Highway Engineering

Question No. 01

Group index method of design of flexible pavement is

    (A) A theoretical method

    (B) An empirical method based on physical properties of sub-grade soil

    (C) An empirical method based on strength characteristics of sub-grade soil

    (D) A semi empirical method

    Answer: Option B

Question No. 02

Which of the following is considered to be the highest quality construction in the group of black top pavements?

    (A) Mastic asphalt

    (B) Sheet asphalt

    (C) Bituminous carpet

    (D) Bituminous concrete

    Answer: Option D

Question No. 03

Los Angeles testing machine is used to conduct

    (A) Abrasion test

    (B) Impact test

    (C) Attrition test

    (D) Crushing strength test

    Answer: Option A

Question No. 04

When the width of car parking space and width of street are limited, generally preferred parking system is

    (A) Parallel parking

    (B) 45° angle parking

    (C) 65° angle parking

    (D) 90° angle parking

    Answer: Option A

Question No. 05

When the bituminous surfacing is done on already existing black top road or over existing cement concrete road, the type of treatment given is

    (A) Seal coat

    (B) Tack coat

    (C) Prime coat

    (D) Spray of emulsion

Answer: Option B

Question No. 06
In the penetration macadam construction, the bitumen is
    (A) Sprayed after the aggregates are spread and compacted
    (B) Premixed with aggregates and then spread
    (C) Sprayed before the aggregates are spread and compacted
    (D) None of the above
    Answer: Option A

Question No. 07
The drain which is provided parallel to roadway to intercept and divert the water from hill slopes is known as
    (A) Sloping drain
    (B) Catch-water drain
    (C) Side drain
    (D) Cross drain
    Answer: Option B

Question No. 08
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
    Answer: Option D

Question No. 09
Select the correct statement.
    (A) More the value of group index, less thickness of pavement will be required
    (B) More the value of CBR, greater thickness of pavement will be required
    (C) Minimum and maximum values of group index can be 0 and 20 respectively
    (D) All of the above
    Answer: Option C

Question No. 10
Penetration test on bitumen is used for determining its
    (A) Grade
    (B) Viscosity
    (C) Ductility
    (D) Temperature susceptibility
    Answer: Option A

Question No. 11
In soils having same values of plasticity index, if liquid limit is increased, then

(A) Compressibility and permeability decrease and dry strength increases

(B) Compressibility, permeability and dry strength decrease

(C) Compressibility, permeability and dry strength increase

(D) Compressibility and permeability increase and dry strength decreases

Answer: Option D

Question No. 12
The maximum limit of water absorption for aggregate suitable for road construction is

(A) 0.4 %

(B) 0.6 %

(C) 0.8 %

(D) 1.0 %

Answer: Option B

Question No. 13
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

Answer: Option C

Question No. 14
In highway construction, rolling starts from

(A) Sides and proceed to center

(B) Center and proceed to sides

(C) One side and proceed to other side

(D) Any of the above

Answer: Option A

Question No. 15
The most economical lighting layout which is suitable for narrow roads is

(A) Single side lighting

(B) Staggered system

(C) Central lighting system

(D) None of the above

Answer: Option A

Question No. 16
The ideal shape of a transition curve, is

(A) Clothoid

(B) Cubic spiral

(C) Cubic parabola

(D) Lamniscate

Answer: Option A

Question No. 17

The full width of land acquired before finalising a highway, alignment is known

   (A) Width of formation

   (B) Right of way

   (C) Carriage way

   (D) Roadway

   Answer: Option B

Question No. 18

Tyre pressure influences the

   (A) Total depth of pavement

   (B) Quality of surface course

   (C) Both the above

   (D) None of the above

   Answer: Option B

Question No. 19

Any gradient on a road is said to be an exceptional gradient, if it is

   (A) More than ruling gradient

   (B) Less than average gradient

   (C) More than floating gradient

   (D) Less than minimum gradient or more than maximum gradient

   Answer: Option D

Question No. 20

During last phase of the reconnaissance, details of the grade line is recorded on 2 metre poles to indicate

   (A) Direction of the proposed alignment

   (B) Distance between the previous and forward pegs

   (C) Relative elevations of pegs

   (D) All the above

   Answer: Option D

Question No. 21

The most suitable equipment for compacting clayey soils is a

   (A) Smooth wheeled roller

   (B) Pneumatic tyred roller

   (C) Sheep foot roller

   (D) Vibrator

   Answer: Option C

Question No. 22

Pick up the correct statement from the following:

   (A) Seasonal cycle of traffic volume during April and November, is usually near the annual average

(B) Mid-winter seasonal cycle of traffic is least

(C) Mid-summer seasonal cycle of traffic is highest

(D) All the above

Answer: Option D

Question No. 23

Three points *A*, *B* and *C* 500 m apart on a straight road have 500 m, 505 m and 510 m as their reduced levels. The road is said to have

(A) No gradient between *A* and *C*

(B) A positive gradient between *A* and *C*

(C) A negative gradient between *A* and *C*

(D) A negative gradient between *A* and *B*

Answer: Option D

Question No. 24

Select the correct statement.

(A) Quantity of binder required for tack coat is less than that required for prime coat

(B) Prime coat treatment is given for plugging the voids in water bound macadam during bituminous road construction

(C) Seal coat is the final coat over certain previous bituminous pavements

(D) A bitumen primer is a high viscosity cutback

Answer: Option D

Question No. 25

The minimum design speed of various types of highways in plain terrain is the same as the ruling design speed of

(A) Rolling terrain

(B) Mountainous terrain

(C) Steep terrain

(D) None of these

Answer: Option A

Question No. 26

Excessive camber on pavements may cause

(A) Deterioration of central portion

(B) Slip of the speedy vehicles towards the edges

(C) Erosion of the berms

(D) All the above

Answer: Option D

Question No. 27

In hill roads the side drains arc provided

(A) Only on the hill side of road

(B) Only on the opposite side of hill

(C) On both sides of road

(D) None of the above

Answer: Option A

Question No. 28

Selection of the routes, of highways depends upon

(A) Feasibility of attaining ruling gradient

(B) Avoidance of cutting hard rocks

(C) Minimum number of bridges

(D) All the above

Answer: Option D

Question No. 29

Maximum number of vehicles that can pass a given point on a lane during one hour without creating unreasonable delay, is known as

(A) Traffic density of lane

(B) Basic capacity of lane

(C) Probable capacity of lane

(D) Practical capacity of lane

Answer: Option D

Question No. 30

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 vehicles per hour

Answer: Option A

Question No. 31

Pick up the correct statement from the following:

(A) Minimum desirable width of medians on rural highways is 5 metres

(B) Minimum width of medians should be 3 metres

(C) On long bridges and viaducts, the width of medians should be 1.5 m

(D) All the above

Answer: Option D

Question No. 32

Pick up the correct statement from the following:

(A) The cross fall of the shoulder should be at least 0.5% steeper than camber

(B) On super-elevated sections, the shoulders should be provided a cross fall equal to camber

(C) Earthen roads in general are provided steepest cross-fall

(D) All the above

Answer: Option D

Question No. 33

If aggregate impact value is 20 to 30 percent, then it is classified as

(A) Exceptionally strong

(B) Strong

(C) Satisfactory for road surfacing

(D) Unsuitable for road surfacing

Answer: Option C

Question No. 34

Design of horizontal curves on highways, is based on

(A) Design speed of vehicles

(B) Permissible friction on the road surface

(C) Permissible centrifugal ratio

(D) All the above

Answer: Option D

Question No. 35

Set-back distance is the distance between

(A) Road land boundary and building line

(B) Road land boundary and control line

(C) Building line and control line

(D) Road land boundary and control line

Answer: Option A

Question No. 36

RC-2, MC-2 and SC-2 correspond to

(A) Same viscosity

(B) Viscosity in increasing order from RC-2 to SC-2

(C) Viscosity in decreasing order from RC-2 to SC-2

(D) None of the above

Answer: Option A

Question No. 37

Speed regulations on roads is decided on the basis of

(A) 60 percentile cumulative frequency

(B) 75 percentile cumulative frequency

(C) 80 percentile cumulative frequency

(D) 85 percentile cumulative frequency

Answer: Option D

Question No. 38

At intersection of roads, the traffic volume study is carried out to ascertain the number of vehicles

