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Subject Name & Code : Mechanics of Solids (PCME405) Exam Name : Q2

1. For circular section, the maximum shear stress is equal to _____ times of average shear stress. [C]

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

2. A beam has a triangular cross-section, having altitude ”h” and base “b”. If the section is being subjected to a shear force “F”. Calculate the shear stress at the level of neutral axis in the cross section. [C]

A) 4F/5bh B) 4F/3bh C) 8F/3bh D) 3F/4bh

3. The maximum shear stress in the rectangular section is _____ times the average shear stress. [D]

A) 3/4 B) 3/7 C) 5/3 D) 3/2

4. Calculate the modulus of section for a hollow circular column of external diameter 60 mm and 10 mm thickness. [A]

A) 170 m B) 190 m C) 250 m D) 300 m

5. The maximum shear stress distribution is _____ percentage more than average shear stress in circular section. [C]

A) 0.54 B) 0.6 C) 0.33 D) 0.5

6. Shear stress at top most fibre of rectangular section is _____ [C]

A) Maximum B) Minimum C) Zero D) Uniform through out

7. Calculate the maximum shear force for square beam of side is 320 mm. If the shear force is 94kN. [A]

A) 1.37N/mm^2 B) 2.36N/mm^2 C) 5.21N/mm^2 D) 4.32N/mm^2

8. When a cantilever beam is loaded at its free en The maximum compressive stress shall develop at [A]

A) bottom fibre B) top fibre C) neutral axis D) centre of gravity

9. Two beams , one is circular cross section and other of square cross section have equal area moment. The ratio of weights of the square beam to the circular beam is [D]

A) both beams are equally economical B) square beam is more economical C) circular beam is economical D) none of the mentioned

10. A beam of uniform strength is obtained by [A]

A) keeping the width uniform and varying depth B) keeping the depth uniform and varying width C) varying width and depth D) None of the mentioned

11. A beam of uniform strength has [B]

A) same cross section throughtout the beam B) same bending stress at every section C) same bending moment at every section D) same shear stress at every section

12. The bending stress in a beam is …. Bending moment. [D]

A) equal to B) less than C) more than D) directional propotional to

13. At the neutyral axis of a beam [D]

A) the layers are subjected to maximum bending stress B) the layers are subjected to minimum bending stress C) the layers subjected to compression D) the layers do not undergo any strain

14. The neutral axis of a beam is subjected to …… stress. [A]

A) zero B) maximum tensile C) minimum tensile D) maximum compressive

15. The neutral axis of a tranverse section of a beam passes to the centre of the gravity of the section and is [D]

A) in vertical plane B) in horizontal plane C) in the same plane in which the beam bends D) at right angle to the plane in which the beam bends

16. In a beam subjected to pure bending the intensity of stress in any fibre is…… the distance of the fibre from neutral axis. [D]

A) equal to B) less than C) more than D) directional propotional to

17. The rectangular beam A has a length of L width B and depth D and another beam B has the same length and depth but width is double that of the elastic strength of beam B will be…..as compared to beam [B]

A) same B) double C) four times D) six times

18. If the depth is kept constant for the beam of uniform strength, then its width will vary in propotional to [A]

A) M B) √M C) M^2 D) M^3

19. In a beam of uniform strength, the bending stress developed is ..... to the allowable stress at every section of the beam [C]

A) not equal B) not constant C) constant and is equal to D) not constant but equal

20. When the rectangular beam is loaded transversely, the maximum tensile stress is developed on the [A]

A) top layer B) bottom layer C) neutral axis D) every cross section

21. when a rectangular beam is loaded transversely, the maximum compressive stress is developed on the [B]

A) top layer B) bottom layer C) neutral axis D) every cross section

22. when a rectangular beam is loaded transversely, the stress developed on the neutral axis. [A]

A) Zero B) maximum C) minimum D) no stress

23. when a rectangular beam is loaded longitudinally, the shear stress is developed on . [B]

