

BRAINWARE UNIVERSITY

Term End Examination 2021 - 22 Programme – Diploma in Civil Engineering Course Name – Transportation Engineering I Course Code - DCE403 (Semester IV)

Time allotted: 1 Hrs.15 Min. Full Marks: 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following:

- (1) Select the correct statement.
 - a) Nagpur road plan formulae take into account t he towns with very large population.
 - c) Second 20-year plan has provided 1600 km of expressways out of the proposed National hig hway.
- b) Nagpur road plan has a target road length of 3 2 km per 100 square km.
- d) Second 20-year plan allowed deduc-tion of le ngth of railway track in the area while calculat ing the length of roads.
- (2) The sequence of four stages of survey in a highway alignment is.
 - a) reconnaissance, map study, preli-minary surve y and detailed survey
 - c) map study, reconnaissance, prelimi-nary surve y and detailed survey
- b) map study, preliminary survey, recon-naissanc e and detailed survey
- d) preliminary survey, map study, recon-naissanc e and detailed survey
- (3) The stopping sight distance depends upon?
 - a) total reaction time of driver
- c) efficiency of brakes

- b) speed of vehicle
- d) all of these
- (4) When the path travelled along the road surface is more than the circumferential movement of the wheels due to rotation, then it results in
 - a) slipping

b) skidding

c) turning

- d) revolving
- (5) Coefficient of friction is less when the pavement surface is
 - a) rough

b) dry

c) smooth and dry	d) smooth and wet	
(6) Compared to a level surface, on a descen-ding gr	adient the stopping sight distance is-	
a) less	b) more	
c) same	d) dependent on the speed	
(7) On a single lane road with two way traffic, the minimum stopping sight distance is equal t o-		
a) stopping distance	b) two times the stopping distance	
c) half the stopping distance	d) three times the stopping distance	
(8) Stopping sight distance is always-		
a) less than overtaking sight distance	b) equal to overtaking sight distance	
c) more than overtaking sight distance	d) none of these	
(9) Reaction time of a driver-		
a) increases with increase in speed	b) decreases with increase in speed	
c) is same for all speeds	d) none of these	
(10) If the stopping distance is 60 metres, then the minimum stopping sight distance for two la ne, two way traffic is-		
a) 30m	b) 60m	
c) 120m	d) 180m	
(11) The ruling design speed on a National Highway in plain terrain as per IRC recommendati ons is-		
a) 60 kmph	b) 80 kmph	
c) 100 kmph	d) 120 kmph	
(12) The terrain may be classified as rolling terrain if the	ne cross slope of land is-	
a) upto 10%	b) between 10% and 25%	
c) between 25% and 60%	d) more than 60%	
(13) If b is the wheel track of a vehicle and h is the height of centre of gravity above road surface, then to avoid overturning and lateral skidding on a horizontal curve, the centrifugal ratio should always be-		
 a) less than b/2h and greater than co-efficient of l ateral friction 	b) less than b/2h and also less than co-efficient of lateral friction	
c) greater than b/2h and less than co-efficient of l ateral friction	d) greater than b/2h and also greater than coefficient of lateral friction	
(14) For the design of superelevation for mixed traffic	conditions, the speed is reduced by-	
a) 0.15	b) 0.2	
c) 0.25	d) 0.75	
(15) On a horizontal curve if the pavement is kept horizontal across the alignment, then the pre ssure on the outer wheels will be-		
a) more than the pressure on inner wheels	b) less than the pressure on inner wheels	
c) equal to the pressure on inner wheels	d) zero	
(16) The absolute minimum radius of curve for safe operation for a speed of 110 kmph is-		
a) 110 m	b) 220 m	

