USHARAMA
COLLEGE OF ENGINEERING AND TECHNOLOGY
On NH16, Telaprolu, Near Gannavaram, Krishna Dist. – 521109
Ph.: 0866-2527558, www.usharama.edu.in
(An Autonomous Institute, Approved by AICTE, New Delhi, Permanently Affiliated to JNTUK, Kakinada)

Subject Name & Code : Metrology & Instrumentation (PCME603) Exam Name : Q2

1. Which of the following is true for use of comparators? [C]

A) Can't be used in mass production B) Not suitable for inspection purposes C) Can be used as working gauge D) Slow rate of working

2. What is the principle of 'The Johansson Mikrokator'? [A]

A) Button spinning on a loop of string B) Principle of interference C) Optical magnification D) Principle of transformer

3. From which category 'Sigma comparator' belongs? [B]

A) Optical comparator B) Mechanical comparator C) Mechanical-optical comparator D) Pneumatic comparator

4. What is the advantage of mechanical comparator over others? [B]

A) Less moving parts B) No need of external supply C) No error due to parallax D) Large range of instrument

5. Which of the following is true for 'Cross strip' in sigma comparator? [B]

A) Has two moving members B) Cross strip is hinged C) Two members are at 45° to each other D) A flexible strip is attached to any one of the members of cross strip

6. Which colour of light is filtered by filter present in Zeiss Ultra-optimeter? [C]

A) Red B) Blue C) Green D) Yellow

7. Which of the following is true for Eden-Rolt Millionth Comparator? [A]

A) Utilise both mechanical and optical magnifications B) Only mechanical magnification C) Only optical magnification D) Only electrical magnification

8. Which of the following option is correct regarding the characteristics of comparators? [A]

A) Minimum inertia B) Minimum compensation for temperature effect C) High measuring pressure D) Minimum versatility

9. What is the use of bleed valve in flow type pneumatic comparator? [A]

A) Zero adjustment B) Measurement of size C) Connect passage of air from plastic tube to gauging head D) Used with pressure reducing unit

10. Which of the following is not correct for pneumatic comparator? [B]

A) Independent of operator skill B) Loss of accuracy due to gauge wear C) Speedy operation D) Total life cost is less

11. What is the order of magnification in flow type pneumatic gauge? [B]

A) 100 to 1000 times B) 500 to 5000 times C) 50 to 500 times D) 100 to 2000 times

12. Which of the following is true for Pneumatic sensitivity in pneumatic comparators? [A]

A) Directly proportional to operating pressure B) Inversely proportion to operating pressure C) Directly proportional to geometrical area of orifice D) Independent of area of orifice and operating pressure

13. What is the formula for overall magnification of pneumatic comparator? (Where, λ is the length of scale of pressure measuring device and La is the average separation between nozzle surface and surface to be gauged) [A]

A) 0.4*λ/La B) 0.7*λ/La C) 0.4*λ*La D) 0.7*λ*La

14. What is the relation between overall magnification and pneumatic sensitivity in pneumatic comparators? [D]

A) Independent of each other B) Overall magnification is directly dependent on the square of pneumatic sensitivity C) Overall magnification is inversely proportional to the pneumatic sensitivity D) Overall magnification is directly dependent on the pneumatic sensitivity

15. Which of the following option is correct for velocity type pneumatic gauge? [A]

A) Operate by sensing momentary rate of flow of air B) Response speed is less than back pressure type C) Low amplification D) Filter is placed after pressure reducing unit

16. Which of the following statement is true for pneumatic gauges? [A]
Statement 1: Can be used to check multiple dimensions.
Statement 2: A float is present inside the bore.

A) T, T B) F, T C) F, F D) T, F

17. In Back pressure type pneumatic gauge, there are two orifices. What is the relationship between upstream pressure of first orifice and pressure between two orifices? [B]

A) Depends upon the distance between two orifice B) Depends upon relative size of orifice C) Only on geometric area of first orifice D) Distance between pressure source and first orifice

18. After which frequency range, pneumatic measuring system is not correctly measured displacements? [D]

A) 5 cycles/second B) 4 cycles/second C) 3 cycles/second D) 2 cycles/second

19. For which diameter range of parts pneumatic gauges can be used? [B]

A) 50 to 500 mm B) 0.5 to 900 mm C) 50 to 700 mm D) 100 to 600 mm

20. Which of the following is measuring head sensitivity with the variation of diameter (D) of measuring orifice? [B]

A) πD2L B) πD C) πDL D) πDL2

21. Which of the following is the incorrect condition for a perfectly flat surface when tested for interferometry? [C]

A) Monochromatic light is used B) Viewing angle should be greater than 0° C) Optical flats are important in light wave measurement D) For perfect flat surface alternate light and dark bands are observed