A) bottom layer B) top layer C) at N. D) none of the mentioned

24. At the neutral axis of a beam, the shear stress is [C]

A) Zero B) minimum C) maximum D) infinite

25. The maximum shear stress developed in a beam of rectangular setion is.....the average shear stress [C]

A) equal to B) 4/3 times C) 1.5 times D) twice

26. The maximum shear stress developed in a beam of circular setion is.....the average shear stress [B]

A) equal to B) 4/3 times C) 1.5 times D) twice

27. The ratio of maximum shear stress developed in a rectangular beam and a circular beam of the same cross-sectional area is [D]

A) 0.66666666667 B) 0.75 C) 1 D) 9/8

28. A beam of triangular section is placed with its base horizantal. The maximum shear stress occurs at [B]

A) apex of triangle B) mid of height C) G. of the triangle D) base of the triangle

29. The maximum shear stress of abeam of triangular section occurs the neutral axis. [A]

A) below B) on C) above D) none of the mentioned

30. A beam of T -section is subjected to a shear force of F.The maximum shear force will occur at the [C]

A) top of the section B) bottom of the section C) N. of the section D) junction of web and flange

31. The maximum shear stress developed in a beam of circular section is _____ the average shear stress. [B]

A) equal to B) 4/3 times C) 1.5 times D) twice

32. Determine section modulus for beam of 100mm diameter. [D]

A) 785 × 103 mm^3 B) 456 × 103 mm^3 C) 87 × 103 mm^3 D) 98 × 103 mm^3

33. Calculate the maximum stress due to Bending in a steel strip of 30 mm thick and 60 mm wide is bent around a circular drum of 3.6 m diameter [Take Young's modulus = 200kN/m2]. [B]

A) 2341.76 N/mm^2 B) 1666.67 N/mm^2 C) 5411.76 N/mm^2 D) 4666.67 N/mm^2

34. Find the modulus of section of square beam of size 300×300 mm. [B]

A) 4.8 × 106 mm^3 B) 4.5 × 106 mm^3 C) 5.6 × 106 mm^3 D) 4.2 × 106 mm^3

35. To what radius a silver strip 200 mm wide and 40 mm thick can be bent if the maximum stress in the ship is 80 N/mm2. Young's modulus for Silver is 80×103 N/mm2. [A]

A) 20m B) 30m C) 15m D) 35m

36. A Cantilever beam of rectangular cross-section is 1m deep and 0.6 m thick. If the beam were to be 0.6 m deep and 1m thick, then the beam woul [B]

A) Be weakened 0.5 times B) Be weakened 0.6 times C) Be strengthened 0.6 times D) Have the same strength as the original beam because the cross-sectional area remains the same

37. A pipe of external diameter 3 cm and internal diameter 2 cm and of length 4 m is supported at its ends. It carries a point load of 65 N at its centre. The sectional modulus of the pipe will be: [C]

A) 65π/64 cm^3 B) 65π/32cm^3 C) 65π/96 cm^3 D) 65π/128cm^3

38. A T-section beam is simply supported and subjected to a uniform distributed load over its whole span. Maximum longitudinal stress at [D]

A) Top fibre of the flange B) The junction of web and flange C) The mid-section of the web D) The bottom fibre of the web

39. Two beams, one having square cross section and another circular cross-section, are subjected to the same amount of bending moment. If the cross sectional area as well as the material of both the beams are the same then [B]

A) Maximum bending stress developed in both the beams is the same
B) The circular beam experiences more bending stress than the square one
C) The square beam experiences more bending stress than the circular one
D) As the material is same both the beams will experience same deformation

40. Two beams of equal cross-sectional area are subjected to equal bending moment. If one beam has square cross-section and the other has circular section, then [B]

A) Both beams will be equally strong
B) Circular section beam will be stronger
C) Square section beam will be stronger
D) The strength of the beam will depend on the nature of loading

41. A simply supported beam of length l is loaded with a uniformly distributed load of w per unit length. The maximum deflection is 5wl4/384 EI and lies at the of the beam. [B]

A) right end
B) center
C) left end
D) none of the mentioned

42. The simply supported beam 'A' of length l carries a central point load W. Another beam 'B' is loaded with a uniformly distributed load such that the total load on the beam is W. The ratio of maximum deflections between beams A and B is [B]