(A) Moving along straights

(B) Turning left

(C) Turning right

(D) All the above

Answer: Option D

Question No. 39

Flexible pavement distribute the wheel load

    (A) Directly to sub-grade

    (B) Through structural action

    (C) Through a set of layers to the sub-grade

    (D) None of the above

Answer: Option C

Question No. 40

The most commonly adopted method to provide super-elevation on roads, is by pivoting the road surface about

    (A) Outer edge so that the inner edge is lowered

    (B) Crown so that outer edge is raised and inner edge is lowered

    (C) Inner edge so that outer edge is raised

    (D) None of these

Answer: Option C

Question No. 41

When load is applied on concrete pavement

    (A) Away from edges, the maximum bending moment is negative

    (B) Away from edges, the maximum bending moment cause compression

    (C) On the edges, the maximum stress is parallel to the edge of the slab

    (D) None of these

Answer: Option C

Question No. 42

The fundamental factor in the selection of pavement type is

    (A) Climatic condition

    (B) Type and intensity of traffic

    (C) Sub-grade soil and drainage conditions

    (D) Availability of funds for the construction project

Answer: Option B

Question No. 43

If the coefficient of friction on the road surface is 0.15 and a maximum super-elevation 1 in 15 is provided, the maximum speed of the vehicles on a curve of 100 metre radius, is

    (A) 32.44 km/hour

    (B) 42.44 kg/hour

    (C) 52.44 km/hour

    (D) 62.44 km/hour

Answer: Option C

Question No. 44

Pick up the correct statement from the following:

(A) Various geometric design features and generally guided by ruling design speed

(B) The design speed for a given highway should preferably be uniform

(C) Abrupt change in the design speed should not be permitted

(D) All the above

Answer: Option D

Question No. 45

For the construction of water bound macadam roads, the correct sequence of operations after spreading coarse aggregates is

(A) Dry rolling, wet rolling, application of screening and application of filler

(B) Dry rolling, application of filler, wet rolling and application of screening

(C) Dry rolling, application of screening, wet rolling and application of filler

(D) Dry rolling, application of screening, application of filler and wet rolling

Answer: Option C

Question No. 46

In case of a multi-lane road, overtaking is generally permitted

(A) From right

(B) From left

(C) From both sides right and left

(D) Not at all

Answer: Option C

Question No. 47

If degree of a road curve is defined by assuming the standard length of an arc as 30 metres, the radius of 1° curve is equal

(A) 1719 m

(B) 1146 m

(C) 1046 m

(D) 1619 m

Answer: Option A

Question No. 48

The walls which are necessary on the hill side of roadway where earth has to be retained from slipping is known as

(A) Retaining wall

(B) Breast wall

(C) Parapet wall

(D) None of the above

Answer: Option B

Question No. 49

If cross slope of a country is greater than 60%, the terrain is classified as

(A) Rolling

(B) Mountainous

(C) Steep

(D) Plain

Answer: Option C

Question No. 50

The length of a transition curve, is governed by

(A) Rate of change of radial acceleration

(B) Rate of change of super-elevation

(C) Both (a) and (b)

(D) Neither (a) nor (b)

Answer: Option C

Question No. 51

When a number of roads are meeting at a point and only one of the roads is important, then the suitable shape of rotary is

(A) Circular

(B) Tangent

(C) Elliptical

(D) Turbine

Answer: Option B

Question No. 52

A gradient along which the vehicle does not require any tractive effort to maintain a specified speed, is known as

(A) Ruling gradient

(B) Pushing gradient

(C) Floating gradient

(D) Minimum gradient

Answer: Option C

Question No. 53

In welded wire mesh, the longitudinal wire is placed at

(A) 10 cm centres

(B) 15 cm centres

(C) 20 cm centres

(D) 25 cm centres

Answer: Option B

Question No. 54

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 the above

Answer: Option B

Question No. 55

Pavement is said to be flexible if it contains

    (A) Water bound macadam surface

    (B) Stabilised soil base constructed of lime cement or tar

    (C) Bitumen-bound stone layer of varying aggregates

    (D) All the above

    Answer: Option D

Question No. 56

Hill roads are

    (A) Provided camber along spur curves

    (B) Provided camber along valley curves

    (C) Seldom provided a camber

    (D) None of these

    Answer: Option C

Question No. 57

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

    Answer: Option B

Question No. 58

A district road with a bituminous pavement has a horizontal curve of 1000 m for a design speed of 75 km ph. The super-elevation is

    (A) 1 in 40

    (B) 1 in 50

    (C) 1 in 60

    (D) 1 in 70

    Answer: Option A

Question No. 59

The head of public works department of any Indian state, is

    (A) Transport Minister

    (B) Chief Engineer

    (C) Superintending Engineer

    (D) Executive Engineer

    Answer: Option B

Question No. 60

Tie bars in cement concrete pavements are at

    (A) Expansion joints

    (B) Contraction joints

    (C) Warping joints

    (D) Longitudinal joints

    Answer: Option D

Question No. 61

As per recommendations of I.R.C., traffic volume study is carried out for rural roads for 7 days continuously during

    (A) Harvesting

    (B) Lean season

    (C) Harvesting and lean season

    (D) None of these

    Answer: Option C

Question No. 62

Formation width of a hill road is the distance between

    (A) Outer end of side drain to outer end of parapet wall

    (B) Outer end of side drain to inner end of parapet wall

    (C) Inner end of side drain to outer end of parapet wall

    (D) Inner end of side drain to inner end of parapet wall

    Answer: Option A

Question No. 63

The camber of shoulders in water bound macadam roads is

    (A) Equal to the cross slope of pavement

    (B) Less than the cross slope of pavement

    (C) Greater than the cross slope of pavement

    (D) Zero

    Answer: Option A

Question No. 64

Traffic surveys are carried out

    (A) To know the type of traffic

    (B) To determine the facilities to traffic regulations

    (C) To design proper drainage system

    (D) All the above

    Answer: Option D

Question No. 65

The difference in gradients after full super-elevation and the initial alignment of a road, is known as

    (A) Ruling gradient

(B) Rising gradient

(C) Compensated gradient

(D) Differential gradient

Answer: Option D

Question No. 66

The camber for hill roads in case of bituminous surfacing is adopted as

(A) 2 %

(B) 2.5 %

(C) 3 %

(D) 4 %

Answer: Option B

Question No. 67

If *C* is basic capacity per lane, *V* is velocity in km/hour, *S* is stopping distance plus length of the vehicles in metres, the formula *C* = 1000*V*/*S* is applicable to

(A) District roads

(B) Two lane roads

(C) Two lane roads in one direction

(D) None of these

Answer: Option C

Question No. 68

To prevent movement of moisture from sub-grade to road pavement on embankments about 0.6 m to 1 m higher than water table, the thickness of cut off layer of coarse sand used, is

(A) 15 cm

(B) 20 cm

(C) 30 cm

(D) None of these

Answer: Option D

Question No. 69

The direct interchange ramp involves

(A) Diverging to the right side and merging from left

(B) Diverging to the left side and merging from right

(C) Diverging to the right side and merging from right

(D) Diverging to the left side and merging from left

Answer: Option C

Question No. 70

Design of flexible pavements is based on

(A) Mathematical analysis

(B) Empirical formulae

(C) A compromise of pure theory and pure empirical formula

(D) None of these

Answer: Option C

Question No. 71
The total value of extra widening required at a horizontal curve on a two lane hill road of radius 42 m for a design speed of 50 kmph and for vehicles with wheel base 6 m, is
- (A) 0.500 m
- (B) 0.589 m
- (C) 1.089 m
- (D) 0.089 m

Answer: Option C

Question No. 72
Which of the following represents hardest grade of bitumen?
- (A) 30/40
- (B) 60/70
- (C) 80/100
- (D) 100/120

