UNIT 1

PART A

1) Define Maintenance?
2) Define Repair?
3) Define Rehabilitation?
4) What are the important aspects of rehabilitation?
5) What are the importances of maintenance?
6) Define Distress in a structure?
7) What are the causes of distress in structure??
8) What are the classifications of distress?
9) Define Quality assurance?
10) What is the need of quality assurance?
11) Define the term Strength of concrete?
12) What are the steps in maintenance?
13) What are the types of Maintenance?
14) Define Structural Appraisal?
15) What are the effects of Structural Appraisal?
16) Define Economic Appraisal?
17) What are the uses of Economic Appraisal?
18) What are the effects of Climate in concrete structures?
19) What are the effects of chemicals in concrete Structures?
20) What are the effects of wear and erosion in concrete?
21) What are the uses of inspection buildings?
22) What are the methods of inspection?
23) Write any four Non-Destructive tests in concrete?
24) Write any four durability test for concrete?

PART B

1) Explain in detail about the facts of maintenance and importance of maintenance?

2) Explain briefly the assessment procedure for evaluating a damaged structure?

3) Write the types of Defects in concrete, Masonry Structures, Plastering and in Steel Structures?

4) What is Quality assurance in concrete construction? Discuss QA of concrete construction?

5) List and explain the parameters affecting the quality of concrete construction?

6) Define structural Appraisal and explain with a case study?

7) Explain in Detail about the Economic appraisal? Justify why Economic Appraisal should be carried out?

8) Explain the defects due to climate, chemicals, wear and erosion?

9) Explain the methods of inspection? Explain any 4 non-destructive test in concrete?

10) Explain the steps Carried out in inspection?

UNIT 2
PART A

1) What are the causes of Cracks?
2) Write the classification of cracks based on width?
3) Define crazing?
4) Define active Cracks?
5) Define Dormant Cracks?
6) Write a short note on thermal conductivity?
7) What is thermal Diffusivity?
8) Define Coefficient of thermal expansion?
9) What are remedial measures for cracks in buildings?
10) What are the effects of unequal loading in concrete structures?
11) What are the effects of vegetation in buildings?
12) What are the remedial measures to reduce the effects of vegetation and trees?
13) What are the types of trees based on their life cycle?
14) What are the necessary criteria for trees to grow?
15) How the foundation movement results in cracks?
16) Define permeability?
17) Define porosity?
18) List the techniques for repairing cracks?
19) What is stitching?
20) What is overlays and blanketing?
21) Explain routing and sealing?
22) Define Epoxy injection?
23) Define Carbonation?

PART B

3) Explain the techniques for repairing cracks?

4) Explain the causes of cracks and how to minimize it?

3) Explain in detail about thermal and shrinkage cracks?

4) Explain how and what are the effects of unequal loading in building?

5) Write briefly how vegetation and trees results in building crack?

6) Explain the reason of cracks due to chemicals and foundation movements?

7) Explain briefly about epoxy injection process?

Unit 3

Part A

1. Explain raising Dampness?

2. Suggest suitable materials for DPC.

3. What is overlay?

4. What are the sources of dampness?

5. Distinguish between Flexible and Rigid Coatings?

6. What are chemicals used for coatings?

7. What are the remedial treatments for moisture penetration?

8. Give some concrete materials used to overcome weathering action on concrete?

9. List some materials used as protective surface coatings.

10. What are use of curing compounds?

11. Write the use of anti fungus admixtures?

12. What are the uses of sealants?

13. What are the causes and effects of dampness in building? Explain the remedies.

14. What method of waterproofing of RCC roof.

15.What are the characteristics of good coatings?

16.What is meant by Ferrocement?

17. How can use prevent the effect of freezing and thawing in concrete?

18. Write any two tests for assessment of frost damage?

19.What is the application of Ferro-cement?