A) 0.625
B) 8/5
C) 5/4
D) 4/5

43. The product of Young's modulus E) and moment of inertia I)is known as [C]

A) modulus of rigidity
B) bulk modulus
C) flexural rigidity
D) tortional rigidity

44. A simply supported beam'A' of length l,breadth b and depth d carries a central load W. Another beam 'B' of the same dimensions carries a central load equal to 2 W. The deflection of beam 'B' will be ..... As that of beam'A'. [C]

A) one-fourth
B) one-half
C) double
D) four times

45. A simply supported beam'A' of length l,breadth b and depth d carries a central point load W. Another beam 'B' has the same length and depth but its breadth is double The deflection of beam 'B' will be ..... As compared of beam'A'. [B]

A) one-fourth
B) one-half
C) double
D) four times

46. A simply supported beam'A' of length l,breadth b and depth d carries a central point load W. Another beam 'B' has the same length and breadth but its depth is double The deflection of beam 'B' will be double as compared of beam'A'. [B]

A) TRUE
B) FALSE
C) depends on other factors
D) none of the mentioned

47. Slope in the beam at any point is measured in _____ [C]

A) Degrees B) Minutes C) Radians D) Metric tonnes

48. Elastic curve is also known as _____ [C]

A) Refraction curve B) Reflection curve C) Deflection curve D) Random curve

49. Which of the following method is not used for determining slope and deflection at a point? [C]

A) Moment area method B) Double integration method C) Isoheytal method D) Macaulay's method

50. The slope is denoted by _____ [C]

A) k B) y C) i D) c

51. Calculate the slope at supports, if the area is 180kNm2. Take flexural rigidity as 50000. [B]

A) 0.0054 radians B) 0.0036 radians C) 0.0072 radians D) 0.108 radians

52. In cantilever beams, the slope is _____ at fixed en [B]

A) Maximum B) Zero C) Minimum D) Uniform

53. Slope is maximum at _____ in simply supported beams. [A]

A) Mid span B) Through out C) Supports D) At point of loading

54. Mohr's theorem- 1 states _____ [C]

A) i= EI/A B) i=I/EA C) i=A/EI D) i=EI^2/A

55. Using Mohr's theorem, calculate the maximum slope of a cantilever beam if the bending moment area diagram is 90kNm2. Take EI = 4000 kNm2. [A]

A) 0.0225 radians B) 0 0367 radians C) 0.0455 radians D) 0.066 radians

56. Units of deflection are _____ [D]

A) kNm B) kN/m C) kN D) m

57. Which of the following method is used to determine the slope and deflection at a point? [C]

A) Arithmetic increase method B) Mathematical curve setting C) Macaulay's method D) Lacey's method

58. Deflection is denoted by _____ [B]

A) i B) y C) h D) e

59. In cantilever beams, the deflection is zero at _____ [B]

A) Free and B) Fixed end C) At supports D) Through out

60. Mohr's theorem -¡¡ states? [A]

A) y=Ax/EI B) y= A/Ex C) y=A/EI D) y=AE/Ix

61. Calculate the deflection if the slope is 0.0225 radians. Take the distance of centre of gravity of bending moment to free end as 2 metres. [A]

A) 45mm B) 35mm C) 28mm D) 49mm

62. In simply supported beams, deflection is zero at _____ [B]

A) Mid span B) Supports C) Through out D) Point of action of load

63. The ratio of maximum deflection of a beam to its _____ is called stiffness of the beam. [C]

A) Load B) Slope C) Span D) Reaction at the support

64. Stiffness of the beam is inversely proportional to the _____ of the beam. [C]

A) Slope B) Support reaction C) Deflection D) Load

65. The maximum ____ should not exceed the permissible limit to the span of the beam. [B]

A) Slope B) Deflection C) Load D) Bending moment

66. In cantilever beam the deflection occurs at _____ [A]

A) Free end B) Point of loading C) Through out D) Fixed end

67. Compute the maximum deflection at free end of a cantilever beam subjected to udl for entire span of l metres. [A]

A) wl^4/8EI B) wl^4/4EI C) wl^3/8EI D) wl^2/6EI

68. Calculate the maximum deflection of a cantilever beam with udl on entire span of 3m the intensity of you udl be 25 kN/m. Take EI as 4000 kN/m2. [B]