Answer: Option A

Question No. 73
The weight of vehicles affects
- (A) Pavement thickness
- (B) Ruling gradient
- (C) Limiting gradient
- (D) All the above

Answer: Option D

Question No. 74
Pick up the correct statement from the following:
- (A) The height of head light above road surface, is taken as 0.75 m
- (B) The beam of head light is up to one degree upwards from the grade of road
- (C) While designing the valley curve, the height of the object is assumed nil
- (D) All the above

Answer: Option D

Question No. 75
The number of repetitions, which the pavement thickness designed for a given wheel load should be able to support during the life pavement is
- (A) 1000
- (B) 10,000
- (C) 1,00,000
- (D) 10,00,000

Answer: Option D

Question No. 76

According to the recommendations of Nagpur Conference, the width formation of an ideal National Highway in hard rock cutting, is

(A) 8.9 m
(B) 7.9 m
(C) 6.9 m
(D) 6.5 m

Answer: Option B

Question No. 77

Setting out of Lemniscate transition curves, is done with

(A) Perpendicular offsets
(B) Radial offsets
(C) Deflection angles
(D) Polar deflection angles

Answer: Option D

Question No. 78

Maximum daily traffic capacity of bituminous pavements is

(A) 500 tonnes per day
(B) 1000 tonnes per day
(C) 1500 tonnes per day
(D) 2000 tonnes per day

Answer: Option C

Question No. 79

The head light of vehicles should be such that its lower beam illuminates objects at

(A) 10 m
(B) 20 m
(C) 30 m
(D) 40 m

Answer: Option C

Question No. 80

The gradients of trace cuts for hilly roads, are kept

(A) Equal to ruling gradient
(B) 10 to 20 per cent easier than ruling gradients
(C) 10 to 20 per cent steeper than ruling gradients
(D) None of these

Answer: Option B

Question No. 81

Which of the following represents a carpet of sand-bitumen mix without coarse aggregates?

(A) Mastic asphalt
(B) Sheet asphalt

(C) Bituminous carpet

(D) Bituminous concrete

Answer: Option B

Question No. 82

Reinforcement in cement concrete slab of road pavements, is placed

(A) Longitudinally

(B) Transversely

(C) Longitudinally and transversely

(D) In the form of welded wire mesh

Answer: Option D

Question No. 83

The ability of a driver to stop the vehicle moving with the designed speed, depends upon:

(A) Perception time

(B) Brake reaction time

(C) Efficiency of the brakes

(D) All the above

Answer: Option D

Question No. 84

Maximum number of vehicles can be parked with

(A) Parallel parking

(B) 30° angle parking

(C) 45° angle parking

(D) 90° angle parking

Answer: Option D

Question No. 85

On concrete roads, the camber generally provided, is

(A) 1 in 20 to 1 in 24

(B) 1 in 30 to 1 in 48

(C) 1 in 36 to 1 in 48

(D) 1 in 60 to 1 in 72

Answer: Option D

Question No. 86

If *d* is the economic designed depth of a slab, the thickness of the cement concrete pavement slab at interior, is kept

(A) 1.275 d

(B) 1.125 d

(C) 0.85 d

(D) 0.75 d

Answer: Option C

Question No. 87

The ductility value of bitumen for suitability in road construction should not be less than

    (A) 30 cm

    (B) 40 cm

    (C) 50 cm

    (D) 60 cm

    Answer: Option C

Question No. 88

If L is the length of a moving vehicle and R is the radius of curve, the extra mechanical width b to be provided on horizontal curves,

    (A) L/R

    (B) $L/2R$

    (C) $L^2/2R$

    (D) $L/3R$

    Answer: Option C

Question No. 89

Interior thickness of concrete road slab for design wheel load 6300 kg and permissible flexural stress 21 kg/cm^2, is

    (A) 17.0 cm

    (B) 25.5 cm

    (C) 34.0 cm

    (D) 42.5 cm

    Answer: Option B

Question No. 90

For rapid curing cutbacks, the oil used is

    (A) Gasoline

    (B) Kerosene oil

    (C) Light diesel

    (D) Heavy diesel

    Answer: Option A

Question No. 91

The width of different roads as recommended in Nagpur plan by the Indian Road Conference for hilly region, is

    (A) Same for National Highways

    (B) Different for National Highways

    (C) Same for State Highways

    (D) Same for Major District roads

    Answer: Option B

Question No. 92

To prevent a head-on-collision of vehicles travelling in opposite directions along four-lane roads

(A) Markings on the road are provided

(B) Physical dividers are provided

(C) Area dividers are provided

(D) Medians of wide area are provided

Answer: Option D

Question No. 93

The maximum thickness of expansion joint in rigid pavements is

(A) 0

(B) 25 mm

(C) 50 mm

(D) 100 mm

Answer: Option B

Question No. 94

Length of vehicles does not affect

(A) Extra widening

(B) Minimum radius of turning

(C) Passing sight distance

(D) Width of shoulders

Answer: Option D

Question No. 95

The type of curves generally provided on highways, is

(A) Critical curve

(B) Transition curve

(C) Vertical curve

(D) All the above

Answer: Option D

Question No. 96

The thickness of bituminous carpet varies from

(A) 20 to 25 mm

(B) 50 to 75 mm

(C) 75 to 100 mm

(D) 100 to 120 mm

Answer: Option A

Question No. 97

The advantage of providing super-elevation on roads, is

(A) Higher speed of vehicles

(B) Increased volume of traffic

(C) Reduced maintenance cost of the roads

(D) All the above

Answer: Option D

Question No. 98

Gradient resistance of moving vehicles along down slopes, is

    (A) + 7 kg/tonne

    (B) + 9 kg/tonne

    (C) - 9 kg/tonne

    (D) - 7 kg/tonne

    Answer: Option C

Question No. 99

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

    (A) 10 Lux

    (B) 15 Lux

    (C) 20 Lux

    (D) 30 Lux

    Answer: Option D

Question No. 100

Camber in pavements is provided by

    (A) Straight line method

    (B) Parabola method

    (C) Straight at the edges and parabolic at the crown

    (D) All the above

    Answer: Option D

Question No. 101

Over taking time required for a vehicle with design speed 50 km ph and overtaking acceleration 1.25 m/sec^2 to overtake a vehicle moving at a speed 30 km ph, is

    (A) 5.0 secs

    (B) 6.12 secs

    (C) 225.48 secs

    (D) 30 secs

    Answer: Option B

Question No. 102

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

    (A) 0

    (B) 3

    (C) 5

    (D) 7

    Answer: Option A

Question No. 103

According to Indian Road Congress, the width of carriageway, is

(A) 3.75 m for single lane

(B) 7.0 m for two lanes without raised kerbs

(C) 7.5 m for two lanes with raised kerbs

(D) All the above

Answer: Option D

Question No. 104

For night travel, the length of a valley curve should be such that the head light beam distance is the same as

(A) Stopping sight distance

(B) Overtaking sight distance

(C) Sum of (*a*) and (*b*)

(D) Difference of (*a*) and (*b*)

Answer: Option A

Question No. 105

The binder normally used in flexible pavement construction is

(A) Cement

(B) Lime

(C) Bitumen

(D) None of the above

Answer: Option C

Question No. 106

Intermediate catch water drains are provided only, if

(A) Catchment area of the watershed above road is large

(B) Intensity of rainfall is heavy

(C) Single catch water drain is inadequate

(D) All the above

Answer: Option D

Question No. 107

In retaining and breast walls, weep holes are provided at

(A) 50 cm vertical height and 50 cm centre to centre horizontally

(B) 100 cm vertical height and 100 cm centre to centre horizontally

(C) 100 cm vertical height and 120 cm centre to centre horizontally

(D) 120 cm vertical height and 100 cm centre to centre horizontally

Answer: Option C

Question No. 108

In highway construction on super-elevated curves, the rolling shall proceed from

(A) Sides towards the centre

(B) Centre towards the sides

(C) Lower edge towards the upper edge

(D) Upper edge towards the lower edge

Answer: Option C

Question No. 109

An upgrade g_1% is followed by a downgrade g_2%. The equation of the parabolic curve of length L to be introduced, is given by

(A) $y = g \, [(g_1 - g_2)/100 \, L] \, x^2$
(B) $y = [(g_1 + g_2)/200 \, L] \, x^2$
(C) $y = [(g_1 - g_2)/400 \, L] \, x^2$
(D) $y = [(g_1 + g_2)/800 \, L] \, x^2$

Answer: Option B

Question No. 110

Pick up the correct statement from the following:

(A) Borrow pits are located outside the right of way
(B) Borrow pits may be located on either side of the right of way
(C) Spoil bank is located on one side of the right of way
(D) All the above

Answer: Option D

Question No. 111

Which of the following tests measures the toughness of road aggregates?