22. If the angle at which bands are viewed is 30° in flatness testing with interferometry, what is the possible error? [B]

A) 0 B) 0.15 C) 0.3 D) 0.45

23. Comparator provides [B]

A) Exact size of the product B) Compares the set value with object C) Replacement of limit gauge D) Measurement in metric units

24. The phenomenon of interaction of light waves is called [C]

A) Reflection B) Deflection C) Interference D) Refraction

25. If path difference between reflected rays is even multiples of half wavelength they will be [A]

A) Out of phase B) In phase C) Reflected D) Deflected

26. Dial indicator is a simplest type of [B]

A) Optical comparator B) Mechanical comparator C) Electrical comparator D) Pneumatic comparator

27. Twisted strip comparator is also known as [B]

A) Reed comparator B) Johnson comparator C) Sigma comparator D) Dial gauge

28. If path difference between reflected rays is odd multiples of half wavelength , they will be [B]

A) Out of phase B) In phase C) Reflected D) Deflected

29. If path difference between reflected rays is even multiples of half wavelength --------- band will appear [B]

A) Bright B) Dark C) Colourful D) Grey

30. Comparators which do not require any external agency such as electricity or air [C]

A) Pneumatic comparator B) Optical comparator C) Mechanical comparator D) Electrical comparator

31. Optical comparators makes use of fundamental optical principle of [C]

A) Deflection B) Interference C) Optical lever D) Refraction

32. To check the number of dimensions at the same time ---------- comparators are used [A]

A) Pneumatic B) Mechanical C) Optical D) Electrical

33. Which of the following is the essential condition for interferometry measurement [D]

A) Work surface must be reflective B) Optical flat is required C) Monochromati light source is required D) Work surface must be reflective, Monochromati light source is required, Optical flat is required

34. Which of the following statement is true for Comparator & Gauge [D]
Statement 1: Comparators can be used to compare th edimensions large & thin walled parts
Statement 2: Gauge is not suitable to gauge the dimensions of larger & thin walled parts

A) F, T B) F, F C) T, F D) T, T

35. If path difference between reflected rays is odd multiples of half wavelength --------- band will appear [A]

A) Bright B) Dark C) Colourful D) Grey

36. Mechanical comparators are less accurate than optical comparators [B]

A) FALSE B) TRUE C) Can not be compared D) Accuracy varies from comparator to comparator

37. To amplify the output signal of pneumatic comparator ---------- is measured [C]

A) Variation in back pressure
B) Velocity of air caused due to variations in size
C) Variation in back pressure OR Velocity of air caused due to variations in size
D) Variation in forward pressure

38. The method of fractional coincidances in interferometry techiniqque is used for [A]

A) Measurement of end gauges
B) Flatness of surface
C) Convexity/Concavity measurement
D) Surface roughness measurement

39. Gratings are used in connection with [C]

A) Flatness measurement
B) Roundness measurement
C) Linear displacement measurement
D) Convexity/Concavity measurement

40. Which of the following statement is true for Comparator & Measuring Instrument [A]
Statement 1: Comparators can be used to check dimensions as well as geometric forms
Statement 2: Measuring instrument can not be used to check geometric forms

A) T, T
B) F, T
C) F, F
D) T, F

41. Optical flats are made of [B]

A) Glass
B) Quartz
C) Silicon
D) Plastic

42. Optical gauge works on the principle of [C]

A) Reflection of light rays
B) Refraction of light rays
C) Interference of light rays
D) Polarization of light rays

43. In optical flats, interference bands do not appear due to [D]

A) Presence of dust
B) Presence of dirt between flat & w/p
C) Lack of sufficient polish
D) Presence of dust, Presence of dirt between flat & w/p & Lack of sufficient polish

44. Auto collimator is used for measurement of [A]

A) Small angular differences
B) Flatness
C) Linear surfaces
D) Surface roughness

45. Two beams of light can cause interference patterns when the path difference between them amounts to [C]

A) 1 micron
B) One wave length of light being used
C) An odd half wave length being used
D) 1 mm