A) 0.052m B) 0.063m C) 0.076m D) 0.09m

69. _____ of a beam is a measure of its resistance against deflection. [B]

A) Strength B) Stiffness C) Slope D) Maximum bending

70. The maximum induced _____ stresses should be within the safe permissible stresses to ensure strength of the beam. [C]

A) Tensile B) Compressive C) Bending D) Lateral

71. In simply supported beams, the slope is _____ at supports. [C]

A) Minimum B) Zero C) Maximum D) Uniform

72. In simply supported beam deflection is maximum at _____ [A]

A) Midspan B) Supports C) Point of loading D) Through out

73. Calculate the maximum deflection of a simply supported beam if the maximum slope at A is 0.0075 radians and the distance of centre of gravity of bending moment diagram to support A is 1.33 metres. [A]

A) 9.975 mm B) 9.5 mm C) 9.25 mm D) 9.785 mm

74. A cantilever beam subjected to a point load at free end of span “l” m and possess flexural rigidity EI). [C]

A) Wl^3 / 6EI B) Wl^4/ 8EI C) Wl^2/ 2EI D) Wl^4/ 5EI

75. In a cantilever of span “L” subjected to a concentrated load of “W” at a distance of L/3 from free en The deflection is _____ [D]

A) WL^3/3EI B) 14WL^3/81EI C) WL^3/81EI D) 8WL^3/81EI

76. Calculate the slope in a simply supported beam subjected to point load at centre. Take the EI into consideration. [B]

A) Wl^3/4EI B) Wl^2/16EI C) Wl^3/8EI D) Wl^4/6EI

77. In cantilever beams, the extra support is known as _____ [B]

A) Hinch B) Prop C) Cripple D) Indeterminate end

78. Prop reduces _____ in the beam. [A]

A) Deflection B) Slope C) Shear D) Moment

79. Which of the following is indeterminate structure? [B]

A) Singly rereinforced beam B) Propped cantilever beam C) Over hanging beam D) Simply supported beam

80. In cantilever beams, the maximum deflection occurs at _____ [B]

A) Fixed end B) Free end C) Through out D) Point of loading

81. A simply supported beam carries uniformly distributed load of 20 kN/m over the length of 5 m. If flexural rigidity is 30000 kN.m2, what is the maximum deflection in the beam? [A]

A) 5.4 mm B) 1.08 mm C) 6.2 mm D) 8.6 mm

82. Which of the following is an elastic curve equation for shear force? [C]

A) S = EI dy/dx B) S = EI d^2y /dx^2 C) S = EI d^3y / dx^3 D) S = EI d^4y/ dx^4

83. According to I.S. code in actual design, maximum permissible deflection is limited to _____ [B]

A) span / 200 B) span / 325 C) span / 525 D) none of the mentioned

84. Deflection of a simply supported beam when subjected to central point load is given as _____ [C]

A) Wl /16 EI B) Wl^2 /16 EI C) Wl^3 /48 EI D) 5Wl^4 / 384EI

85. Which of the following statements is/are true for a simply supported beam? [B]

A) Deflection at supports in a simply supported beam is maximum B) Deflection is maximum at a point where slope is zero C) Slope is minimum at supports in a simply supported beam D) All of the mentioned

86. The design of a beam is based on strength criteria, if the beam is sufficiently strong to resist _____ [A]

A) shear force B) deflection C) both and D) none of the mentioned

87. The vertical distance between the axis of the beam before and after loading at a point is called as _____ [B]

A) deformation B) deflection C) slope D) none of the mentioned

88. Which of the following is a differential equation for deflection? [C]

A) dy / dx = M/EI B) dy / dx = MI/E C) d^2y / dx^2 = M/EI D) d^2y / dx^2 = ME/I

89. Macaulay's method is used to determine _____ [A]

A) deflection B) strength C) toughness D) all of the mentioned

90. Calculate maximum slope for a cantilever beam of span 3m subjected to U. L.of 20 kN/m over entire span.Take E=2x10^5N/mm^2 and I=6x10^7mm^4 [A]