(A) Crushing strength test
(B) Abrasion test
(C) Impact test
(D) Shape test

Answer: Option C

Question No. 112

Reconnaissance is best done with the help of

(A) Aerial photographic survey
(B) Cadastral surveys
(C) Topographical surveys
(D) Triangulation surveys

Answer: Option A

Question No. 113

To ensure that bullock carts may not overturn on curves, the maximum value of super-elevation, recommended by I.R.C., is

(A) 1 in 10
(B) 1 in 12
(C) 1 in 15
(D) 1 in 20

Answer: Option C

Question No. 114

If the group index value of sub-grade is between 5 and 9, then the sub-grade is treated as

(A) Good

(B) Fair

(C) Poor

(D) Very poor

Answer: Option C

Question No. 115

An Executive Engineer of roads, executes works under direct control of

(A) Superintending Engineer

(B) Secretary to the Govt

(C) Chief Engineer

(D) None of these

Answer: Option A

Question No. 116

The distance travelled by revolving the wheel of a vehicle more than its circumferential movement, is known as

(A) Slip

(B) Skid

(C) Neither (a) nor (b)

(D) Both (a) and (b)

Answer: Option B

Question No. 117

The suitable surfacing material for a bridge deck slab is

(A) Sheet asphalt

(B) Bituminous carpet

(C) Mastic asphalt

(D) Rolled asphalt

Answer: Option C

Question No. 118

If the velocity of moving vehicles on a road is 24 km/per hour, stopping distance is 19 metres and average length of vehicles is 6 metres, the basic capacity of lane, is

(A) 500 vehicles per hour

(B) 700 vehicles per hour

(C) 1000 vehicles per hour

(D) 1250 vehicles per hour

Answer: Option C

Question No. 119

Traffic census is carried out for

(A) Speed and delay study

(B) Road parking study

(C) Traffic volume study

(D) All the above

Answer: Option D

Question No. 120

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

Answer: Option D

Question No. 121

If the radii of a compound curve and a reverse curve are respectively the same, the length of common tangent

(A) Of compound curve will be more

(B) Of reverse curve will be more

(C) Of both curves will be equal

(D) None of these

Answer: Option C

Question No. 122

The best compromise between the increase of the length of a highway and reduction in its load carrying capacity, is the ruling gradient

(A) 1 in 10

(B) 1 in 15

(C) 1 in 20

(D) 1 in 25

Answer: Option C

Question No. 123

Bottom most layer of pavement is known as

(A) Wearing course

(B) Base course

(C) Sub-base course

(D) Sub-grade

Answer: Option D

Question No. 124

The number of vehicles moving in a specified direction on a roadway that pass a given point during specified unit of time, is called

(A) Traffic volume

(B) Traffic density

(C) Basic capacity

(D) Traffic capacity

Answer: Option A

Question No. 125

Ruling gradient on hill roads 300 m above M.S.L. is kept

(A) 4 %

(B) 5 %

(C) 7 %

(D) 8 %

Answer: Option B

Question No. 126

The aggregates required for one kilometre length of water bound macadam road per meter width and for 10 mm thickness is

(A) 8 cubic meter

(B) 10 cubic meter

(C) 12 cubic meter

(D) 15 cubic meter

Answer: Option C

Question No. 127

The minimum value of camber provided for thin bituminous surface hill roads, is

(A) 2.2 %

(B) 2.5 %

(C) 3.0 %

(D) 3.5 %

Answer: Option B

Question No. 128

Roundabouts are not suitable if number of vehicles exceed

(A) 3000

(B) 4000

(C) 5000

(D) 6000

Answer: Option A

Question No. 129

The minimum design speed for hairpin bends in hill roads is taken as

(A) 20 kmph

(B) 30 kmph

(C) 40 kmph

(D) 50 kmph

Answer: Option A

Question No. 130

Thickness of a pavement may be reduced considerably by

    (A) Compaction of soil

    (B) Stabilisation of soil

    (C) Drainage of soil

    (D) Combination of all the above

    Answer: Option D

Question No. 131

To compensate the loss of tractive force of vehicles along curves of radius *R*, the percentage reduction of gradient, is

    (A) $50/R$

    (B) $75/R$

    (C) $100/R$

    (D) $125/R$

    Answer: Option B

Question No. 132

The maximum allowable Los Angeles abrasion value for high quality surface course is

    (A) 10 %

    (B) 20 %

    (C) 30 %

    (D) 45 %

    Answer: Option C

Question No. 133

The minimum ratio of the radii of two circular curves of a compound curve, is kept

    (A) 1.25

    (B) 1.5

    (C) 1.75

    (D) 2.0

    Answer: Option B

Question No. 134

The distance travelled by a moving vehicle during perception and brake reaction times, is known as

    (A) Sight distance

    (B) Stopping distance

    (C) Lag distance

    (D) None of these

    Answer: Option C

Question No. 135

Rigidity factor for a tyre pressure greater than 7 kg/cm² is

    (A) Equal to 1

(B) Less than 1

(C) Greater than 1

(D) Zero

Answer: Option B

Question No. 136

The formula for calculating the depth of concrete pavements suggested by Gold beck, is

(A) $d = 3W/\sigma_{max}$

(B) $d = \sqrt{(3W/\sigma_{max})}$

(C) $d = \sqrt{(2W/\sigma_{max})}$

(D) $d = \sqrt{(1.5W/\sigma_{max})}$

Answer: Option B

Question No. 137

If a Lemniscate curve having an angle of deflection Δ, is transitional throughout, the maximum polar angle is

(A) $\Delta/2$

(B) $\Delta/3$

(C) $\Delta/4$

(D) $\Delta/6$

Answer: Option D

Question No. 138

Most suitable material for highway embankments is

(A) Granular soil

(B) Organic soil

(C) Silts

(D) Clays

Answer: Option A

Question No. 139

The road foundation for modern highways construction, was developed by

(A) Tresguet

(B) Telford

(C) Tresguet and Telford simultaneously

(D) Telford and Macadam simultaneously

Answer: Option D

Question No. 140

Longitudinal pavement lines marked broken in white paint

(A) Are for the guidance of the drivers

(B) Are not to be crossed over

(C) May be crossed over at the discretion of the driver

(D) All the above

Answer: Option C

Question No. 141
The recommended grade of tar for grouting purpose is
- (A) RT-1
- (B) RT-2
- (C) RT-3
- (D) RT-5

Answer: Option D

Question No. 142
According to Highway Research Board of U.S.A. practical land width, is
- (A) 2.7 m
- (B) 3.0 m
- (C) 3.3 m
- (D) 3.6 m

Answer: Option D

Question No. 143
If the radius of a main curve is 300 m and length of the transition curve is 100 m, the angle with tangent to locate the junction point, is
- (A) 1° 11'
- (B) 2° 11'
- (C) 3° 11'
- (D) 4° 11'

Answer: Option C

Question No. 144
Which of the following premix methods is used for base course?
- (A) Bituminous carpet
- (B) Mastic asphalt
- (C) Sheet asphalt
- (D) Bituminous bound macadam

