University of Mumbai

Examination 2021 under cluster __ (Lead College: __KJSIEIT_____)

Examinations Commencing from 1 June 2021

Program: **Civil Engineering**

Curriculum Scheme: **Rev - 2016**

Examination: **Third Year,Semester VI**

Course Code: **CEC603** and Course Name: **Transportation Engineering -II**

Time: 2 hour Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	In earliest stage of development of railways, which type of rails were used?
Option A:	Flat footed rails
Option B:	Double headed rails
Option C:	Bull headed rails
Option D:	Flat headed rails
2.	A train is travelling from Darjeeling to Siliguri at 110 km/hr , due to the foggy weather which limits the visibility what type of signal is used to guide the train driver
Option A:	Fixed Signal
Option B:	Detonating Signal
Option C:	Hand Signals
Option D:	Stop Signal
3.	Ruling Gradient for an Urban city with increasing population area having a Cross Slope of 38% is
Option A:	1 in 150
Option B:	1 in 180
Option C:	1 in 200
Option D:	1 in 250
4.	What is the extra width of gauge required for a curve of radius 168m, for a vehicle having wheel base of 6m. Diameter of wheel is 152.4cm and depth of flange below top of the rail is 3.2cm
Option A:	13.2 cm
Option B:	3.21 cm
Option C:	12.3 cm
Option D:	2.31 cm
5.	An engineer examined reduction in cross-sectional dimension of I section, He concluded it as
Option A:	Wear of rails
Option B:	Creep of rails
Option C:	Failure of rails
Option D:	Split web

6.	To avoid the conflicting movement between the signal operations and the points of crossings, the arrangement designed is
Option A:	crossing
Option B:	signaling
Option C:	interlocking
Option D:	shunting
7.	On Lonavala - Karjat Railway section, at some places…….gradient is provided
Option A:	Ruling Gradient
Option B:	Pusher Gradient
Option C:	Momentum Gradient
Option D:	Station Yard Gradient
8.	While constructing a new railway track , which plate laying method is widely used in Indian Railways
Option A:	Tram line method
Option B:	Side method
Option C:	American method
Option D:	Telescopic method
9.	The wind intensity that does not play any role in landing and takeoff operations of an aircraft at a airport located at mean sea level is
Option A:	Below 4.6 km/hr
Option B:	Above 5 km/hr
Option C:	Between 5-10 km/hr
Option D:	Below 6.4 km/hr
10.	The bearing of runway is $100^{0,}$ then runway number towards that direction is
Option A:	100
Option B:	10
Option C:	280
Option D:	28
11.	An extra Gauge width on track is mandatory on
Option A:	Horizontal curves
Option B:	Vertical Curves
Option C:	Summit curve
Option D:	Valley curve
12.	A pilot is trying to land an aircraft at a airport having three runways A, B and C. The head winds at the runways are 35kmph, 23kmph and 42kmph respectively. What would be the ideal preference of runways for the pilot to land the aircraft safely
Option A:	A, B,C
Option B:	B,A,C
Option C:	C,A,B
Option D:	C,B,A
13.	If mean of the maximum daily temperatures is 50^{o} and mean of average daily temperatures is 40^{o}, for the hottest month at an airport site, the airport reference

	temperature in degree Celsius is
Option A:	43.3
Option B:	53.3
Option C:	35.5
Option D:	45.5
14.	Landing direction indicator and wind direction indicator are placed
Option A:	At the end of runway
Option B:	At the start of runway
Option C:	On the terminal building
Option D:	In the segmented circle
15.	Construction of ..... makes it possible to use the area as a safe anchorage for ships and to facilitate loading of cargo in comparatively calm waters.
Option A:	pier
Option B:	wharf
Option C:	breakwater
Option D:	pier head
16.	The place where new ships are built
Option A:	Harbour
Option B:	Dry Dock
Option C:	Wet Dock
Option D:	Port
17.	Wharves that project at right angles to the shore for ships to come closer for loading and unloading are called
Option A:	Fender
Option B:	Jetties
Option C:	Quay
Option D:	Pier
18.	The length available in the bridge between extreme edge of a water surface at the highest flood level, measured at right angles to the abutment faces is
Option A:	Linear waterway
Option B:	Effective Linear waterway
Option C:	Free board
Option D:	Effective span
19.	For economic span of bridge, cost of substructure is
Option A:	More than cost of superstructure
Option B:	Less than cost of superstructure
Option C:	Equal to cost of superstructure
Option D:	Independent of cost of superstructure
20.	Afflux occurs due to
Option A:	Increase in discharge
Option B:	Contraction of linear waterway
Option C:	Increase in velocity of flow
Option D:	Scouring

Descriptive questions

Q2. (20 Marks)	Solve any Four out of Six 5 marks each
A	Describe the working principle of a Turnout designed for high speeds trains with a neat figure
B	How are the wheels of a rolling stock designed to prevent the lateral movement in trains? Explain in detail with a suitable diagram
C	A maintenance engineer on site examines that the expansion gap in the track is less than the permissible value, name the defect and what can be the causes and how can it be rectified.
D	Calculate number of rails, sleepers and all the fixtures and fastening required for a 100 km BG track with concrete sleeper and having sleeper density as M+7.
E	A BG 1^0 branch line track takes off as a contrary flexure through a 1 in 16 turnout from a main line track of 3^0 curvature. Due to the turnout, the maximum permissible speed on the branch line is 40 km/h. Calculate the super elevation to be provided on the branch line track and the maximum permissible speed on main line track (when it takes off from straight track)
F	Design a turnout of 1 in 8.5 for an urban city in Maharashtra in plain terrain areas,In the design the curve is tangential to tongue rail,springs up from the heel of switch at 1^0 34' 27" and ends at TNC. Assume heel divergence= 13.6 cm

Q3. (20 Marks)	Solve any Four out of Six 5 marks each
A	The length of runway under standard condition is 1620m. The airport reference temperature is 32^oC and has an elevation of 320m. The runway is to be constructed with an equivalent gradient of 0.20%. Determine the corrected length of the runway.
B	What are the two types of flight rules and explain how ATC is helpful in each case.
C	Explain the working of those parts available in an aircraft to maneuver in space in all three direction
D	How are docks different from harbour? What are the classification of docks? Name any two natural and artificial in India
E	What is the component of a bridge connecting bridge piers and the bridge deck ? Classify the component with its utility.
F	Find the maximum depth of scour for a bridge consisting of 2 spans of 40m each. Discharge of the stream is 200 m^3/s. Assume Lacey's silt factor as 1.0