A) 0.0075 radian B) 0.075 radian C) 0.0085 radian D) 0.095 radian

91. At any point angle made by tangent drawn to the deflected shape of a beam, with horizontal is called _____ at that point. [B]

A) Deflection B) Slope C) Both Deflection and Slope D) None of the mentioned

92. What is the unit of slope? [C]

A) m B) cm C) Radian or Degree D) None of the mentioned

93. 1 degree = [D]

A) 0.0175 radian B) 2π/180 radian C) π/180 radian D) 0.0175 radian & 2π/180 radian

94. 1 radian = [B]

A) 180 degree B) 180/π degree C) 180/2π degree D) 360/π degree

95. At any point, vertical distance between the axis of original beam and the axis of deflected beam is known as _____ at that point. [A]

A) Deflection B) Slope C) Both Deflection and Slope D) None of the mentioned

96. At the free end of cantilever beam, deflection is _____ and slope is _____. [A]

A) Maximum, Maximum B) Zero, Maximum C) Maximum, Zero D) Zero, Zero

97. At the fixed end of cantilever beam, deflection is _____ and slope is _____. [D]

A) Maximum, Maximum B) Zero, Maximum C) Maximum, Zero D) Zero, Zero

98. At the both ends of simply supported beam, deflection is _____ and slope is _____. [B]

A) Maximum, Maximum B) Zero, Maximum C) Maximum, Zero D) Zero, Zero

99. At the centre of simply supported beam, deflection is _____ and slope is _____. [C]

A) Maximum, Maximum B) Zero, Maximum C) Maximum, Zero D) Zero, Zero

100. Maximum slope in a cantilever beam with a moment M at the free end will be [C]

A) 3ML/EI B) 2ML/EI C) ML/EI D) None of the mentioned

101. Difference in slopes between two points A and B by the moment area method is given by [C]

A) Area of BMD between A and B/2EI B) Area of BMD between A and B/3EI C) Area of BMD between A and B/EI D) None of the mentioned

102. Macaulay's method is more convenient for beams carrying [C]

A) Single concentrated load B) UDL C) Multi-loads D) None of the mentioned

103. Slope is found by moment area method by using [D]

A) First moment of the area B) Second moment of the area C) Third moment of the area D) None of the mentioned

104. Deflection is found by moment area method by using [A]

A) First moment of the area B) Second moment of the area C) Third moment of the area D) None of the mentioned

105. Which one method is the best for finding slope and deflection [B]

A) Double integration method B) Macaulay 's method C) Strain energy method D) None of the mentioned

106. Slope at a point in a beam is the [B]

A) Vertical displacement B) Angular displacement C) Horizontal displacement D) None of the mentioned

107. Deflection at a point in a beam is the [A]

A) Vertical displacement B) Angular displacement C) Horizontal displacement D) None of the mentioned

108. Maximum deflection in a S.S. beam with W at centre will be [C]

A) WL^3/36EI B) WL^3/24EI C) WL^3/48EI D) None of the mentioned

109. Maximum deflection in a cantilever beam with a moment M at the free end will be [C]

A) 3M^2L/2EI B) 2M^2L/2EI C) M^2L/2EI D) None of the mentioned

110. Difference in deflections between two points A and B by the moment area method is given by [B]

A) Area of BMD between A and . XB/2EI B) Area of BMD between A and . XB /EI C) Area of BMD between A and . XB /3EI D) None of the mentioned

111. Props can be used in [C]

A) S.S.Beam B) Cantilever beam C) S.S. beam as well as cantilever D) None of the mentioned

112. Identify the differential equation for finding slope and deflection [C]

A) EI d^2y/dx^2 = –M B) EI d^2y/dx^2= +M C) EI d^2y/dx^2 = ±M D) None of the mentioned