Answer: Option D

Question No. 145
Pick up the correct statement from the following:
- (A) During reconnaissance, the general route of the alignment is selected
- (B) After reconnaissance, a trace is cut for the alignment
- (C) Last stage is the detailed surveys for desired geometries' of the highway
- (D) All the above

Answer: Option D

Question No. 146
The statement, regarding the size of stones used at the wearing surface. "The size of a stone used on a road must be in due proportion to the space occupied by a wheel of ordinary dimensions on a smooth level surface. The point of contact will be found to be longitudinal about 2.5 cm and every

piece of stone put into the road which exceeds 2.5 cm in any of its dimension is mischievous" was made by

    (A) Telford

    (B) Macadam

    (C) Tresguet

    (D) Sully

    Answer: Option B

Question No. 147

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

    Answer: Option C

Question No. 148

Pick up the correct statement from the following:

    (A) Safety fences are provided on either side of a roadway if embankments are in excess of 6 metres

    (B) Safety fences are provided on outside of the curves of radii less than 750 m if the embankments are between 3 metres and 6 metres

    (C) Guard stones are provided at 2.5 metres intervals if embankments are between 1.6 metres to 3 metres

    (D) All the above

    Answer: Option D

Question No. 149

I.R.T.D.A. (Indian Roads and Transport Development Association) was set up at Bombay in

    (A) 1907

    (B) 1917

    (C) 1027

    (D) 1937

    Answer: Option C

Question No. 150

The maximum spacing of contraction joints in rigid pavements is

    (A) 2.5 m

    (B) 3.5 m

    (C) 4.5 m

    (D) 5.5 m

    Answer: Option C

Question No. 151

If _N_ is deviation angle, the length _L_, of a parabolic vertical curve for safe stopping distance _S_, is

(A) $NS^2/4.4$ if $L > S$

(B) $2S - 4.4/N$ if $L < S$

(C) $2S - 4.4/N$ if $L > S$

(D) Both (*a*) and (*b*)

Answer: Option D

Question No. 152

A single lane carriage way whenever changes to two-lane carriage way, is affected through a taper of

(A) 1 in 10

(B) 1 in 15

(C) 1 in 20

(D) 1 in 15 to 1 in 20

Answer: Option D

Question No. 153

Softening point of bitumen to be used for read construction at a place where maximum temperature is 40°C should be

(A) Less than 40°C

(B) Greater than 40°C

(C) Equal to 40°C

(D) None of the above

Answer: Option B

Question No. 154

According to IRC : 52-1973, for a single lane National Highway in hilly region,

(A) Width of the carriageway must be 3.75 m

(B) Shoulders on either side must be 1.25 m

(C) Total width of the road-way must be 6.25 m

(D) Total of the above

Answer: Option D

Question No. 155

If a Lemniscate curve of transition throughout is introduced to connect two parallel roads, the maximum polar angle of the curve, is

(A) 10°

(B) 15°

(C) 20°

(D) 30°

Answer: Option D

Question No. 156

Minimum thickness of a layer of fine sand required to cut off capillary rise of water completely, should be

(A) 40 cm

(B) 52 cm

(C) 64 cm

(D) 76 cm

Answer: Option D

Question No. 157

The standard equation of a cubical spiral transition curve provided on roads, is

(A) $y = l^2/6RL$

(B) $y = x^3/6RL$

(C) $y = x^2/6RL$

(D) $y = x/6RL$

Answer: Option B

Question No. 158

If *N* is the algebraic difference of grades, *S* is the head light beam distance in metres, the length (*L*) of a valley curve, is

(A) $NS^2/4$

(B) $NS^2/6$

(C) $NS^2/9.6$

(D) $NS^2/4.8$

Answer: Option A

Question No. 159

To prevent compressive stresses in a rigid concrete pavement, the joint provided, is

(A) Expansion joint

(B) Contraction joint

(C) Hinged joint

(D) All the above

Answer: Option D

Question No. 160

Along high ways confirmatory route markers are generally fixed

(A) Before the crossing on the left side

(B) After the crossing on the left side

(C) Before the crossing on the right side

(D) After the crossing on the right side

Answer: Option B

Question No. 161

If the width of carriage way is 12.5 metres, outer edge 50 cm higher than the inner edge, the required super elevation is

(A) 50 cm

(B) 1 in 25

(C) 1 in 400

(D) 1 in 40

Answer: Option B

Question No. 162
If *N* is the net difference of grades, *S* is the minimum overtaken sight distance in metres, the length (*L*) of a summit curve, is
   (A) $NS/4$
   (B) $NS^2/4$
   (C) $NS^2/4.8$
   (D) $NS^2/9.6$
   Answer: Option D

Question No. 163
Super-elevation on roads in snow bound areas, should generally not exceed
   (A) 15 %
   (B) 12 %
   (C) 10 %
   (D) 7 %
   Answer: Option D

Question No. 164
Passing zones are generally not provided on
   (A) Summit curves
   (B) Horizontal curves
   (C) Two lane highways
   (D) All the above
   Answer: Option D

Question No. 165
In a braking test, a vehicle travelling at 36 km ph was stopped at a braking distance of 8.0 m. The average value of the vehicle's skid resistance (friction coefficient) is
   (A) 0.64
   (B) 6.25
   (C) 0.16
   (D) None of these
   Answer: Option C

Question No. 166
The first stage of deciding the alignment of a hill road, is
   (A) Reconnaissance
   (B) Detailed survey
   (C) Trace-out
   (D) Preliminary survey
   Answer: Option A

Question No. 167

The normal road land width for a National or State highway, in open areas should be

(A) 45 m

(B) 30 m

(C) 24 m

(D) 20 m

Answer: Option A

Question No. 168

Floating gradients are generally provided

(A) Along maximum gradients

(B) Along minimum gradients

(C) At summit curves

(D) At valley curves

Answer: Option C

Question No. 169

If cross slope of a country is upto 10% the terrain is classified as

(A) Plain

(B) Rolling

(C) Mountainous

(D) Steep

Answer: Option A

Question No. 170

Area of steel required per metre width of pavement for a length of 20 m for design wheel load 6300 kg and permissible stress in steel 1400 kg/cm^2, is

(A) 70 kg/sq cm

(B) 80 kg/sq cm

(C) 90 kg/sq cm

(D) 100 kg/sq cm

Answer: Option C

Question No. 171

In case of a hair pin bend of a highway,

(A) Minimum radius of inner curve is 14 m

(B) Minimum radius of transition is 15 m

(C) Circular compound curve may be provided

(D) All the above

Answer: Option D

Question No. 172

The minimum vertical clearance of overhanging cliffs or any other structure above the surface of a hill road, should be

(A) 3 m

(B) 4 m

(C) 5 m

(D) 6 m

Answer: Option C

Question No. 173

The camber on pavements, is provided by

(A) Straight line method

(B) Parabolic method

(C) Straight line and parabolic at crown

(D) Elliptical method

Answer: Option C

Question No. 174

One-way streets are generally provided in crowded cities as, these

(A) Are inexpensive means of traffic flow

(B) Reduce delays to vehicles

(C) Permit higher speed

(D) All the above

Answer: Option D

Question No. 175

The width of the right of way, is influenced by

(A) Formation width

(B) Shoulders or berms

(C) Classification of road

(D) All the above

Answer: Option D

Question No. 176

The maximum distance of the apex of a vertical curve of length L from the point of intersection of two grades + g_1%, and - g_2% ($g_1 > g_2$), is

(A) $L(g_1 - g_2)/400$

(B) $L(g_1 - g_2)/800$

(C) $L(g_1 + g_2)/800$

(D) $L(g_2 - g_1)/300$

Answer: Option C

Question No. 177

Pick up the incorrect statement from the following. On highways circular curves may be

(A) Simple curves

(B) Compound curves

(C) Reverse curves

(D) Vertical curves

Answer: Option D

Question No. 178

The desirable camber for straight roads with thin bituminous surfacing, is

(A) 1 in 33 to 1 in 25

(B) 1 in 40 to 1 in 33

(C) 1 in 150 to 1 in 140

(D) 1 in 160 to 1 in 140

Answer: Option C

Question No. 179

If brakes of vehicles are effective, the vehicle-running at 30 km/hour comes to a stop in