46. Optical flats are used in conjunction with [D]

A) Angular measurements B) Surface flatness C) Surface parallelism D) Interferometric measurements

47. How many types of optical flats are present? [A]

A) 2 B) 1 C) 4 D) 3

48. What is the coefficient of linear expansion of fused quartz used to make optical flats? [A]

A) 0.6 x 10-6/ degree B) 0.6 x 10-5/ degree C) 0.6 x 10-4/ degree D) 0.6 x 10-3 / degree

49. To what degree the edges of optical flats are bevelled? [B]

A) 30 degrees B) 45 degrees C) 60 degrees D) 90 degrees

50. Working surfaces of Type-B optical flats are inclined to each other at which angle? [A]

A) 5 minutes B) 10 minutes C) 15 minutes D) 20 minutes

51. What is the tolerance on flatness for Type-A optical flats of sizes up to 100 mm? [B]

A) 0.05 cm B) 0.05 μm C) 0.05 mm D) 0.05 m

52. Which of the following is not the dimension of optical flat Type A as per IS : 5440—1969 in mm ? [C]

A) 25 x 10 B) 50 x 30 C) 30 x 10 D) 125 x 30

53. What is the tolerance on thickness for Type-B (Grade I) opticals flats? [C]

A) 0.05 μm B) 0.15 μm C) 0.20 μm D) 0.30 μm

54. Which of the following statement is true for optical flats? [D]
Statement 1: Type-A optical flats are tested for parallelism of working surfaces.
Statement 2: Flatness of working surface is tested by comparing with a master flat.

A) T, F B) F, F C) T, T D) F, T

55. Which of the following is the method to test parallelism in Type-B optical flats? [C]

A) Hawking interferometer B) Enrico interferometer C) Fizeau interferometer D) Stephan interferometer

56. Which of the following is the dimension for Type-B optical flats? [A]

A) 25.0 x 12.000 mm B) 25.0 x 23.000 mm C) 26.0 x 24.000 mm D) 26.0 x 24.250 mm

57. Which of the following is the use of Type-A optical flats? [D]

A) Testing parallelism of measuring devices B) Testing parallelism of measuring anvils C) Testing micrometer measuring surfaces D) Testing the flatness of measuring table

58. Which of the following is of more important in case of Type-B optical flat? [A]

A) Thickness B) Diameter C) Length D) Area

59. At what distance instrument is placed when straightness is determined with the help of autocollimator? [C]

A) 0.5 to 0.75 mm B) 0.5 to 0.75 cm C) 0.5 to 0.75 m D) 0.5 to 0.75 μm

60. Which of the following option is true for autocollimators? [C]
Statement 1: Electronic autocollimator has more resolution than visual autocollimator.
Statement 2: Observations are taken using precision level.

A) F, F B) F, T C) T, T D) T, F

61. 1 sec of arc will correspond to how much rise or fall in surface, when surface straightness is tested by autocollimator? (λ is the distance between centres of feet) [A]

A) 0.000006λ B) 0.00006λ C) 0.006λ D) 0.0006λ

62. Which of the following is not true for autocollimator? [B]

A) Taylor's principle B) Least square method C) Bryan method D) Average method

63. What is the shape of the tool maker's flats? [A]

A) Circular B) Rectangular C) Square D) Triangular

64. Which of the following is not true about tool maker's flats? [B]

A) Tool maker's flats should be free from inclusions B) Tool maker's flats are of less hardness C) Working surfaces are produced by lapping D) Should be located in a stirred atmosphere

65. Which of the following is not true about the requirements of material selection for tool maker's flats? [D]

A) Suitable surface for the wringing purpose B) High degree of rigidity C) Wear resistance D) Absorb radiant heat

66. What is the tool maker's flat size which generally uses both the faces as a working surface? [B]

A) 30 to 45 mm B) 50 to 75 mm C) 75 to 100 mm D) 100 to 200 mm

67. What is the range of the diameter of optical flats ? [B]

A) 100 to 200 mm B) 25 to 300 mm C) 50 to 100 mm D) 10 to 50 mm

68. Which of the following is more important in case of type B optical flat ? [B]

A) Diameter B) Thickness C) Area D) Length

69. Sometimes optical flats are coated with [D]

A) Alumina B) Titanium C) Silicon D) Titanium oxide

70. The purpose of coating the optical flats is [A]

A) to reduce loss of light B) to enhance loss of light C) to increase the life of optical flat D) to prevent from heat