c) 440 m	d) 577 m
(17) In case of hill roads, the extra widening is genera	ally provided-
a) equally on inner and outer sides of the curve	b) fully on the inner side of the curve
c) fully on the outer side of the curve	d) one-fourth on inner side and three-fourth on o uter side of the curve
(18) For design, that length of transition curve should	be taken which is-
 a) based on allowable rate of change of centrifug al acceleration 	b) based on rate of change of superele-vation
c) higher of (a) and (b)	d) smaller of (a) and (b)
(19) The percentage compensation in gradient for ruli f radius 760 m is-	ing gradient of 4% and horizontal curve o
a) 0.001	b) 0.01
c) 0.1	d) no compensation
(20) If ruling gradient is I in 20 and there is also a hormpensated grade should be-	rizontal curve of radius 76 m, then the co
a) 0.03	b) 0.04
c) 0.05	d) 0.06
(21) Which of the following shapes is preferred in a v	valley curve -
a) simple parabola	b) cubic parabola
c) spiral	d) lemniscate
(22) The value of ruling gradient in plains as per IRC	recommendation is-
a) 1 in 12	b) 1 m 15
c) 1 in 20	d) 1 in 30
(23) If an ascending gradient of 1 in 50 meets a desce mmit curve for a stopping sight distance of 80 m	
a) zero	b) 64m
c) 80m	d) 60m
(24) Highway facilities are designed for	
a) annual average hourly volume	b) annual average daily traffic
c) thirtieth highest hourly volume	d) peak hourly volume of the year
(25) For highway geometric design purposes the spee	d used is-
a) 15th percentile	b) 50 percentile
c) 85th percentile	d) 98 percentile
(26) The maximum width of a vehicle as recommended	ed by IRC is-
a) 1.85m	b) 2.44 m
c) 3.81 m	d) 4.72 m
(27) Desire lines are plotted in-	
a) traffic volume studies	b) speed studies
c) accident studies	d) origin and destination studies
(28) The diagram which shows the approximate path cidents is known as	of vehicles and pedestrians involved in ac

a) spot maps	b) pie charts
c) condition diagram	d) collision diagram
(29) With increase in speed of the traffic stream, the m	inimum spacing of vehicles
a) increases	b) decreases
c) first decreases and then increases after reachin g a minimum value at optimum speed	d) first increases and then decreases after reaching a maximum value at optimum speed
(30) Which of the following is known as design capac	ity?
a) basic capacity	b) theoretical capacity
c) possible capacity	d) practical capacity
(31) With increase in speed of the traffic stream, the m	aximum capacity of the lane-
a) increases	b) decreases
c) first increases and then decreases after reachin g a maximum value at optimum speed	d) first decreases and then increases after reaching a minimum value at optimum speed
(32) If the stopping distance and average length of a vent in the theoretical maxi¬mum capacity of a traffic l	¥ *.
a) 1500 vehicles per hour	b) 2000 vehicles per hour
c) 2500 vehicles per hour	d) 3000 vehicles per hour
(33) Scientific planning of transportation system and nased on	nass transit facilities in cities should be b
a) spot speed data	b) origin and destination data
c) traffic volume data	d) accident data
(34) When the speed of traffic flow becomes zero, then	 -
 a) traffic density attains maximum value whereas traffic volume becomes zero 	b) traffic density and traffic volume both attain maximum value
c) traffic density and traffic volume both become zero	d) traffic density becomes zero whereas traffic v olume attains maximum value
(35) Which of the following is indicated by a warning	sign?
a) level crossing	b) no parking
c) end of speed limit	d) overtaking prohibited
(36) The provision of traffic signals at intersections-	
a) reduces right angled and rear end collisions	b) increases right angled and rear end collisions
 c) reduces right angled collisions but may increa se rear end collisions 	 d) reduces rear end collisions but may increase right angled collisions
(37) Select the incorrect statement	
a) Stop or red time of a signal is the sum of go an d clearance intervals for the cross flow.	b) Go or green time of a signal is the sum of stop and clearance intervals for the cross flow.
c) Clearance time is generally 3 to 5 seconds.	d) The cycle length is normally 40 to 60 seconds for two phase signals.
(38) The particular places where pedestrians are to crothe pavement marking known as-	ss the pavement are properly marked by
a) stop lines	b) turn markings

