

2. List the different types of **drilling equipments** for the construction of tunnel. Explain **any two types** with the help of neat sketches.
3. How the amount of dust can **be controlled** in tunnels? Discuss equipments used for **dust control**.

—x—

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ECE-044

(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID : 100759

Roll No

B.Tech.

(SEM. VII) THEORY EXAMINATION, 2015-16

TUNNEL ENGINEERING

Time : 3 hours]

[Total Marks : 100]

Note : Attempt **all** Question as per the Instruction given

Section-A

1. Attempt **all** questions. Write in brief: (10×2=20)
- a) Discuss the different types of lining in tunnel engineering. Explain any two.
 - b) Write the different types of shape of tunnel commonly used and describe any two.
 - c) Difference between Hard rock and Soft rock.
 - d) Why is locate the central line on the ground in the surveying of tunnel?
 - e) What are the survey operations for a tunnel?

- f) What is steaming of the bore holes?
- g) What are the methods of soft ground tunnel? Describe any one.
- h) What is mucking and difference between mucking by hand & mucking by machines?
- i) What is the different type of locomotives? Explain any two.
- j) Why ventilation used in tunnel engineering. Define any two methods of ventilation

Section-B

Attempt any five questions from this section. (10×5=50)

2. What is tunnel? Describe the advantages and disadvantages of tunnels as a means of communication.
3. Describe various types of drill-bits. What are the advantages of detachable bits.
4. Discuss the following methods of tunneling in farm grounds :
 - (i) Full Face method.
 - (ii) Top heading and benching method.

5. Describe various type of expolsives used in tunneling.
6. Explain Auger Bore Micro Tunneling in detail.
7. What are the locations, where lighting arrangement to be made in tunnels. Also describe the various types of lightings.
8. Write Short Note on:
 - (i) Rock bolting
 - (ii) Austrian method
 - (iii) Bearing plate Supports
 - (iv) German Method
9. Show with neat sketch various types of tunnels and give the conditions when the following tunnels are used (i) segmental (ii) rectangular (iii) horse shoe (iv) elliptical

Section-C

Attempt any two questions from this sections. (2×15=30)

1. Difference between running ground, soft ground and firm ground. What do you understand by shield tunneling and where this is used?