71. Which one of the following is a wrong statement [A]

A) Wave length standard is a physical one B) Wave length standard may be accepted as ultimate C) Cadmium 114, Krypton 87 and mercury are possible sources of radiation of wavelength standards D) Wavelength standards can be reproduced to an accuracy of about one in 1000000000

72. A collimeter is simply a [A]

A) Source of a bundle of parallel lights B) Source of parallel lights C) Sort of telescope D) Standard for flatness

73. Optical collimeter has a maximum working distance of [C]

A) 4 m B) 3 m C) 2 m D) 1 m

74. An optical projector consists of [C]

A) Light source B) Condenser C) Light source & Condenser D) Spring

75. Following measurement techniques are employed on optical projector [D]

A) Measurement by comparision B) Measurement by movement C) Measurement by translation D) Measurement by comparision, Measurement by movement, Measurement by translation

76. If fringe pattern shows straight lines and uniform spacing, the surface under test is [B]

A) Bulged B) Flat C) Convex D) Concave

77. The Maximum disturbance of the wave is called [A]

A) Amplitude B) Frequency C) Time period D) Velocity of transmission

78. Optical collimeter will cover reflected displacements upto [C]

A) 3 degrees B) 2 degrees C) 1 degree D) 4 degrees

79. Using autocollimeter, the inclination of reflecting surface is expressed in terms of linear distance [D]

A) $2f / \theta$ B) $2\theta/f$ C) $f \theta /2$ D) $2f \theta$

80. Tool maker's microscope is best suited for [D]

A) small components B) Large components C) Intricate components D) Small & Intricate components

81. Which of the following option is true for given statements about surface texture? [D]
Statement 1: Concept of surface roughness is sensory.
Statement 2: Failure due to fatigue starts always at sharp corners.

A) T, F B) F, T C) F, F D) T, T

82. What is the relation between rate of wear and contact surface area? [B]

A) Rate of wear is inversely proportional to the contact surface area B) Rate of wear is directly proportional to the contact surface area C) Rate of wear is inversely proportional to the square of contact surface area D) Rate of wear is directly proportional to the square of contact surface area

83. Under which group, does waviness in surface falls? [B]

A) Primary texture B) Secondary texture C) Tertiary texture D) Quaternary texture

84. In how many categories, geometrical irregularities can be classified? [C]

A) 3 B) 2 C) 4 D) 5

85. What is the importance of the valley in any irregular surface? [B]

A) Reduce metal to metal contact B) Retain film of lubricating oil C) Reduce stress concentration D) Improve surface texture

86. Match the following order with their irregularities. First Order - 1. Feed marks of cutting tool Second Order - 2. Lack of straightness of guideways Third Order - 3. Rupture of material during chip removal Fourth Order - 4. Vibrations [B]

A) A-3, B-2, C-4, D-1 B) A-2, B-4, C-1, D-3 C) A-2, B-4, C-3, D-1 D) A-1, B-2, C-4, D-3

87. Which of the following is not true about first order irregularities? [C]

A) Arising due to irregularities in machine tool itself B) Arising due to weight of material itself C) Arise due to vibrations D) May arises due to deformation of work under action

88. Under which group, does third order irregularities fall? [D]

A) Primary group B) Secondary group C) First group D) Second group

89. Which type of irregularities comes under the first group? [A]

A) First and second order B) Second and third order C) Third and fourth order D) First and fourth order

90. Which of the following is true about texture in case of finishing process? [C]

A) Directional and irregular B) Regular and directional C) Irregular and non-directional D) Regular and non-directional

91. Under which category, does the error arises due to non-linear feed motion falls? [C]

A) Second group B) Primary texture C) Waviness D) Roughness

92. Which of the following option is true if hills and valleys on any surface are very close? [B]

A) Wavelength is more B) Wavelength is small C) Surface appears more wavy D) Surface appears rough but wavelength is more

93. Which term is used for errors of first and second order? [B]

A) Micro geometrical error B) Macro geometrical error C) Mini geometrical error D) Mili geometrical error

94. What is meant by roughness? [B]

A) Minute succession of hills of different height B) Minute succession of valleys and hills of different height and varied spacing C) Minute succession of valleys and hills of same height and same gap D) Minute succession of valleys of different depth

