

Unit 7 - Week 5

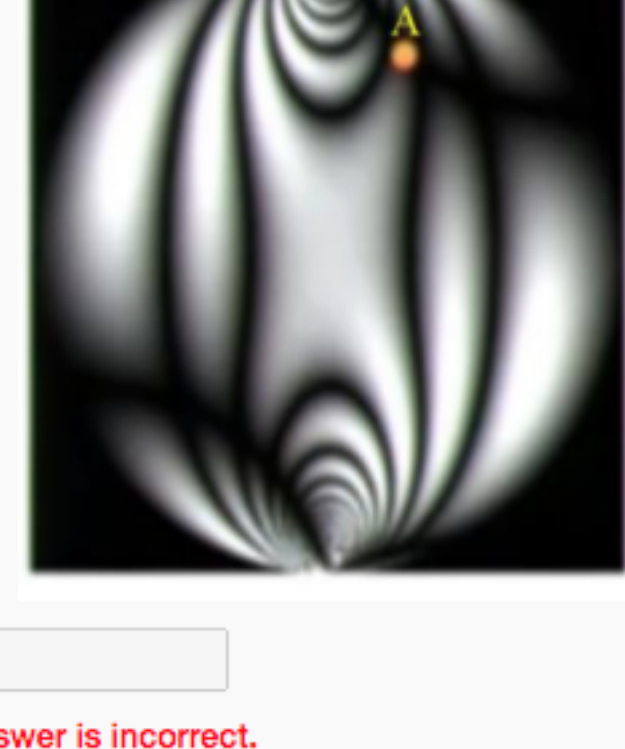
Course outline
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Assignment 5

The due date for submitting this assignment has passed. **Due on 2020-03-04, 23:59 IST.**
 As per our records you have not submitted this assignment.

1) The following image of a model is obtained by viewing it through a plane polariscopes with the elements crossed and analyzer oriented at 30° to the reference axis.

What is the principal stress orientation (in degrees) at point A indicated in the figure?



No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: Numeric) 30 1 point

2) The method of using analyzer itself as a compensator is called 1 point

- Babinet Soleil compensation
- Tardy's method of compensation
- Analyzer compensation
- Polariscopes compensation

No, the answer is incorrect. Score: 0
 Accepted Answers: Tardy's method of compensation

3) To find fringe order at any arbitrary point using compensation techniques, which of the information are required 1 point

- Neighborhood fringe order
- Isoclinic angle at the point of interest
- Isoclinic angle at the boundary
- Wavelength of light used

No, the answer is incorrect. Score: 0
 Accepted Answers: Neighborhood fringe order, Isoclinic angle at the point of interest

4) When compared to the plane polariscopes, two additional elements (quarter waveplates) in circular polariscopes helps in removing the ____ 1 point

- Isochromatic contours
- Isoclinic contours
- None of the above

No, the answer is incorrect. Score: 0
 Accepted Answers: Isoclinic contours

5) The retardation caused by the model when a white light source is passed through it at a point having fringe order zero is 1 point

- Cannot predict
- 577 nm
- 1730 nm
- zero

No, the answer is incorrect. Score: 0
 Accepted Answers: zero

6) To find the isoclinic angle at a point of interest, one should follow which of the following steps. Select the option representing correct sequence 2 points

- Keep the model in a circular polariscopes
- Keep the model in a plane polariscopes
- Rotate the analyzer polarizer crossed combination until a fringe passes through the point of interest
- Rotate the First and Second quarter waveplate combination until a fringe passes through the point of interest
- Rotate the analyzer clock wise
- Orientation of the analyzer gives the isoclinic angle
- Orientation of the 2 nd quarter waveplate gives the isoclinic angle

- i – iv – vii
- ii – iii – vi
- i – iii – v – vi
- ii – v – iv – vii

No, the answer is incorrect. Score: 0
 Accepted Answers: ii – iii – vi

Different setup of polarizing elements are given in the table. Identify the background of the model for the corresponding setups. Enter D for dark and B for bright

Set up	Polarizer and Analyzer	Quarter wave plates
1.	Crossed	None
2.	Crossed	Crossed
3.	Parallel	Parallel
4.	Crossed	Parallel
5.	Parallel	Crossed