113. Maximum slope in a S.S. beam with W at centre will be [A]

A) WL^2/16EI B) WL^2/32EI C) WL^2/48EI D) None of the mentioned

114. Maximum deflection in a S.S. beam with UDL ‘w’ over the entire span will be [B]

A) 3wL^4/584EI B) 5wL^4/384EI C) 7wL^4/384EI D) None of the mentioned

115. Maximum deflection in a cantilever beam with W at the free end will be [C]

A) WL^3/6EI B) WL^3/2EI C) WL^3/3EI D) None of the mentioned

116. Maximum slope in a cantilever beam with W at the free end will be [B]

A) WL^2/4EI B) WL^2/2EI C) WL^2/8EI D) None of the mentioned

117. Maximum deflection in a cantilever beam with UDL ‘w’ over the entire length will be [C]

A) WL^4/4EI B) WL^4/12EI C) WL^4/8EI D) None of the mentioned

118. Maximum slope in a cantilever beam with with UDL ‘w’ over the entire length will be [B]

A) WL^3/9EI B) WL^3/6EI C) WL^3/3EI D) None of the mentioned

119. A simply supported laterally loaded beam was found to deflect more than a specified value. Which of the following measures will reduce the deflection? [A]

A) Increase the area moment of inertia B) Increase the span of the beam C) Select a different material having lesser modulus of elasticity D) Magnitude of the load to be increased

120. The second moment of a circular area about the diameter is given by D is the diameter). [D]

A) πD^4/4 B) πD^4/16 C) πD^4/32 D) πD^4/64

121. A cylindrical section having no joint is known as _____ [B]

A) Proof section B) Seamless section C) Target section D) Mown section

122. Maximum shear stress in thin cylindrical shell be _____ [C]

A) pr/2t B) pr/3t C) pr/4t D) pr/ 5t

123. Circumferential stress is same as of _____ [A]

A) Hoop stress B) Longitudinal stress C) Transverse stress D) Phreatic stress

124. The hoop stress is also known as _____ [C]

A) Parametrical stress B) Surface stress C) Circumferential stress D) Lateral stress

125. A vessel is said to be thin if [B]

A) Its wall has less thickness B) Stresses are uniform over the entire thickness C) Stresses vary at inner and at outer radius D) None of the mentioned

126. Vessel is said to be thin if [C]

A) d/t =20 B) d/t=10 C) d/t >20 D) d/t >10

127. Hoop stress in a thin vessel is [A]

A) pd/2t B) pd/4t C) pd/3t D) None of the mentioned

128. Strength of a rivet is [D]

A) Strength in shear B) Strength in crushing C) Strength in tension D) None of the mentioned

129. Which stress is the least in a thin shell [C]

A) Longitudinal stress B) Hoop stress C) Radial stress D) None of the mentioned

130. Among the cylindrical and spherical thin vessels of same material, diameter and pressure which has the lesser thickness [B]

A) Cylindrical shell B) Spherical shell C) Cylindrical shell with semi spherical heads D) None of the mentioned

131. Radial stress in a thin shell is given by [D]

A) pd/2t B) pd/4t C) pd/3t D) None of the mentioned

132. Thin cylindrical shell under internal pressure can fail by [C]

A) Shear B) Compression C) Tension D) None of the mentioned

133. A thin spherical shell under internal pressure will fail under [C]

A) Maximum shear stress B) Principal compressive stress C) Principal tensile stress D) None of the mentioned

134. A thin cylindrical under internal pressure can fail along the [C]

A) Longitudinal joint B) Circumferential joint C) Longitudinal as well as circumferential joint D) None of the mentioned

135. What is the ratio of hoop stresses in a spherical vs cylindrical shell of same diameter, thickness and under same pressure? [C]

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

136. Stresses in a thin cylindrical shell under internal pressure is independent of [C]

A) Diameter B) Thickness C) Length D) Diameter and thickness

137. Design of a thin shell under pressure is done on the basis of [C]

A) Radial stress B) Longitudinal stress C) Hoop stress D) All the three stresses

138. Which is most predominant type of failure in a thin shell? [D]

A) Bearing failure B) Compression failure C) Crushing failure D) None of the mentioned

