagram	Comprehensive	1,4
5	a) State how surface finish is designated on drawings	Comprehensive	1,4,5

S. No.	Question	Blooms Taxonomy Level	Course Outcomes
	b)The surface finish on the milled surface with 1.2 mm machining allowance having Ra value 6.3 Micro meters with cut off length 2.5 mm and direction of lay parallel. How will you represent it	Evaluation Analysis	
6	a)What is the ISI symbol for indication of surface finish b)What are the inspection methods used for measurement of surface finish	Comprehensive Evaluation	1,2
7	a) Explain the Average surface Roughness methods of CLA and RMS b) In the measurement of surface roughness ,roughness ,heights of successive 10 peaks and troughs were measured from a datum and were 33,25,30,19,22,18,27,29 and 20 microns . If these measurements were obtained on 10 mm length, determine CLA and RMS values of surface roughness	Comprehensive Evaluation Analysis	1,4,5
8	a) what do you mean by Ra and Rz values b) Explain the evaluation of surface finish method by peak to valley height method	Comprehensive Evaluation	1,4
9	a)Define the principle of Talysurf instrument b)Explain the working of Talysurf surface roughness instrument	Comprehensive Analysis	1,2
10	a) Define the principle of Pofilograph instrument b) Explain the working of Pofilograph surface roughness instrument	Comprehensive Analysis	1,2
	UNIT – V		
1	a) What are the comparators? For what purpose they are used. b)Difference between comparator and a gauge	Comprehensive Synthesis	1,4
2	. a) Distinguish between mechanical comparator and electrical comparator b) Explain the construction and working of a sigma comparator	Comprehensive Analysis	1,2
3	.a) List out various characteristics of a comparator b) State the principle of a working of Mechanical ,electrical ,electronic and pneumatic comparator	Comprehensive Evaluation	1,2,4
4	a)Name the various types of pitch errors found in screw and state their causes. b) Describe the method of measurement of minor diameter of internal threads.	Evaluation Analysis	2,3
5	a)Describe with a neat sketches two wire method of measuring the effective diameter of screw threads b)Describe the method of measuring the pitch of the screw by using the pitch measuring machine	Comprehensive Analysis	1,2
6	a) what are the measuring equipments used for alignment test explain briefly b)Name the various alignment tests to be performed on a lathe. Describe any two of them in details	Analysis Evaluation	2,3
7	a)Name the various alignment tests to be performed on a milling. Describe any two of them in details. b)Name the various alignment tests to be performed on a drilling. Describe any two of them in details.	Comprehensive Analysis Evaluation	1,2,3
8	a)What are the various manufacturing errors in gear b) What are the Types of gears which are commonly used for power transmission	Analysis Evaluation	2,4
9	Give the elements for specifying the gear and give formulae for i) circular pitch ii) module iii) addendum iv) base diameter b) Describe a gear tooth vernier calliper and explain its use for checking the tooth thickness and depth of tooth.	Comprehensive Analysis Evaluation	1,2,4

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10	a)Describe briefly co-coordinating measuring machine. b)State the advantages and possible sources of errors in CMM.	Comprehensive Application	1,4