

**5 Sem. / Civil, Constr., Mgmt., Civil Engg.  
(Spl. Highway Engg.)  
Subject : Railways, Bridges and Tunnels**

Time : 3 Hrs. M.M. : 100

**SECTION-A**

**Note: Multiple type Questions. All Questions are compulsory. (10x1=10)**

Q.1 The clear gauge distance of two rails of broad gauge are \_\_\_\_\_.  
a) 1767 mm      b) 1777 mm  
c) 1676 mm      d) 1666 mm

Q.2 The rail is designated by \_\_\_\_\_.  
a) Weight      b) Length  
c) Weight per unit length      d) Cross section

Q.3 A circular curve consisting of two reverse curves with or without a straight length in between in known as \_\_\_\_\_.  
a) Reverse curve      b) Transition curve  
c) Deviation curve      d) Vertical curve

Q.4 The span for which, total cost of the bridge structure is minimum is called \_\_\_\_\_.  
a) Clear span      b) Clearance  
c) Economic span      d) All of these

Q.5 The end supports of a bridges super-structure are \_\_\_\_\_.  
a) Abutments      b) Columns  
c) Piers      d) Foundations

Q.6 \_\_\_\_\_ are provided in the bridges to allow free movement of the girder without any difficulty.

- a) Bearings      b) Piers  
c) Foundations      d) End supports

Q.7 The most suitable soil used for compressed air tunneling is \_\_\_\_\_. (CO19)

- a) Silt      b) Clay  
c) Sand      d) Gravel

Q.8 Which tunnel section is commonly used in traffic tunnel, subways or navigation tunnels?

- a) Horses shoe shape      b) Egg-Shaped  
c) D-Shape      d) Elliptical shape

Q.9 Which method is commonly used for drainage of tunnel carrying double railway track or two lane road?

- a) Open Drain      b) Central Drain  
c) Side Drain      d) Temporary Drain

Q.10 A minimum illumination of \_\_\_\_\_ should be provided at the tunnel and shaft heading during drilling, drilling mucking and sealing.

- a) 50 lux      b) 100 lux  
c) 75 lux      d) 125 lux

**Section-B**

**Note: Objective type questions. All questions are compulsory. (10x1=10)**

Q.11 The railways provided over the ground surface are known as \_\_\_\_\_ (Elevated railways / Surface railways)

Q.12 The way of placing the rails to an inward slope of 1 in 20 is termed as \_\_\_\_\_ (Tilting of rails / Coning of wheels)

- Q.13 The end point of wing rail with lead rail is known as \_\_\_\_\_ (Toe of crossing / Angle of crossing)
- Q.14 \_\_\_\_\_ is the frictional resistance of the surroundings soil on the outer surface of steining of wells. (Axial load / Skin friction)
- Q.15 The bearings of \_\_\_\_\_ is to be coated with oil from time to time. (Lintels / Girder)
- Q.16 \_\_\_\_\_ of tunneling is used to construct tunnels in rocks. (Drift Method / Tramline Method)
- Q.17 \_\_\_\_\_ section of tunnel is not suitable for placement of concrete lining. (Scaling / Circular)
- Q.18 \_\_\_\_\_ is the operation of loading the rock, earth and any other excavated material. (Scaling / Mucking)
- Q.19 The art to keep the tunnels free from water during and after the construction operations is called \_\_\_\_\_ (water logging / Drainage of tunnels)
- Q.20 Orange lights are usually found at the \_\_\_\_\_, called the Threshold zone. (Beginning of the tunnels / centre of tunnels)

### Section-C

**Note:** Short answer type Question. Attempt any twelve questions out of fifteen Questions. (12x5=60)

- Q.21 Describe the various factors affecting the selection of a rail route.
- Q.22 Describe the various advantages of providing the uniform gauge system of railway track in a country.
- Q.23 Describe the buckling of rails along with its remedial measures.
- Q.24 Write any five functions of ballast used in railway track construction.

- Q.25 Describe the working of "Square Crossing" with a neat sketch.
- Q.26 Describe the necessity of "Maintenance of a railway track".
- Q.27 Write a short note on "Width of Formation" for a railway track.
- Q.28 Write the differences between a bridge and a culvert.
- Q.29 Write a short note on IRC classification of bridges.
- Q.30 Write the disadvantages of RUB.
- Q.31 Write the problems arise during the sinking of a well foundation.
- Q.32 Describe the various functions of a pier provided in a bridge.
- Q.33 Describe the working of elastomeric bearings, used in bridges.
- Q.34 Write the various points to be taken into consideration during the "Routine Maintenance of Bridges" required for their proper functioning.
- Q.35 Write a short note on ventilation in tunnels using exhaust fans.

### Section-D

**Note:** Long answer questions. Attempt any two question out of three Questions. (2x10=20)

- Q.36 Explain with the help of a diagram the working of CST-9 sleepers and also write their any five main advantages.
- Q.37 Describe the functions of a station in railways. Explain the working of abutments with return wings walls.
- Q.38 Enlist the various factors which affect the site selection of a bridge and describe any two of them in brief.