139. Which one is most important in a thin shell? [C]

A) d/t <20 B) d/t> 10 C) Stresses are uniform D) None of the mentioned

140. Hoop strain in a thin shell is [D]

A) σh /E B) σl /E C) 3 σh /E D) None of the mentioned

141. Longitudinal strain in a thin shell is [D]

A) σh /E B) σL/E C) σr /E D) None of the mentioned

142. Considering σh, σl and σr, maximum shear stress will be [C]

A) (σh—σl) /2 B) (σl— σh) /2 C) (σh + σr) /2 D) None of the mentioned

143. Value of Radial stress in a thin shell is [D]

A) pD/2t B) pD/4t C) pD/3t D) None of the mentioned

144. In a thin shell which stress is negligible [C]

A) Hoop Stress B) Longitudinal Stress C) Radial Stress D) None of the mentioned

145. In a thick shell which stress is negligible [B]

A) Hoop Stress B) Longitudinal Stress C) Radial Stress D) None of the mentioned

146. Maximum shear stress in a thick shell is [B]

A) (σh+ σl)/2 B) (σh+ σr)/2 C) (σh– σl)/2 D) None of the mentioned

147. Which stress is constant in a thick shell [B]

A) σh B) σl C) σr D) None of the mentioned

148. The thick shell is made from laminations to get [C]

A) Increased stresses B) Decreased stresses C) Uniform stresses D) None of the mentioned

149. A thick cylinder under external fluid pressure’ p0′ will have maximum stress at the [B]

A) Outer radius B) Inner radius C) Mean radius D) None of the mentioned

150. A thick cylinder under internal fluid pressure' pi will have maximum stress at the [B]

A) 1. Outer radius B) 2. Inner radius C) 3. Mean radius D) None of the mentioned

151. Hoop shrinking in thick cylinders is done to achieve [C]

A) Increased stresses B) Decreased stresses C) Uniform stresses D) None of the mentioned

152. The maximum strain in a thick cylinder under pi will be [B]

A) σh/E+μ σl/E B) σh/ E+ μσr/E C) σr/E+μ σl/E D) None of the mentioned

153. Tangential stress in a cylinder is given by [symbols have their usual meanings]. [A]

A) PD/2t B) 2PD/t C) PD/4t D) 4PD/t

154. Longitudinal stress in a cylinder is given by [symbols have their usual meanings]. [C]

A) PD/2t B) 2PD/t C) PD/4t D) 4PD/t

155. A seamless cylinder of storage capacity of 0.03mis subjected to an internal pressure of 21MP The ultimate strength of material of cylinder is 350N/mm².Determine the length of the cylinder if it is twice the diameter of the cylinder. [A]

A) 540mm B) 270mm C) 400mm D) 350mm

156. A seamless cylinder of storage capacity of 0.03mis subjected to an internal pressure of 21MP The ultimate strength of material of cylinder is 350N/mm².Determine the thickness of the cylinder if it is twice the diameter of the cylinder. [C]

A) 12mm B) 4mm C) 8mm D) 16mm

157. Cylinder having inner diameter to wall thickness ratio less than 15 are [B]

A) Thin cylinders B) Thick Cylinders C) Moderate cylinders D) none of the mentioned

158. Lame's equation used to find the thickness of the cylinder is based on maximum strain failure. [B]

A) True B) False C) None of the mentioned D) depends on other factors

159. The piston rod of a hydraulic cylinder exerts an operating force of 10kN. The allowable stress in the cylinder is 45N/mm². Calculate the thickness of the cylinder using Lame's equation. Diameter of the cylinder is 40mm and pressure in cylinder is 10MP [C]

A) 2.05mm B) 4.2mm C) 5.07mm D) None of the listed

160. In a thick-cylinder pressurized from inside, the hoop stress is maximum at [C]

A) The center of the wall thickness B) the outer radius C) the inner radius D) both the inner and the outer radii