(A) 10 metres

(B) 12 metres

(C) 15 metres

(D) 18 metres

Answer: Option B

Question No. 180

From the point of tangency before an intersection, the route markers are fixed at a distance of

(A) 15 m to 30 m

(B) 20 m to 35 m

(C) 40 m to 50 m

(D) 100 m to 150

Answer: Option D

Question No. 181

The minimum super-elevation in rolling terrain in plains, is limited to

(A) 4 %

(B) 5 %

(C) 6 %

(D) 7 %

Answer: Option D

Question No. 182

In ideal pavement is constructed with

(A) Bricks

(B) Hard soil

(C) Portland cement concrete

(D) Tar

Answer: Option C

Question No. 183

Pick up the incorrect statement from the following. If water cement ratio is

(A) Increased, strength of concrete increases

(B) Decreased, strength of concrete increases

(C) Increased, strength of concrete is not affected

(D) None of these

Answer: Option C

Question No. 184

Design of horizontal and vertical alignments, super-elevation, sight distance and grades, is worst affected by

    (A) Width of the vehicle

    (B) Length of the vehicle

    (C) Height of the vehicle

    (D) Speed of the vehicle

Answer: Option D

Question No. 185

For a comfortable travel on Highways, the centrifugal ratio should not exceed

    (A) 0.10

    (B) 0.15

    (C) 0.20

    (D) 0.25

Answer: Option D

Question No. 186

Border Roads Organisation for hilly regions (India), was formed in

    (A) 1947

    (B) 1954

    (C) 1958

    (D) 1960

Answer: Option D

Question No. 187

For a poorly graded sub-grade soil, thickness of sub-base, is

    (A) 10 cm

    (B) 15 cm

    (C) 20 cm

    (D) 30 cm

Answer: Option D

Question No. 188

The usual width of parapet walls along Highways in hilly region, is

    (A) 50 cm

    (B) 60 cm

    (C) 70 cm

    (D) 80 cm

Answer: Option B

Question No. 189

In scanty rainfall regions, the camber provided will be

    (A) Nil

    (B) Flatter

    (C) Steeper

    (D) None of these

    Answer: Option B

Question No. 190

In water bound macadam roads, binding material, is

    (A) Sand

    (B) Stone dust

    (C) Cement

    (D) Brick dust

    Answer: Option B

Question No. 191

Design of flexible pavement, involves

    (A) Wheel loads

    (B) Intensity of traffic

    (C) Climate of the region

    (D) Sub-grade conditions

    Answer: Option C

Question No. 192

Increase in traffic volume, due to increase in transport vehicles, is known as

    (A) Development traffic

    (B) Normal traffic growth

    (C) Generated traffic growth

    (D) Current traffic

    Answer: Option C

Question No. 193

Width of a rotary round should be equal to

    (A) Twice the width of narrowest radial road

    (B) Width of the widest road

    (C) Width of the widest road plus the width of one lane

    (D) Width of the widest road plus 2 metres

    Answer: Option C

Question No. 194

Volume of traffic which would immediately use a new road or an improved one when opened to traffic, is known

    (A) Development traffic

    (B) Current traffic

(C) General traffic

(D) Normal traffic growth

Answer: Option D

Question No. 195

Volume of traffic which is due to improvement carried out in adjacent area, is known as

(A) Development traffic

(B) Generated traffic growth

(C) Normal traffic growth

(D) Current traffic

Answer: Option A

Question No. 196

Maximum number of passenger cars that can pass a given point on a road during one hour under the most ideal road way and traffic conditions, is known as

(A) Traffic density

(B) Basic capacity of traffic lane

(C) Possible capacity of traffic lane

(D) All the above

Answer: Option B

Question No. 197

Reference pillars fixed on the centre line of a proposed road, provide the following information:

(A) Reduced distance (R.D.)

(B) Horizontal distance of road from the centre line

(C) Reduced level at the top of pillar

(D) All the above

Answer: Option D

Question No. 198

In an ideal transition curve, the radius of curvature

(A) Is constant

(B) At any point is directly proportional to its distance from the point of commencement

(C) Is inversely proportional to the radius of main curve

(D) Is directly proportional to the radius of main curve

Answer: Option C

Question No. 199

Alignment of highways in hilly regions, is decided on

(A) Long stretch of very hard cutting

(B) Number of river crossings

(C) Natural unstable areas

(D) All the above

Answer: Option D

Question No. 200

The desirable camber for straight cement concrete roads, is

    (A) 1 in 33 to 1 in 25

    (B) 1 in 40 to 1 in 33

    (C) 1 in 150 to 1 in 140

    (D) 1 in 160 to 1 in 140

    Answer: Option D

Question No. 201

In case of cement concrete pavements, pick up the incorrect statement

    (A) Tractive resistance is low

    (B) Initial cost of construction is high

    (C) Initial cost of construction is low

    (D) Visibility during nights is high

    Answer: Option C

Question No. 202

If *D* is the degree of a curve, the percentage reduction of gradient, is

    (A) $0.01\ D$

    (B) $0.02\ D$

    (C) $0.03\ D$

    (D) $0.04\ D$

    Answer: Option D

Question No. 203

Pick up the incorrect statement from the following:

    (A) Highways are always constructed in straight line

    (B) Highways may be provided horizontal curves

    (C) Highways may be provided vertical curves

    (D) Highways may be provided both horizontal and vertical curves

    Answer: Option A

Question No. 204

Pick up the correct statement from the following:

    (A) Long tangent sections exceeding 3 km in length should be avoided

    (B) Curve length should be at least 150 metres for a deflection angle of 5 degree

    (C) For every degree decrease in the deflection angle, 30 metre length of curve to be increased

    (D) All the above

    Answer: Option D

Question No. 205

Minimum number of 50 kg cement bags per cubic metre of concrete for a mix corresponding to crushing strength 280 kg/cm^2 at 28 days, are

    (A) 5.0

    (B) 6.5

(C) 7.0

(D) 7.5

Answer: Option B

Question No. 206

For Indian conditions, the water bound macadam roads, are suitable if daily traffic does not exceed

(A) 2000 tonnes

(B) 2500 tonnes

(C) 3000 tonnes

(D) 3500 tonnes

Answer: Option A

Question No. 207

Indian Road Congress (I.R.C.) was founded and constituted with its head quarters at New Delhi, in

(A) 1924

(B) 1927

(C) 1930

(D) 1934

Answer: Option D

Question No. 208

The steepest gradient permitted on roads which, in ordinary conditions, does not exceed, is known

(A) Ruling gradient

(B) Maximum gradient

(C) Exceptional gradient

(D) Floating gradient

Answer: Option B

Question No. 209

When each particle of aggregates is thinly coated with cement paste, a heterogeneous solid is formed, which is known as

(A) Hydration

(B) Gel

(C) Concrete

(D) None of these

Answer: Option C

Question No. 210

Width of the shoulders of carriage way is generally kept

(A) 100 cm

(B) 125 cm

(C) 150 cm

(D) 250 cm

Answer: Option D

Question No. 211

Reduction of load capacity in a ruling gradient of

    (A) 1 in 10, is 10%

    (B) 1 in 15, is 15%

    (C) 1 in 20, is 10%

    (D) 1 in 25, is 25%

    Answer: Option C

Question No. 212

The width of road pavements, depends upon

    (A) Width of traffic lane

    (B) Number of traffic

    (C) Width of median strip

    (D) All the above

    Answer: Option D

Question No. 213

While calculating the overtaking sight distance, the height of the object above road surface, is assumed