c) crosswalk lines	d) lane lines
(39) When two equally important roads cross roughly ral island is-	at right angles, the suitable shape of cent
a) circular	b) elliptical
c) tangent	d) turbine
(40) A traffic rotary is justified where-	
a) number of intersecting roads is between 4 and 7	b) space is limited and costly
c) when traffic volume is less than 500 vehicles per hour	d) when traffic volume is more than 5000 vehicle s per hour
(41) Maximum number of vehicles can be parked with	1-
a) parallel parking	b) 30° angle parking
c) 45° angle parking	d) 90° angle parking
(42) As per IRC recommendations, the average level of ng fast traffic is-	of illumination on important roads carryi
a) 10 lux	b) 15 lux
c) 20 lux	d) 30 lux
(43) The direct interchange ramp involves-	
a) diverging to the right side and merging from le ft	b) diverging to the left side and merging from rig ht
c) diverging to the right side and merging from right	d) diverging to the left side and merging from left t
(44) Which of the following tests measures the tought	ness of road aggregates?
a) crushing strength test	b) abrasion test
c) impact test	d) shape test
(45) In CBR test the value of CBR is calculated at-	
a) 2.5 mm penetration only	b) 5.0 mm penetration only
c) 7.5 mm penetration only	d) both 2.5~mm and 5.0 mm penetrations
(46) The maximum allowable Los Angeles abrasion v	alue for high quality surface course is-
a) 0.1	b) 0.2
c) 0.3	d) 0.45
(47) Percentage of free carbon in bitumen is-	
a) more than that in tar	b) less than that in tar
c) equal to that in tar	d) None of these
(48) The maximum limit of water absorption for aggre	egate suitable for road construction is-
a) 0.004	b) 0.006
c) 0.008	d) 0.01
(49) Penetration test on bitumen is used for determining	ng its-
a) grade	b) viscosity
c) ductility	d) temperature susceptibility
(50) Bitumen of grade 80/100 means-	·

a) its penetration value is 8 mm	b) its penetration value is 10 mm	
c) its penetration value is 8 to 10 mm	d) its penetration value is 8 to 10 cm	
(51) RC-2, MC-2 and SC-2 correspond to-		
a) same viscosity	b) viscosity in increasing order from RC-2 to S C-2	
c) viscosity in decreasing order from RC-2 to SC -2	d) none of these	
(52) Softening point of bitumen to be used for read comperature is 40° C should be-	onstruction at a place where maximum te	
a) less-than 40°C	b) greater than 40°C	
c) equal to 40°C	d) none of these	
(53) For rapid curing cutbacks, the oil used is-		
a) gasoline	b) kerosene oil	
c) light diesel	d) heavy diesel	
(54) The method of design of flexible pavement as recommended by IRC is-		
a) group index method	b) CBR method	
c) Westergaard method	d) Benkelman beam method	
(55) The number of repetitions, which the pavement the should be able to support during the life of pavement.		
a) 1000	b) 10000	
c) 100000	d) 1000000	
(56) If the group index value of subgrade is between 5	5 and 9, then the subgrade is treated as-	
a) good	b) fair	
c) poor	d) very poor	
(57) Rigidity factor for a tyre pressure greater than 7 kg	kg/cm2 is-	
a) equal to 1	b) less than 1	
c) greater than 1	d) zero	
(58) The critical combination of stresses for corner region in cement concrete roads is-		
a) load stress + warping stress frictional stress	b) load stress + warping stress + frictional stress	
c) load stress + warping stress	d) load stress + frictional stress	
(59) The maximum spacing of contraction joints in rig	gid pavements is-	
a) 2.5 m	b) 3.5 m	
c) 4.5 m	d) 5.5m	
(60) The function of an expansion joint in rigid pavements is to-		
a) relieve warping stresses	b) relieve shrinkage stresses	
c) resist stresses due to expansion	d) allow free expansion	