95. Surfaces produced by straight and cylindrical grinding tools tend to create which type of roughness? [C]

A) Regularly spaced but directional roughness
B) Regularly spaced but non directional roughness
C) Irregularly spaced but directional roughness
D) Irregularly spaced but non directional roughness

96. Which of the following is necessary for the complete study of surface roughness? [D]

A) Measurement of all the components of elements
B) Analysis of all the component element
C) Assessment of the effects of combined texture
D) Measurement and analysis of all the components and assessment of combined texture

97. Which of the following is true for measurement of surface roughness? [B]

A) 3 dimensional geometry can be easily measured
B) Direction of measurement is perpendicular to the lay
C) Direction of measurement is parallel to the lay
D) Direction of measurement is parallel to the direction of the predominant surface marking

98. How much a stylus instrument can be magnified to plot or find minute irregularities? [D]

A) 50 times
B) 500 times
C) 5000 times
D) 50,000 times

99. Which of the following is true about Tomlinson surface meter? [C]

A) It is a mechanical instrument
B) It is an electrical instrument
C) It is a mechanical cum optical instrument
D) It is an optical instrument

100. Which of the following is used for the direct measurement of surface quality and commonly used in U.S.A.? [A]

A) Profilometer
B) Tomlinson surface meter
C) Talysurf
D) Replica method

101. Which of the following parameter is important for specifying surface roughness? [D]

A) Size of irregularity
B) Spacing of irregularity
C) Height of irregularities
D) Height, spacing and form of irregularities

102. What do you mean by Geometrical Surface? [A]

A) Surface prescribed by design without any errors of form or surface roughness
B) Surface limiting the body and separating it from surrounding
C) Close representation of real surface
D) Outer surface of the body

103. Under which category, does the scratches falls? [C]

A) Lay
B) Effective surface
C) Flaws
D) Geometrical surface

104. Which of the following statement is wrong about sampling length? [D]

A) It is the length of profile necessary for evaluation of irregularities to be taken account
B) It is known as cut off length in regard to measuring instruments
C) It is measured in a direction parallel to general direction of profile
D) It is the length of profile necessary for evaluation of surface roughness parameters

105. What is the general instrument cut off for majority engineering work? [B]

A) 0.08 mm
B) 0.8 mm
C) 0.1 cm
D) 0.5 mm

106. What is the upper limit that is commonly accepted for waviness measurement? [C]

A) 10mm
B) 20mm
C) 25mm
D) 15mm

107. What is the correct formula for average wavelength to describe surface roughness? (Where, Ra is the arithmetic mean deviation from the mean line of profile) [A]

A) 2π x Ra / Mean slope
B) 2π x Ra x Mean slope
C) 2π / Ra x Mean slope
D) 2π / Ra / Mean slope

108. Which of the following is an effective surface as per Indian standard? [C]

A) A real surface is an effective surface
B) It is the direction of predominant surface pattern
C) Close representation of real surface
D) Real surface which doesn't represent instrumental means

109. Which of the following is true for a mean and center line of profile? [D]

A) When the waveform is repetitive then there is some difference between mean and centre line
B) Mean line of profile is the mean distance between more prominent irregularities
C) Mean line profile is the average value of ordinates from mean line
D) Centre line of profile is the line which is parallel to the direction of profile and area embraced above and below the line is equal

110. What is ten point height of irregularities? [C]

A) Average difference between 10 highest peaks
B) Average difference between 10 deepest valleys
C) Average difference between 5 highest peaks and 5 deepest valleys
D) Average difference between 10 highest peaks and 10 deepest valleys

111. Which of the following is a criterion of a good bearing surface? [B]

A) Positive skew
B) Negative skew
C) Negative peak roughness
D) Positive start up length

112. Which of the following is the best for the examination of surface finish? [D]

A) Touch inspection
B) Visual inspection
C) Scratch inspection
D) Microscopic inspection

113. Upto which limits irregularities can be detected with touch inspection of a surface? [C]

A) 0.0001 mm B) 0.001 mm C) 0.01 mm D) 0.1 mm

114. Which of the following material is not used for rubbing on the surface to be inspected in scratch inspection? [B]

A) Softer material B) Hard material C) Plastic D) Lead babbitt

115. Which of the following option is true for given statements about method of measurement of surface finish? [A]
Statement 1: Minute flaws can be easily detected by touch inspection.
Statement 2: Direct instrument measurement is enabled to determine a numerical