    (A) 50 cm

    (B) 75 cm

    (C) 100 cm

    (D) 120 cm

    Answer: Option D

Question No. 214

Minimum thickness of the base of a flexible pavement, is

    (A) 10 cm

    (B) 15 cm

    (C) 20 cm

    (D) 25 cm

    Answer: Option A

Question No. 215

Widening of the roads on curves in hilly region, is done

    (A) On the outer side

    (B) On the inner side

    (C) On the outer and inner sides equally

    (D) Less on outer side and more on inner side

    Answer: Option B

Question No. 216

Side drains on both sides of a hill road, are essential when the road is

(A) Along the spur curves

(B) Along the re-entrant curves

(C) In cutting

(D) None of these

Answer: Option C

Question No. 217

The wall constructed for the stability of a back filling portion of a road on the downhill side, is known as

(A) Retaining wall

(B) Breast wall

(C) Parapet wall

(D) All the above

Answer: Option A

Question No. 218

If *V* is speed of a moving vehicle, *r* is radius of the curve, *g* is the acceleration due to gravity, *W* is the width of the carriageway, the super elevation is

(A) WV/gr

(B) W^2V/gr

(C) WV^2/gr

(D) WV/gr^2

Answer: Option C

Question No. 219

In a right angle bend of a road provided with a transition throughout, the maximum polar angle will be

(A) 10°

(B) 15°

(C) 20°

(D) 30°

Answer: Option B

Question No. 220

If *V* is the design speed in km/hour and *R* is the radius of the curve of a hill road, the super-elevation

(A) $e = V / 127\,R$

(B) $e = V^2 / 127\,R$

(C) $e = V^2/ 225\,R$

(D) $e = V / 225\,R$

Answer: Option C

Question No. 221

Along a hill road, a side drain is provided on

(A) Outer side of a spur curve

(B) Outer side of a re-entrant curve

(C) Outer side of both (*a*) and (*b*)

(D) Inner side of both (*a*) and (*b*)

Answer: Option D

Question No. 222

The total length of a valley formed by two gradients - 3% and + 2% curve between the two tangent points to provide a rate of change of centrifugal acceleration 0.6 m/sec², for a design speed 100 kmph, is

(A) 16.0 m

(B) 42.3 m

(C) 84.6 m

(D) None of these

Answer: Option C

Question No. 223

If *V* is speed in km/hour and *R* is radius of the curve, the super-elevation *e* is equal to

(A) $V^2/125\,R$

(B) $V^2/225\,R$

(C) $V^2/325\,R$

(D) $V^2/25\,R$

Answer: Option B

Question No. 224

The weaving length of a roadway is the distance

(A) Between the channelizing islands

(B) Equal to half circumference

(C) Equal to total width of adjoining radial roads

(D) Equal to diameter of rotary

Answer: Option A

Question No. 225

Following type of pavement is generally known as flexible pavement

(A) Water-bound macadam roads

(B) Stabilised soil roads

(C) Road constructed with various layers of building material well compacted

(D) All the above

Answer: Option D

Question No. 226

First operation during the detailed survey of a hill road, is

(A) Hydrological and soil surveys

(B) Adjustment of alignment along with curves

(C) Derivation of longitudinal and cross-sections

(D) Fixation of Bench Marks

Answer: Option D

Question No. 227
Pick up the incorrect statement from the following. The width of the right-of-way is decided so as to accommodate
- (A) Formation width
- (B) Side slopes
- (C) Horizontal curve
- (D) Vertical curve

Answer: Option D

Question No. 228
The type of transition curves generally provided on hill roads, is
- (A) Circular
- (B) Cubic parabola
- (C) Lemniscate
- (D) Spiral

Answer: Option D

Question No. 229
When a number of hair pin bends are introduced, a minimum intervening distance in between is kept
- (A) 20 m
- (B) 40 m
- (C) 60 m
- (D) 100 m

Answer: Option C

Question No. 230
If cross slope of a country is 10% to 25%, the terrain is classified as
- (A) Rolling
- (B) Mountainous
- (C) Steep
- (D) Plain

Answer: Option A

Question No. 231
For the design of cement concrete pavement for corner loading, Indian Road Congress recommends the use of
- (A) Westergaard's formula
- (B) Kelly's formula
- (C) Goldbeck's formula
- (D) Picker's formula

Answer: Option D

Question No. 232

On the recommendations of Indian Road Congress, the ruling gradient in plains, is

(A) 1 in 15
(B) 1 in 20
(C) 1 in 30
(D) 1 in 45

Answer: Option C

Question No. 233

The tangent length of a simple circular curve of radius R deflecting through θ°, is

(A) $R \tan θ$
(B) $R \tan θ/2$
(C) $R \sin θ$
(D) $R \sin θ/2$

Answer: Option B

Question No. 234

While calculating the sight distances, the driver's eye above road surface, is assumed

(A) 90 cm
(B) 100 cm
(C) 110 cm
(D) 120 cm

Answer: Option D

Question No. 235

On earth roads, the camber should preferably be

(A) 1 in 20 to 1 in 24
(B) 1 in 30 to 1 in 48
(C) 1 in 15 to 1 in 20
(D) 1 in 10 to 1 in 15

Answer: Option A

Question No. 236

At a road junction, 7 cross conflict points are severe if

(A) Both are one-way roads
(B) Both are two-way roads
(C) One is two-way road and other is one-way road
(D) None of these

Answer: Option C

Question No. 237

The safe length L of a valley curve for night travel is

(A) $2S - (1.50 + 0.035 S)/N$ if $L < S$
(B) $NS^2/(1.50 + 0.035 S)$ if $L > S$
(C) Neither (*a*) nor (*b*)

(D) Both (*a*) and (*b*)

Answer: Option D

Question No. 238

Road width 8.8 m of two lane National highways or State highways in mountainous terrain

(A) Excludes the width of parapet (0.6 m)

(B) Excludes the width of side drain (0.6 m)

(C) Excludes the width of parapet and side drain

(D) Includes the width of parapet and side drain

Answer: Option C

Question No. 239

The radius of curvature provided along a transition curve, is

(A) Minimum at the beginning

(B) Same throughout its length

(C) Equal to the radius of circular curve

(D) Varying from infinity to the radius of circular curve

Answer: Option D

Question No. 240

The normal road width of National and State highways

(A) Is kept 45 m

(B) In plain and rolling terrain built-up area, is 30 m

(C) In mountainous built-up area is 20 m

(D) All the above

Answer: Option D

Question No. 241

If *R* is the radius of a main circular curve, Δ is the angle of deflection and α is the polar deflection angle of any point, its radial distance is

(A) $3R\sqrt{(\sin \Delta/3 \sin 2\alpha)}$

(B) $3R\sqrt{(\sin \Delta/2 \sin 3\alpha)}$

(C) $3R\sqrt{(\sin \Delta/3 \sin \alpha/2)}$

(D) $3R\sqrt{(\sin 2\Delta \sin \alpha)}$

Answer: Option A

Question No. 242

Raising of outer edge of a road with respect to inner edge, is known

(A) Super elevation

(B) Cant

(C) Banking

(D) All the above

Answer: Option D

Question No. 243

The G.T. road from Lahore to Calcutta in undivided India, was constructed during

  (A) 3495-3500 BC
  (B) 265-270 BC
  (C) 1540-1545 AD
  (D) 1440-1450 AD

  Answer: Option C

Question No. 244

Endoscope is used to determine

  (A) Spot speed
  (B) Average speed
  (C) Travel time
  (D) None of these

  Answer: Option A

Question No. 245

The minimum road width is taken

  (A) 9 m
  (B) 12 m
  (C) 16 m
  (D) 20 m

  Answer: Option A

Question No. 246

Newly constructed pavement with ordinary Portland cement attains its working strength after

  (A) 7 days
  (B) 14 days
  (C) 21 days
  (D) 28 days

  Answer: Option D

Question No. 247

The maximum comfortable retardation applied to moving vehicles, is

  (A) 3.42 m/sec^2
  (B) 4.42 m/sec^2
  (C) 5.56 m/sec^2
  (D) 7.80 m/sec^2

  Answer: Option A

Question No. 248

For a vehicle moving with a speed of 80 km per hour, the brake reaction time, in ordinary cases, is

