

Online Examinations (Even Sem/Part-I/Part-II Examinations 2020 - 2021)

Course Name - Transportation Engineering I

Course Code -DCE403

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Answer all the questions. Each question carry one mark.

9. 1.Nagpur road plan formulae were prepared by assuming.

Mark only one oval.

- rectangular or block road pattern
- radial or star and block road pattern
- radial or star and circular road pattern
- radial or star and grid road pattern

10. 2.Select the correct statement.

Mark only one oval.

- Nagpur road plan formulae take into account the towns with very large population.
- Nagpur road plan has a target road length of 32 km per 100 square km.
- Second 20-year plan has provided 1600 km of expressways out of the proposed National highway.
- Second 20-year plan allowed deduction of length of railway track in the area while calculating the length of roads.

11. 3.The sequence of four stages of survey in a highway alignment is.

Mark only one oval.

- reconnaissance, map study, preliminary survey and detailed survey
- map study, preliminary survey, reconnaissance and detailed survey
- map study, reconnaissance, preliminary survey and detailed survey
- preliminary survey, map study, reconnaissance and detailed survey

12. 4.For water bound macadam roads in localities of heavy rainfall, the recommended value of camber is.

Mark only one oval.

- 1 in 30
- 1 in 36
- 1 in 48
- 1 in 60

13. 5.The stopping sight distance depends upon?

Mark only one oval.

- total reaction time of driver
- speed of vehicle
- efficiency of brakes
- all of these

14. 6.When the path travelled along the road surface is more than the circumferential movement of the wheels due to rotation, then it results in

Mark only one oval.

- slipping
- skidding
- turning
- revolving

15. 7.The shoulder provided along the road edge should be

Mark only one oval.

- rougher than the traffic lanes
- smoother than the traffic lanes
- of same colour as that of the pavement
- of very low load bearing capacity

16. 8. Compared to a level surface, on a descending gradient the stopping sight distance is-

Mark only one oval.

- less
- more
- same
- dependent on the speed

17. 9. On a single lane road with two way traffic, the minimum stopping sight distance is equal to-

Mark only one oval.

- stopping distance
- two times the stopping distance
- half the stopping distance
- three times the stopping distance

18. 10. The desirable length of overtaking zone as per IRC recommendation is equal to-

Mark only one oval.

- overtaking sight distance
- two times the overtaking sight distance
- three times the overtaking sight distance
- five times the overtaking sight distance

19. 11.Reaction time of a driver

Mark only one oval.

- increases with increase in speed
- decreases with increase in speed
- is same for all speeds
- none of these

20. 12.The effect of grade on safe overtaking sight distance is-

Mark only one oval.

- to increase it on descending grades and to decrease it on ascending grades
- to decrease it on descending grades and to increase it on ascending grades
- to increase it on both descending and ascending grades
- to decrease it on both descending and ascending grades

21. 13.The terrain may be classified as rolling terrain if the cross slope of land is-

Mark only one oval.

- upto 10%
- between 10% and 25%
- between 25% and 60%
- more than 60%

22. 14.As per IRC recommendations, the maximum limit of superelevation for mixed traffic in plain terrain is-

Mark only one oval.

- 1 in 15
- 1 in 12.5
- 1 in 10
- equal to camber

23. 15.On a horizontal curve if the pavement is kept horizontal across the alignment, then the pressure on the outer wheels will be-

Mark only one oval.

- more than the pressure on inner wheels
- less than the pressure on inner wheels
- equal to the pressure on inner wheels
- zero

24. 16.To calculate the minimum value of ruling radius of horizontal curves in plains, the design speed is given by-

Mark only one oval.

- 8 kmph
- 12kmph
- 16kmph
- 20 kmph

25. 17.The attainment of superelevation by rotation of pavement about the inner edge of the pavement-

Mark only one oval.

- is preferable in steep terrain
- results in balancing the earthwork
- avoids the drainage problem in flat terrain
- does not change the vertical alignment of road

26. 18.In case of hill roads, the extra widening is generally provided-

Mark only one oval.