7) Setup 1 = _____ 0.4 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) D

8) Setup 2 = _____ 0.4 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) D

9) Setup 3 = _____ 0.4 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) D

10) Setup 4 = _____ 0.4 points

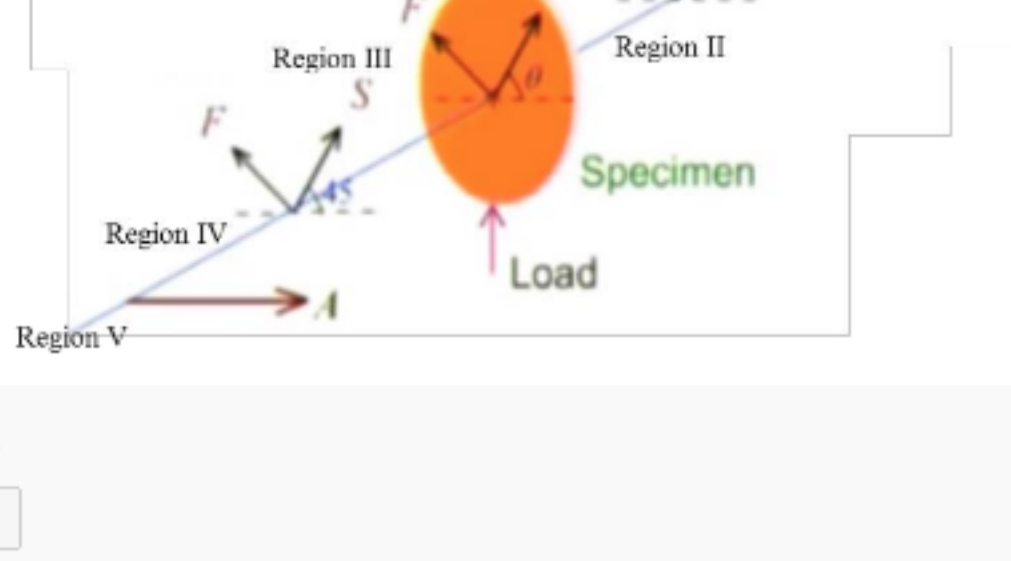
No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) B

11) Setup 5 = _____ 0.4 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) B

A model loaded in a circular polariscopes arrangement is shown in figure. At a point 'X' in the model, the fringe order is found to be 3. Different regions are marked in the figure. Identify the state of polarization of light passing through point 'X' at each region enter the appropriate letter (A, B, C, D, E) indicating the state of polarization.

- A. Plane polarized
- B. Circularly polarized
- C. Elliptically polarized
- D. Unpolarized
- E. No light



12) Region I = _____ 0.4 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) A

13) Region II = _____ 0.4 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) B

14) Region III = _____ 0.4 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) B

15) Region IV = _____ 0.4 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) A

16) Region V = _____ 0.4 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) E

17) It is decided to find the fringe order at a point in the model using Babinet Soleil compensation technique. Steps to be followed are given indicated by letters. Arrange the steps suitably. Enter the letters without comma or spacing (Example: ABCDE) 2 points

- Align the compensator at the isoclinic angle
- Rotate the knob in the compensator until a fringe is seen
- Find the isoclinic angle at point of interest
- Note down the counter reading
- Find fringe order from the graph supplied by the manufacturer

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: String) CABDE

Mention how to estimate stress concentration factor (SCF) from photoelastic data. Figure shows the fringe pattern observed for a finite plate of dimensions (Length = 230 mm, width = 36 mm, thickness = 6 mm) with a hole of diameter 12 mm subjected to an axial tensile load of 288 N. The far-field fringe order for this load is found to be 0.86. Near the boundary of the hole, fringe order 2 was found to move and occupy the boundary of the hole when the analyzer is rotated by an angle of 83 degrees. Find the SCF

