<table>
<thead>
<tr>
<th>S. No.</th>
<th>Table no.</th>
<th>Table name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Table 2.1</td>
<td>Conditions of Vacuum - Pressure Impregnation</td>
<td>48</td>
</tr>
<tr>
<td>2.</td>
<td>Table 3.1</td>
<td>Performance rating of panels for attack by Teredinids, other molluscs and crustaceans after an exposure period of six months in the estuary</td>
<td>65</td>
</tr>
<tr>
<td>3.</td>
<td>Table 3.2</td>
<td>Rating for attack by Teredinids, other molluscs and crustaceans after an exposure period of twelve months in the estuary</td>
<td>66</td>
</tr>
<tr>
<td>4.</td>
<td>Table 3.3</td>
<td>Rating system for attack by Teredinids, other molluscs and crustaceans after an exposure period of eighteen months in the estuary</td>
<td>67</td>
</tr>
<tr>
<td>5.</td>
<td>Table 3.4</td>
<td>Rating system for attack on panels (that are scraped of monthly to remove fouling) by Teredinids, other molluscs and crustaceans after an exposure period of eighteen months in the estuary</td>
<td>68</td>
</tr>
<tr>
<td>6.</td>
<td>Table 3.5</td>
<td>The percentage area and volume of the panels deteriorated during 6, 12 and 18 months of immersion in the field</td>
<td>69</td>
</tr>
<tr>
<td>7.</td>
<td>Table 5. 1</td>
<td>Tukey’s test results for the (a) Compression</td>
<td>101-</td>
</tr>
</tbody>
</table>
Strength at Maximum Load of (1) untreated rubber wood panels, CCA treated panels to retention of (2) 16 kg m\(^{-3}\) (3) 29 kg m\(^{-3}\) (4) 42 kg m\(^{-3}\) (5) dual treated panels

8. Table 5.2. Tukey’s test results for the Compression Strength at Maximum Load of (a) untreated rubber wood panels, CCA treated panels to retention of (b) 16 kg m\(^{-3}\) (c) 29 kg m\(^{-3}\) (d) 42 kg m\(^{-3}\) (e) dual treated panels; exposed in cochin estuary for durations (1) unexposed (2) 6months (3) 12 months (4) 18 months

9. Table 6.1. Hydrographical parameters of water used for the study

10. Table 6.2. Bioconcentration factor (B.C.F.) for copper, chromium and arsenic in black clam tissue

11. Table 7.1. Hydrographical parameters in the aquarium tanks

12. Table 7.2. Mean concentration of copper, chromium and arsenic in liver and muscles of Oreochromis mossambicus over 6 months (Concentration of metals in µg.g\(^{-1}\) wet wt.)

13. Table 7.3. Mean concentration of copper, chromium and arsenic in gills and gonads of Oreochromis
mossambicus over 6 months (Concentration of metals in \(\mu g.g^{-1}\) wet wt.)

14. Table 7.4. Bioconcentration of copper, chromium and arsenic in gills of *Oreochromis mossambicus* (Concentration of metals in \(\mu g\ g^{-1}\) wet wt.)

15. Table 7.5. Bioconcentration of copper, chromium and arsenic in liver of *Oreochromis mossambicus* (Concentration of metals in \(\mu g\ g^{-1}\) wet wt.)

16. Table 7.6. Bioconcentration of copper, chromium and arsenic in muscles of *Oreochromis mossambicus* (Concentration of metals in \(\mu g\ g^{-1}\) wet wt.)

17. Table 7.7. Bioconcentration of copper, chromium and arsenic in gonads of *Oreochromis mossambicus* (Concentration of metals in \(\mu g\ g^{-1}\) wet wt.)

18. Table 7.8. Tukey’s test results showing significance of changes in copper concentration between treatment types studied

19. Table 7.9. Tukey’s test results showing significance of changes in chromium concentration between treatment types studied

20. Table 7.10. Tukey’s test results showing significance of changes in arsenic concentration between
treatment types studied

21. Table 7.11. Tukey’s test results showing significance of changes in copper concentration between tissue types studied

22. Table 7.12. Tukey’s test results showing significance of changes in chromium concentration between tissue types studied

23. Table 7.13. Tukey’s Test results showing significance of changes in arsenic concentration between tissue types studied

24. Table 8.1. Tukey’s test results showing statistical significance of copper concentration in barnacle tissues collected from eight different treatment types

25. Table 8.2. Tukey’s test results showing statistical significance of chromium concentration in barnacle tissues collected from eight different treatment types

26. Table 8.3. Tukey’s test results showing statistical significance of arsenic concentration in barnacle tissues collected from eight different treatment types
27. Table 8.4. Tukey’s test results showing statistical significance of copper concentration in barnacle shells collected from eight different treatment types

28. Table 8.5. Tukey’s test results showing statistical significance of chromium concentration in barnacle shells collected from eight different treatment types

30. Table 8.6. Tukey’s test results showing statistical significance of arsenic concentration in barnacle shells collected from eight different treatment types