A) F, T B) T, F C) F, F D) T, T

116. What is the limitation of microscopic inspection to check surface finish? [B]

A) An average value is needed B) Small portion of surface can be detected at a time C) A master finish surface is also needed D) It is necessary to inspect whole surface together

117. In the method of microscopic inspection what is the angle of beam light with the work? [C]

A) 20 degrees B) 30 degrees C) 60 degrees D) 90 degrees

118. Which of the following is true for a method of measurement of surface finish with surface photographs? [A]

A) Different type of illumination is needed B) No effect of type of illumination C) Same type of illumination is needed D) Monochromatic light is needed

119. In case of vertical illumination in measuring surface finish with surface photographs, which will appear as bright area? [A]

A) Flat portion B) Scratch C) Irregularity D) Hills

120. In roughness measurement by instrument, the vertical magnification usually ranges between [D]

A) 100 to 1,000 B) 1,000 to 10,000 C) 10 to 100 D) 1,000 to 1,00,000

121. Which of the following is the correct mathematical formula for module? [A]

A) D/N B) D/2N C) 2D/N D) 4D/N

122. What is the standard value of clearance? (Where, m is module) [C]

A) 0.572 x m B) 0.182 x m C) 0.157 x m D) 0.821 x m

123. What is the value of addendum? [D]

A) 1 module B) 2 modules C) 3 modules D) 4 modules

124. What is dedendum? [D]

A) Addendum + 2 x clearance B) Addendum + clearance / 2 C) 2 x Addendum + clearance D) Addendum + clearance

125. What is the flank of tooth? [B]

A) Part of the surface of tooth which is above the pitch surface B) Part of the surface of tooth which is below the pitch surface C) Part of the surface of tooth which is in the middle of top and bottom of the pitch surface D) Part of the surface of tooth which is at the top of the pitch surface

126. What is tooth thickness? [A]

A) Circular pitch / 2 B) Circular pitch / 4 C) 2x Circular pitch D) 4 x Circular pitch

127. What is the name of angle which is present between line of action and common tangent to the pitch circles? [D]

A) Helix angle B) Lead angle C) Pitch angle D) Pressure angle

128. Which of the following is not the correct formula for base pitch? [C]

A) Base circumference / Number of teeth B) π x Base circle diameter / N C) π x D $\sin\varphi$ / N D) π x m x $\cos\varphi$

129. What is blank diameter? [B]

A) Pitch circle diameter plus addenda B) Pitch circle diameter plus twice the addenda C) Base circle diameter plus addenda D) Base circle diameter plus twice the addenda

130. Which of the following is not necessary to find normal module of helical gear? [D]

A) Number of teeth B) Pitch diameter C) Helix angle D) Tooth thickness

131. What is worm lead in worm and worm gear? [C]

A) Nw x 2px B) Nw x 4px C) Nw x px D) Nw / px

132. Which of the following is true for generating method of gear formation? [B]

A) No use of cutter
B) Profiles of several teeth are formed simultaneously
C) Linear motion of the tool and the blank is not constant
D) Each tool space is cut independently

133. Which of the following is true for high power gears? [A]

A) Operated at low speed
B) Operated at high speed
C) Operated at moderate speed
D) Operated at high or moderate speed

134. Which of the following gear is used for counting and timing purposes? [D]

A) High speed gears
B) High power gears
C) Low speed gears
D) Precision gears

135. What is the kinematic error in gears? [B]

A) Minimum error in gear rotation per gear revolution
B) Accumulated permissible error in gear rotation per gear revolution
C) Maximum error in gear rotation per gear revolution
D) Accumulated permissible error in gear rotation in two gear revolutions

136. What is profile error? [D]

A) The minimum distance of any point on the profile of tooth form and normal to the design profile when the two coincide at the reference circle
B) The minimum distance of any point on the profile of tooth form and parallel to the design profile when the two coincide at the reference circle
C) The maximum distance of any point on the profile of tooth form and parallel to the design profile when the two coincide at the reference circle
D) The maximum distance of any point on the profile of tooth form and normal to the design profile when the two coincide at the reference circle

137. What is a cyclic error? [B]

A) Mean value of the discrete values of variation in the kinematic error of the gear taken for all cycles during one revolution
B) Mean value of the range of variation in the kinematic error of the gear taken for all cycles during one revolution
C) Mean value of the range of variation in permissible deviations in basic pitch of the gear taken for all cycles during one revolution
D) Mean value of the range of variation in the angular error of the gear taken for all cycles during one revolution