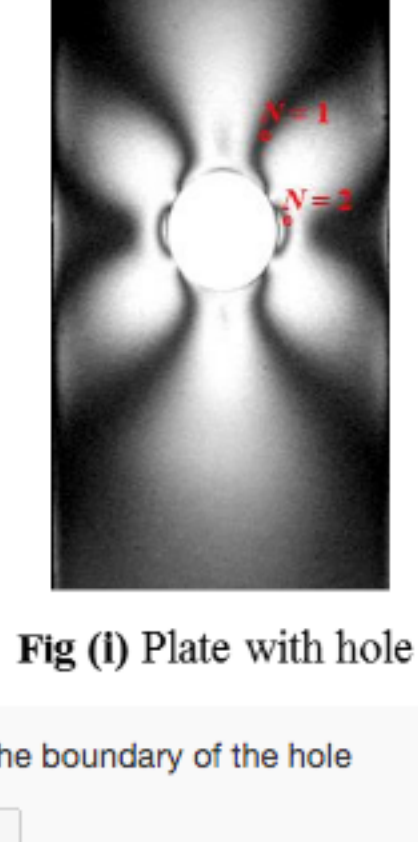


Fig (1) Plate with hole

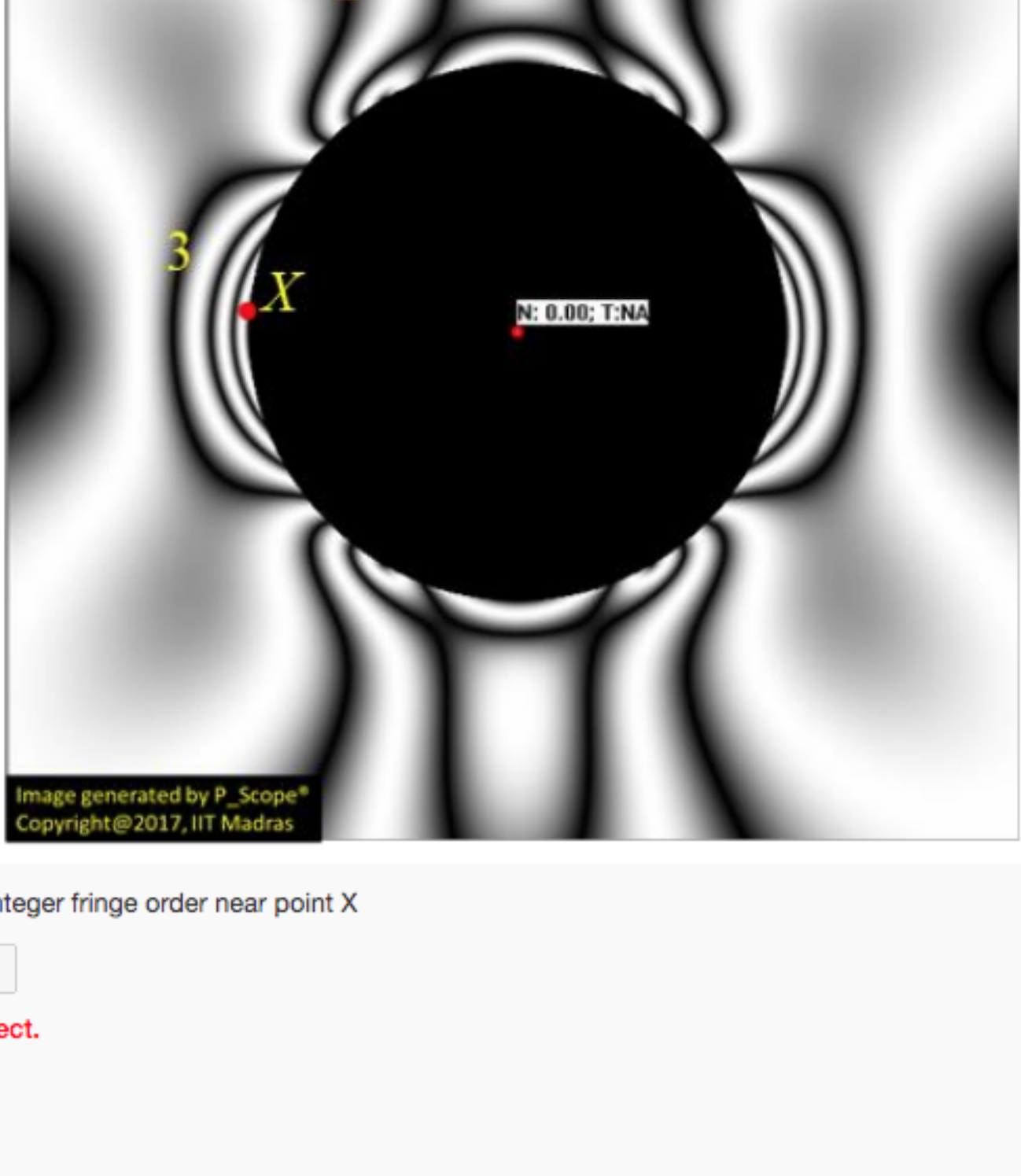
18) Total fringe order at the boundary of the hole 1 point

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: Range) 2.4,2.5

19) Stress Concentration Factor 1 point

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: Range) 2.80,2.90

It is required to find the fringe order at point 'X' in the model using fringe order of hole in plate subjected to tension. The fringes observed under monochromatic and white light source are shown in the figure with the fringe order marked. To find the fringe order Tardy's method of compensation is used. At the point of interest, the isoclinic angle was 0°. When analyzer was rotated by 45° from the reference axis, a fringe order emerged from the boundary and reached the point of interest



20) What is the closest integer fringe order near point X 1 point

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: Range) 5.00,6.00

21) Find the fractional fringe order at the point of interest 2 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: Range) -0.30,0.30

22) Find the total fringe order at the point of interest 2 points

No, the answer is incorrect. Score: 0
 Accepted Answers: (Type: Range) 5.00,6.00