- equally on inner and outer sides of the curve
- fully on the inner side of the curve
- fully on the outer side of the curve
- one-fourth on inner side and three-fourth on outer side of the curve

27. 19.For design, that length of transition curve should be taken which is-

Mark only one oval.

- based on allowable rate of change of centrifugal acceleration
- based on rate of change of superelevation
- higher of (a) and (b)
- smaller of (a) and (b)

28. 20.The percentage compensation in gradient for ruling gradient of 4% and horizontal curve of radius 760 m is-

Mark only one oval.

- 0.001
- 0.01
- 0.1
- no compensation

29. 21.The camber of road should be approximately equal to-

Mark only one oval.

- longitudinal gradient
- two times the longitudinal gradient
- three times the longitudinal gradient
- half the longitudinal gradient

30. 22.The value of ruling gradient in plains as per IRC recommendation is-

Mark only one oval.

- 1 in 12
- 1 m 15
- 1 in 20
- 1 in 30

31. 23.If the design speed is V kmph and deviation angle is N radians, then the total length of a valley curve in metres is given by the expression-

Mark only one oval.

- $0.38 N V^{3/2}$
- $0.38 (NV^3)^2$
- $3.8 NV^2$
- $3.8 (NV^3)^2$

32. 24.Highway facilities are designed for

Mark only one oval.

- annual average hourly volume
- annual average daily traffic
- thirtieth highest hourly volume
- peak hourly volume of the year

33. 25.For highway geometric design purposes the speed used is-

Mark only one oval.

- 15th percentile
- 50th percentile
- 85th percentile
- 98th percentile

34. 26.Length of a vehicle affects-

Mark only one oval.

- width of traffic lanes
- extra width of pavement and minimum turning radius
- width of shoulders and parking facilities
- clearance to be provided under structures such as overbridges, under-bridges etc.

35. 27.Desire lines are plotted in-

Mark only one oval.

- traffic volume studies
- speed studies
- accident studies
- origin and destination studies

36. 28.The diagram which shows the approximate path of vehicles and pedestrians involved in accidents is known as

Mark only one oval.

- spot maps
- pie charts
- condition diagram
- collision diagram

37. 29. Which of the following is known as design capacity ?

Mark only one oval.

- basic capacity
- theoretical capacity
- possible capacity
- practical capacity

38. 30. With increase in speed of the traffic stream, the maximum capacity of the lane-

Mark only one oval.

- increases
- decreases
- first increases and then decreases after reaching a maximum value at optimum speed
- first decreases and then increases after reaching a minimum value at optimum speed

39. 31. If the stopping distance and average length of a vehicle are 18 m and 6 m respectively, then the theoretical maximum capacity of a traffic lane at a speed of 10 m/sec is-

Mark only one oval.

- 1500 vehicles per hour
- 2000 vehicles per hour
- 2500 vehicles per hour
- 3000 vehicles per hour

40. 32.The diagram which shows all important physical conditions of an accident location like roadway limits, bridges, trees and all details of roadway conditions is known as-

Mark only one oval.

- pie chart
- spot maps
- condition diagram
- collision diagram

41. 33.On a right angled road intersection with two way traffic, the total number of conflict points is

Mark only one oval.

- 6
- 11
- 18
- 24

42. 34.Which of the following is indicated by a warning sign ?

Mark only one oval.

- level crossing
- no parking
- end of speed limit
- overtaking prohibited

43. 35.The most efficient traffic signal system is-

Mark only one oval.

- simultaneous system
- alternate system
- flexible progressive system
- simple progressive system

44. 36.Select the incorrect statement.-

Mark only one oval.

- Stop or red time of a signal is the sum of go and clearance intervals for the cross flow.
- Go or green time of a signal is the sum of stop and clearance intervals for the cross flow.
- Clearance time is generally 3 to 5 seconds.
- The cycle length is normally 40 to 60 seconds for two phase signals.

45. 37.The particular places where pedestrians are to cross the pavement are properly marked by the pavement marking known as-

Mark only one oval.

- stop lines
- turn markings
- crosswalk lines
- lane lines

46. 38. When two equally important roads cross roughly at right angles, the suitable shape of central island is-

Mark only one oval.

