

# University of Mumbai

Program: **T.E. (Civil) (REV. -2016)** Engineering  
Curriculum Scheme: Rev 2016  
Examination: Third Year Semester VI  
Course Name: **Transportation Engineering - II**

Time: 1 hour

Max. Marks: 50

For the students:- All the Questions are compulsory and carry equal marks .

Q1.	A culvert having a length less than 1m is called
Option A:	Minor Bridge
Option B:	Vent way
Option C:	Culvert
Option D:	Viaduct
Q2.	The bridge having its floor supported at the top of structure is known as
Option A:	Semi through bridge
Option B:	Deck Bridge
Option C:	Through Bridge
Option D:	Submersible Bridge
Q3.	The bridge constructed to enable a road to pass under another land communication route is called an
Option A:	Under Bridge
Option B:	Over Bridge
Option C:	Subway
Option D:	Flyover Bridge
Q4.	The sleepers which satisfy the requirements of an ideal sleeper are Sleepers
Option A:	Wooden
Option B:	Steel
Option C:	Cast iron
Option D:	Pre stressed
Q5.	The tread of wheels is provided an outward slope of 1 in
Option A:	10
Option B:	15
Option C:	20
Option D:	25
Q6.	The gradient on which an additional engine is required to negotiate the gradient is called
Option A:	momentum gradient
Option B:	pusher gradient
Option C:	ruling gradient
Option D:	Steep gradient.

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Q7.	Degree of a railway curve is defined as number of degrees subtended at the center of a curve by an arc of _____ m
Option A:	10.5
Option B:	22.75
Option C:	30.5
Option D:	45
Q8.	Maximum cant deficiency prescribed on Indian Board Gauge Railways, is _____ mm
Option A:	25
Option B:	50
Option C:	75
Option D:	100
Q9.	Heel divergence, the distance between the running faces of stock rail and gauge face of tongue rail, as recommended for Indian B.G. tracks, is _____ mm
Option A:	135
Option B:	120
Option C:	100
Option D:	85
Q10.	In a diamond crossing, number of noses is _____
Option A:	0
Option B:	2
Option C:	4
Option D:	6
Q11.	The check rails are placed opposite the crossing so that _____
Option A:	it is symmetrically placed opposite nose of crossing
Option B:	its one-third length is ahead of the nose of crossing
Option C:	its two-third length is ahead of the nose of crossing
Option D:	its three fourth lengths is ahead of the nose of crossing.
Q12.	The percentage of time in a year during which the cross wind component remains within the limit is _____
Option A:	Wind coverage
Option B:	Head wind
Option C:	Prevailing wind
Option D:	Cross wind
Q13.	For a runway at an elevation of 1000m above MSL and airport reference temperature of 16°C, the rise in temperature to be taken into account as per ICAO is _____
Option A:	24.5°C
Option B:	15°C
Option C:	7.5°C

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Option D:	6°C
Q14.	According to the International Civil Aviation Organisation (I.C.A.O.) the strength of runway pavements, have been coded by
Option A:	Seven English alphabets
Option B:	Last Seven English alphabets
Option C:	First Seven English alphabets
Option D:	First seven numbers
Q15.	The Bridge having its floor flush or a little above the bed of stream which allows flood water always to pass over its super structure
Option A:	Vent way
Option B:	minor Bridge
Option C:	Cause way
Option D:	Viaduct
Q16.	It is an instrument which provides to the controller at the ATC (Air traffic Control) tower an overall picture of all the aircrafts within the airspace surrounding the terminal
Option A:	Localizer
Option B:	Glide slope antenna
Option C:	Beacon
Option D:	Airport surveillance radar
Q17.	The runway length after correction for elevation and temperature is 2845m. If the effective gradient on runway is 0.5%, the revised runway length will be
Option A:	2845m
Option B:	2910m
Option C:	3030m
Option D:	3130m
Q18.	The minimum turning radius of taxiway for supersonic and subsonic respectively is _____
Option A:	120m and 180m
Option B:	180m and 120m
Option C:	60m and 120m
Option D:	180m and 60m
Q19.	A runway is being constructed in a new airport as per ICAO recommendations. The elevation and the ART of this airport are 535m above MSL and 22.65°C, respectively. Consider the effective gradient of runway as 1%. The length of runway required for a design aircraft under the standard conditions is 2000m. within the timeframe of

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	applying sequential corrections as per the ICAO recommendations, the length of runway corrected for the temperature is
Option A:	2223m
Option B:	2250m
Option C:	2500m
Option D:	2750m
Q20.	For a runway at an elevation of 1000m above MSL and airport reference temperature of 16°C, the rise in temperature to be taken into account as per ICAO is
Option A:	24.5°C
Option B:	15°C
Option C:	7.5°C
Option D:	6°C

Q. NO 2	SOLVE ANY 4	20 MARKS
A	The runway length required at sea level in standard atmospheric condition is 1620 m. the airport has an elevation of 270m. ART is 32.94 degree Celsius. If effective gradient is 0.20 percent, find corrected runway length.	5 MARKS
B	Design an exit taxiway joining a runway and a parallel main taxiway. The total angle of turn is 30 degrees and turn off speed is 80kmph. Draw a neat sketch and show all elements.	5 MARKS
C	Determine Lineal waterway required for Bridge to be constructed as follows across the river. Take catchment area = 600hectare, max rainfall intensity is 1cm per hour. If runoff is 60% and permissible velocity is 120cm per sec and avg depth of flow = 180cm.	5 MARKS
D	Discuss on various rail fasteners and calculate the number of each required for a 10km railway line assuming rail length as 13 meters.	5 MARKS
E	If a 5° curve diverges from a 3° main curve in reverse direction in a layout of B.G yard. If speed on Branch line is 35 kmph, find the speed of Main line.	5 MARKS
F	Compare Harbors and Docks. And discuss on its various types.	5 MARKS

Q. NO 3	SOLVE ANY 4	20 MARKS
A	Draw a layout of an airport and discuss on use of each component.	5 MARKS

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B	Write note on Airport Markings	5 MARKS
C	If normal velocity of river is 1.50m/sec, and Natural, artificial and enlarged area is 8000, 7000 and 10000 m <sup>2</sup> . Calculate the increase in velocity due to afflux using Merrimen's and Molesworth formula.	5 MARKS
D	Compare various types of sleepers.	5 MARKS
E	If on a B.G track, given is 1 in 12 turnouts, heel divergence is 13.3 cm, $\beta = 1^{\circ} 8' 0''$ , calculate data to set out the turnout.	5 MARKS
F	Explain various types of Breakwater.	5 MARKS