Part -B

1. What are the ill effects of moisture movement into the brick walls? How will you restore ineffective DPC?
2. An RCC roof slab and a Madras terrace roof, both are under water leakage problem. Suggest suitable remedial measures for both.
3. What are the causes and effects of dampness in building? Explain the remedies.
4. Describe method of waterproofing of RCC roof.
5. Describe in detail about the weathering action on concrete.
6. Explain the Flexible and Rigid coatings with a case study?
7. Give a case study of leakage of concrete slabs and how will you control the leakage?
8. A RCC bridge is under distress showing wide cracks of more than 1 cm, due to some causes such as freezing-thaw effect, poor design and detailing, improper cover for rebars, drying shrinkage etc, as an Engineer how would you repair the bridge and make it functional. Justify your recommendations for the suggestion of remedies.

Unit 4

Part A

1. What are the causes of deterioration?
2. How deterioration occurs due to corrosion?
3. Mention any two possible reasons for spalling of cover concrete?
4. Under what circumstances stones will discolour?
5. Discuss about the environment effects which leads to deterioration of concrete structure?
6. How can we determine the cause for deterioration of concrete structure?
7. Discuss about the design and construction errors leading to deterioration of a structure.
8. Tabulate the cover to be provided for various exposure conditions as per IS code.
9. What do you mean by deterioration?
10. Explain the types of deterioration in steel structures?
11. Give the equation explaining mechanism of corrosion ?

12. What are the chemical preservatives used in masonry structure to avoid discoloration?

13. Explain the mechanism of cathodic protection?

14. What do you mean by weathering corrosion?

15.Give one example in each for corrosion inhibitors and corrosion coating.?

16.Name any two atmospheric agents responsible for corrosion.

17. Discuss about the design and construction errors leading to deterioration of a structure.

18. Define corrosion inhibitors and corrosion?

19. Give examples for corrosion inhibitors.

20. What is the use of corrosion inhibiting chemicals?

Part -B

9. Explain the various causes for deterioration of concrete structures
10. Explain the various corrosion protection methods.
11. Briefly explain about rust eliminators and foam concrete and its preparation process with advantages.
12. An RCC building is under distress due to rebar corrosion. Column beams and slabs are under cracks. The age of the building is 25 years. Give the flowchart for diagnosis and suitable repair scheme.
13. A steel structure is to be erected in a place with corrosion ambience. Suggest suitable preventive measure to keep the corrosion problem in control.
14. A RCC structure constructed in deep sea is found to show distress due to corrosion of rebars. As a maintenance Engineer you are left with the responsibility of repairing, it and further maintaining it. Compare the various methods of repair arid suggest suitable measures for its rehabilitation with justification.
15. Discuss the role of FRP in corrosion resistant in RCC structures.
16. Explain about the distress and its remedial measures in masonry structure.

Unit 5

Part A

1. What are the demerits of plating technique used in strengthening RC elements?

2. How to ensure bonding between a new layer of concrete over the existing old concrete?

3. What is Guniting?

4. What are the two types of process in Shotcrete?

5. What are the stages in dry mix process in shotcrete?

6. How can we determine the cause for deterioration of concrete structure?

7. What is shotcrete?

8. Give a brief note on shoring and underpinning.

9. Define stitching?

10. What do you mean by blanketing?

11. Give short note on Jacketing.

12. Give an account on how metal bonding is done on concrete member

13. How clamps are used to overcome low member strength?

14. Define grouting.?

15. Give a short note on epoxy coatings.

16. Give a brief account on routing and sealing.

17. Define dry pack.

18. What are the advantages of shotcrete?

19. List the methods to overcome low member strength in concrete structures.

20. Give two reasons for strengthening of structure say 'concrete structures'.

Part -B

17. An RCC beam needs to be strengthened to take additional load. Suggest necessary strengthening method including materials.
18. An old masonry building constructed on clayey bed is under distress due to foundation failure/settlement. Suggest suitable foundation strengthening methods..
19. Explain the technique of adding external reinforcement for strengthening. Explain the importance of strengthening in buildings.
20. Explain the process of epoxy injection. Also explain routing and scaling with sketches.
21. Explain different methods of strengthening the concrete structures against earthquake.
22. With simple sketch explain the methods of improving the strength of existing column and beams.

23. Write with an example how underpinning is to be done if the client want to increase the number of floors in his building?
24. Explain in detail about underpinning and its methods.
25. Explain the various techniques to repair spalling and disintegration of concrete.