- circular
- elliptical
- tangent
- turbine

47. 39. A traffic rotary is justified where-

Mark only one oval.

- number of intersecting roads is between 4 and 7
- space is limited and costly
- when traffic volume is less than 500 vehicles per hour
- when traffic volume is more than 5000 vehicles per hour

48. 40. Maximum number of vehicles can be parked with-

Mark only one oval.

- parallel parking
- 30° angle parking
- 45° angle parking
- 90° angle parking

49. 41.As per IRC recommendations, the average level of illumination on important roads carrying fast traffic is-

Mark only one oval.

- 10 lux
 15 lux
 20 lux
 30 lux

50. 42.The direct interchange ramp involves-

Mark only one oval.

- diverging to the right side and merging from left
 diverging to the left side and merging from right
 diverging to the right side and merging from right
 diverging to the left side and merging from left

51. 43.Which of the following tests measures the toughness of road aggregates ?

Mark only one oval.

- crushing strength test
 abrasion test
 impact test
 shape test

52. 44.In CBR test the value of CBR is calculated at-

Mark only one oval.

- 2.5 mm penetration only
- 5.0 mm penetration only
- 7.5 mm penetration only
- both 2.5~mm and 5.0 mm penetrations

53. 45.The maximum allowable Los Angeles abrasion value for high quality surface course is-

Mark only one oval.

- 0.1
- 0.2
- 0.3
- 0.45

54. 46.The ductility value of bitumen for suitability in road construction should not be less than-

Mark only one oval.

- 30 cm
- 40 cm
- 50 cm
- 60 cm

55. 47.Which of the following represents hardest grade of bitumen ?

Mark only one oval.

- 30/40
- 60/70
- 80/100
- 100/120

56. 48.Bitumen of grade 80/100 means-

Mark only one oval.

- its penetration value is 8 mm
- its penetration value is 10 mm
- its penetration value is 8 to 10 mm
- its penetration value is 8 to 10 cm

57. 49.The recommended grade of tar for grouting purpose is-

Mark only one oval.

- RT-1
- RT-2
- RT.3
- RT-5

58. 50. For rapid curing cutbacks, the oil used is-

Mark only one oval.

- gasoline
- kerosene oil
- light diesel
- heavy diesel

59. 51. The group index for a soil, whose liquid limit is 40 percent, plasticity index is 10 percent and percentage passing 75 micron IS sieve is 35, is-

Mark only one oval.

- 0
- 3
- 5
- 7

60. 52. Flexible pavement distribute the wheel load-

Mark only one oval.

- directly to subgrade
- through structural action
- through a set of layers to the subgrade
- none of these

61. 53.Group index method of design of flexible pavement is-

Mark only one oval.

- a theoretical method
- an empirical method based on physical properties of subgrade soil
- an empirical method based on strength characteristics of subgrade soil
- a semi empirical method

62. 54.Rigidity factor for a tyre pressure greater than 7 kg/cm² is-

Mark only one oval.

- equal to 1
- less than 1
- greater than 1
- zero

63. 55.Tie bars in cement concrete pavements are at-

Mark only one oval.

- expansion joints
- contraction joints
- warping joints
- longitudinal joints

64. 56.The maximum thickness of expansion joint in rigid pavements is-

Mark only one oval.

- 0
- 25 mm
- 50 mm
- 100 mm

65. 57.The fundamental factor in the selection of pavement type is-

Mark only one oval.

- climatic condition
- type and intensity of traffic
- subgrade soil and drainage conditions
- availability of funds for the construction project

66. 58.Maximum daily traffic capacity of bituminous pavements is-

Mark only one oval.

- 500 tonnes per day
- 1000 tonnes per day
- 1500 tonnes per day
- 2000 tonnes per day

67. 59.The aggregates required for one kilometre length of water bound macadam road per metre width and for 10 mm thickness is-

Mark only one oval.

- 8 cubic metre
- 10 cubic metre
- 12 cubic metre
- 15 cubic metre

68. 60.The binder normally used in flexible pavement construction is-

Mark only one oval.

- cement
- lime
- bitumen
- None of these

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