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**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 is 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 bridge's 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) Horseshoe 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 surrounding soil on the outer surface of stringing of rails. (Axial load / Skin friction)
- Q.15 The bearings of _____ are to be coated with oil from time to time. (Lintels / Girders)
- Q.16 _____ of tunneling is used to construct tunnels in rocks. (Drift Method / Rammed Air 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 questions 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 wing walls.
- Q.38 Enlist the various factors which affect the site selection of a bridge and describe any two of them in brief.