138. How bearing contact of mating gears is represented? [D]

A) By the relative size of the bearing contact pattern in mm
B) By the relative size of the bearing contact pattern in cm
C) By the relative size of the bearing contact pattern in meter
D) By the relative size of the bearing contact pattern in percent

139. Another name for Wobble [D]

A) Radial run-out
B) Eccentricity
C) Composite error
D) Axial run-out

140. What is undulation? [A]

A) Departure of the actual tooth surface from design surface
B) Departure of the virtual tooth surface from design surface
C) Departure of the design surface from actual tooth surface
D) Departure of the design surface from virtual tooth surface

141. Which of the following is true for eccentricity? [A]

A) Half the radial run-out B) Half the axial run-out C) Equal to the radial run-out D) Equal to the axial run-out

142. Which of the following can be used to ensure smoothness of gear operation? [C]

A) By limiting the minimum permissible deviation in base circle B) By limiting the maximum permissible deviation in base circle C) By limiting the maximum permissible deviation in basic pitch D) By limiting the minimum permissible deviation in basic pitch

143. What is the effect of improper alignment of each tooth? [C]

A) Tooth thickness increases B) Face width decreases C) Load will not distributed evenly D) Pitch of teeth reduced

144. Which of the following is not true about concentricity of teeth? [D]

A) Fluctuating velocity will be noticed when not concentric B) Can be checked by using projector C) Inaccuracy of parts when not concentric D) Should be tested to ensure the proper heat treatment

145. Which of the following option is true about an analytical method of inspection of gears? [D]

A) Analytical method is widely used for industries B) This method is fast C) All individual elements of gear teeth are checked D) More accurate

146. Which of the following element is not determined by analytical inspection? [B]

A) Profile B) Composite vibrations C) Spacing D) Pitch

147. Which of the following option is correct for given statements about gear measurement? [D]
Statement 1: Improper alignment of each teeth will cause high bearing stresses.
Statement 2: Gear blank should be tested for dimensional accuracy.

A) T, F B) F, F C) F, T D) T, T

148. Which of the following is not determined by the functional type of inspection? [A]

A) Lead B) Noise level C) Variation in action D) Vibration

149. Which of the following statement is true about inspection of gear? [B]

A) Profile is determined by functional inspection B) Backlash is determined by analytic inspection C) Analytic test require running test of gear D) Thickness of tooth is measured by functional inspection

150. Which of the following machine is used for rolling tests? [A]

A) Parkson gear tester B) Tooth caliper C) Base pitch measuring instrument D) Involute profile testing machine

151. If reference circle of gear is eccentric then which error is reflected by this eccentricity? [C]

A) Cyclic error B) Periodic error C) Pitch error D) Undulation

152. Which of the following option is true for given statements about gear measurement? [D]
Statement 1: There is no effect of cutter accuracy on the accuracy of gear.
Statement 2: Accuracy of individual elements is necessary for precision gears.

A) T, F B) F, F C) T, T D) F, T

153. Gear tooth vernier is used to measure [C]

A) Height of a gear B) Width of a gear C) Height & width D) Pitch

154. Parkinson gear tester is used for checking [C]

A) Radial errors B) Dimensions C) Composite errors D) Defects

155. Radial height of the tooth from the pitch circle to the tip of the tooth is called [C]

A) Dedundum B) Tooth face C) Addendum D) Pitch

156. Roughness grade number ‘3’ roughness grade symbol consists of [D]

A) 4 triangles B) 3 triangles C) 2 triangles D) no triangle

157. Working depth of a gear [B]

A) Addendum + dedundum B) Addendum + dedundum - clearance C) Addendum + dedundum + clearance D) Addendum - dedundum + clearance

158. The amount by which a tooth space exceeds the thickness of an engaging tooth is [B]

A) Runout B) Backlash C) Lead D) Composite error

159. The size of a gear is usually specified by [D]

A) pressure angle B) circular pitch C) diametral pitch D) pitch circle diameter

160. Which is the incorrect relationship of gears? [D]

A) Circular pitch × Diametral pitch = π B) Module = P.C.D/No.of teeth C) Dedendum = 1.157 module D) Addendum = 2.157 module