31. Table 9.1. Primer analysis results

Table 9.2. Average % similarity in total biomass between treatment types
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Fig. no.</th>
<th>Figure Caption</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Fig. 2.1</td>
<td>Map showing the location of the test site</td>
<td>48</td>
</tr>
<tr>
<td>2.</td>
<td>Fig. 3.1</td>
<td>Fortnightly variations in the water temperature, atmospheric temperature and salinity during the study period</td>
<td>70</td>
</tr>
<tr>
<td>3.</td>
<td>Fig. 3.2</td>
<td>Fortnightly variations in dissolved oxygen and turbidity during the study period</td>
<td>70</td>
</tr>
<tr>
<td>4.</td>
<td>Fig. 3.3</td>
<td>Internal destruction of the panels after exposure for 18 months in the estuary</td>
<td>71</td>
</tr>
<tr>
<td>5.</td>
<td>Fig. 3.4</td>
<td>X-ray radiograph showing internal destruction of the panels</td>
<td>71</td>
</tr>
<tr>
<td>6.</td>
<td>Fig. 4.1</td>
<td>Light Microscopic image of untreated rubber wood samples</td>
<td>81</td>
</tr>
<tr>
<td>7.</td>
<td>Fig. 4.2</td>
<td>Light microscopic image of CCA treated panel to retention of 16 kg m^-3</td>
<td>82</td>
</tr>
<tr>
<td>8.</td>
<td>Fig. 4.3</td>
<td>Light microscopic image of CCA treated panels with retention of 29 kg m^-3</td>
<td>82</td>
</tr>
<tr>
<td>9.</td>
<td>Fig. 4.4</td>
<td>Light microscopic image of CCA treated panels to retention of 42 kg m^-3</td>
<td>83</td>
</tr>
</tbody>
</table>
10. Fig. 4.5. Light microscopic image of dual treated panels

11. Fig. 5.1. Compressive strength of untreated and treated rubber wood panels of exposed and estuarine exposed for 6, 12 and 18 months

12. Fig. 5.2. FTIR spectra of a. untreated rubber wood samples b. CCA (16 kg m$^{-3}$ retention) c. CCA (29 kg m$^{-3}$ retention) d. CCA (42 kg m$^{-3}$ retention) e) dual treated samples

13. Fig. 5.3. FTIR spectra of untreated rubber wood samples (a. unexposed, b. marine exposed 6 months, c. marine exposed 12 months d. marine exposed 18 months)

14. Fig. 5.4. FTIR spectra of CCA (16 kg m$^{-3}$ retention) treated rubber wood samples (a. unexposed, b. marine exposed for 6 months, c. marine exposed for 12 months d. marine exposed for 18 months)

15. Fig. 5.5. FTIR spectra of CCA (29 kg m$^{-3}$ retention) treated rubber wood samples (a. unexposed, b. marine exposed for 6 months, c. marine exposed for 12 months d. marine exposed for 18 months)

16. Fig. 5.6. FTIR spectra of CCA (42 kg m$^{-3}$ retention) treated rubber wood samples (a. unexposed, b. marine exposed for 6 months, c. marine exposed for 12
months, d. marine exposed for 18 months)

17. Fig. 5.7. FTIR spectra of dual treated rubber wood samples (a. unexposed, b. marine exposed for 6 months, c. marine exposed for 12 months, d. marine exposed for 18 months)

18. Fig. 6.1. a) Laboratory set up of toxicity studies b) clams exposed to CCA solution

19. Fig. 6.2. The percentage mortality of black clams at different concentrations of copper

20. Fig. 6.3. The percentage mortality of black clams at different concentrations of chromium

21. Fig. 6.4. The percentage mortality of black clams at different concentrations of arsenic

22. Fig. 6.6. The percentage mortality of black clams at different concentrations of Chromated Copper Arsenate (CCA).

23. Fig. 6.5. *Villorita cyprinoides* exposed in control tank (a) and (b) CCA solution

24. Fig. 7.1. Experimental panels immersed in aquaria where fishes are grown

25. Fig. 7.2. Tilapia removed from the tank

26. Fig. 7.3. Visual observation of gills for deformities
27. Fig. 7.4. Gills, liver, muscle and gonadial tissues dissected from Tilapia

28. Fig. 7.5. Concentration of copper, chromium and arsenic in water exposed to dip treated CCA and marine plywood panels (all values in ppm)

29. Fig.8.1. Mean concentration of copper, chromium and arsenic in tissues of barnacles collected monthly for 18 months from preservative treated estuarine exposed panels (Mean ± SD)

30. Fig. 8.2. Mean concentration of copper, chromium and arsenic in shells of barnacles collected monthly for 18 months from preservative treated estuarine exposed panels (Mean ± SD)

31. Fig. 9.1. The Panels before and after immersion in the Cochin estuarine waters for 18 months

32 Fig. 9.1. a) Panels after immersion in the Cochin estuarine waters for 18 months b) a close view of foulers on the panels

33. Fig. 9.2. Numerical occurrence of *Sphaeroma* spp. on the preservative treated panels exposed in the Cochin estuary at Pre monsoon (Jan - May), Monsoon (June - Sep) and Post monsoon (Oct - Jan) periods –
average salinity respectively 8.5 ‰, 1.45 ‰, 5.8 ‰.

34. Fig. 9.3. Major biofouling organisms observed on the panels

35. Fig. 9.4. Bubble plot depicting the numerical abundance of major taxonomic groups of fouling organisms (a) barnacles b) polychaetes c) crustaceans d) hydroids e) bivalves

36. Fig. 9.4 Percentage coverage of fouling organisms on exposed panels

37. Fig. 9.5. Wet weight biomass of epibiotic organisms collected from different type of panels exposed for 6, 12 and 18 months (Mean ± Std. Error)

38. Fig. 9.6. Bubble plot depicting the biomass of fouling organisms on the exposed panels for a) 6 months, b) 12 months, c) 18 months d) dendrogram showing the average similarity between the treatment types.

39. Fig. 9.7. Dominance plot depicting the dominance of five key abundant groups viz. hydroids, polychaetes, crustaceans including wood borers, barnacles and bivalves after 6, 12 and 18 months of exposure

40. Fig. 9.8. Dominance plot depicting the abundance of organisms during 6, 12 and 18 months