  (A) 1 sec
  (B) 1.5 sec
  (C) 2.0 sec

(D) 2.5 sec

Answer: Option D

Question No. 249

Horizontal curves on highways are provided

    (A) To break the monotony of driving

    (B) To discourage the tendency to increase speed

    (C) To decrease the mental strain on drivers

    (D) All the above

Answer: Option D

Question No. 250

Bottom-most component of a flexible pavement, is

    (A) Sub-grade

    (B) Sub-base

    (C) Base

    (D) Base course

Answer: Option A

Question No. 251

For a properly designed vehicle, the resistance generally ignored, is

    (A) Wind resistance

    (B) Rolling resistance

    (C) Grade resistance

    (D) Axle resistance

Answer: Option D

Question No. 252

If the difference in elevation of an edge of the pavement 9 m wide and its crown is 15 cm, the camber of the pavement, is

    (A) 1 in 60

    (B) 1 in 45

    (C) 1 in 30

    (D) 1 in 15

Answer: Option C

Question No. 253

A subsidiary area in a carriageway placed so as to control the movement of the traffic, is

    (A) Median strip

    (B) Island

    (C) Flower bed

    (D) Refuge

Answer: Option B

Question No. 254

Traffic engineering only includes

    (A) Planning of regulatory measures

    (B) Design and application of control devices

    (C) Analysis of traffic characteristics

    (D) All the above

    Answer: Option D

Question No. 255

The traffic manoeuvre means

    (A) Diverging

    (B) Merging

    (C) Crossing

    (D) All the above

    Answer: Option D

Question No. 256

If *A* is the projected area of a vehicle in square metres, *V* is speed of the vehicles in kilometres per hour and *C* is a constant, then the wind resistance *R* to the moving vehicles, is given by

    (A) $R = CAV$

    (B) $R = CAV^2$

    (C) $R = CAV^3$

    (D) $R = C^2AV$

    Answer: Option B

Question No. 257

If the radius of curvature of a hill road is 50 m, the percentage grade compensation should be

    (A) $60/R$

    (B) $70/R$

    (C) $75/R$

    (D) $80/R$

    Answer: Option C

Question No. 258

The efficiency of the brakes of a vehicle depends upon

    (A) Condition of road surface

    (B) Condition of the tyres

    (C) Presence of the show moisture

    (D) All the above

    Answer: Option D

Question No. 259

On a pavement with parabolic camber, the angle of inclination of the vehicles will be

    (A) More at the crown

    (B) Less at the edges

(C) More at the edges

(D) Same at the edges as well as at the crown

Answer: Option C

Question No. 260

Deviation of the alignment of a trace cut may be permitted in areas involving

(A) Land slides

(B) Sand dunes

(C) Dens

(D) None of these

Answer: Option A

Question No. 261

For a 6.6 m wide two lane pavement, berms are provided on either side having a width of

(A) 1.00 m

(B) 1.25 m

(C) 1.50 m

(D) 1.75 m

Answer: Option C

Question No. 262

The wall constructed for the stability of an excavated portion of a road on the hill side, is known as

(A) Retaining wall

(B) Breast wall

(C) Parapet wall

(D) All the above

Answer: Option B

Question No. 263

Which one of the following transportation systems is not used for the conveyance of passengers in India?

(A) Railways

(B) Roads

(C) Shipping

(D) Pipe lines

Answer: Option D

Question No. 264

If *W* is the weight of a vehicle negotiating an upgrade 1 : *S* along a track having co-efficient of resistance μ, the tractive force *T* is given by

(A) $T = p / (\mu + S)$

(B) $p = T / (\mu + S)$

(C) $S = p / (\mu + T)$

(D) $\mu = p / (T + S)$

Answer: Option D

Question No. 265

The normal road land width for a major district road in open area, is

  (A) 45 m

  (B) 25 m

  (C) 15 m

  (D) 12 m

  Answer: Option B

Question No. 266

Driving vehicles on wet surfaced roads, is dangerous because it may

  (A) Skid

  (B) Slip

  (C) Overturn

  (D) All the above

  Answer: Option B

Question No. 267

If the rate of change of the super-elevation along a curved portion of a 7 metre wide road is 1 in 150 and the maximum super-elevation allowed is 1 in 15, the maximum length of the transition curve to be provided at either end, is

  (A) 65 m

  (B) 70 m

  (C) 75 m

  (D) 80 m

  Answer: Option B

Question No. 268

Transverse joints are provided at distances varying from

  (A) 10 m to 15 m

  (B) 12 m to 18 m

  (C) 16 m to 24 m

  (D) 17 m to 27 m

  Answer: Option D

Question No. 269

Concrete pavement is provided if daily traffic per lane exceeds

  (A) 500 tonnes

  (B) 750 tonnes

  (C) 1000 tonnes

  (D) 1250 tonnes

  Answer: Option C

Question No. 270

While designing hair pin bends on highways, the minimum

  (A) Designed speed is 20 km/hour

(B) Gradient is 1 in 40

(C) Gradient is 1 in 200

(D) All the above

Answer: Option D

Question No. 271

If the width of a pavement slab is 7.5 m, thickness 20 cm and working stress 1400 kg/cm^2, spacing of 10 mm tie bars for the longitudinal joint, is

(A) 10 cm

(B) 20 cm

(C) 30 cm

(D) 40 cm

Answer: Option C

Question No. 272

If no super elevation is provided on a road along curves, pot holes may develop at

(A) Inner edge of the road

(B) Outer edge of the road

(C) Centre of the road

(D) Nowhere on the road

Answer: Option B

Question No. 273

The safe stopping sight distance *D*, may be computed from the equation

(A) $D = 0.278\,Vt + V^2/254f$

(B) $D = 0.254\,Vt + V^2/278f$

(C) $D = 0.254\,Vt + V^2/225f$

(D) $D = 0.225\,Vt + V^2/254f$

Answer: Option A

Question No. 274

Normal formation width of a hill road for one-way traffic, is

(A) 3.6 m

(B) 4.8 m

(C) 6.6 m

(D) 7.2 m

Answer: Option B

Question No. 275

Before providing super-elevation on roads, the portion of the carriageway between the crown and the outer edge is made

(A) To have a reduced fall

(B) Horizontal

(C) To have slope of the camber on the other half of the carriageway

(D) None of these

Answer: Option C

Question No. 276
If the rate of change of grade permitted along a vertical curve is *r* and total change of grade is *g*%, the length *L* of the curve to be provided, is
- (A) $L = (r \times 100/g)$ m
- (B) $L = (g \times 100/r)$ m
- (C) $L = (r + g) \times 100 m$
- (D) $L = [100/(r + g)]$ m

Answer: Option B

Question No. 277
The standard equation of a cubic parabolic transition curve provided on roads, is
- (A) $y = x^3/6 \, RL$
- (B) $y = x/6 \, RL$
- (C) $y = l^2/6 \, RL$
- (D) $y = l^3/6 \, RL$

Answer: Option A

Question No. 278
The traffic carrying capacity of a single lane, depends on
- (A) Type of the vehicles
- (B) Level crossings
- (C) Road intersections
- (D) All the above

Answer: Option D

Question No. 279
In complex situations, total time required for a driver to form a judgement and to act, may be taken as
- (A) 1.0 sec
- (B) 1.5 sec
- (C) 2.0 sec
- (D) 3.0 sec

Answer: Option D

Question No. 280
Full amount of extra width of a pavement on the curve, is provided at
- (A) Beginning of the transition curve
- (B) Centre of the transition curve
- (C) Beginning of the circular curve
- (D) Centre of the circular curve

Answer: Option C

Question No. 281

For the movement of vehicles at an intersection of two roads, without any interference, the type of grade separator generally preferred to, is

(A) Delta

(B) Trumpet

(C) Diamond interchange

(D) Clover leaf

Answer: Option D

Question No. 282

Minimum radius of curvature of National Highways or State highways in hill region free from snow, is kept

(A) 60 m

(B) 50 m

(C) 33 m

(D) 30 m

Answer: Option B

Question No. 283

Width of vehicles affects the width of

(A) Lanes

(B) Shoulders

(C) Parking spaces

(D) All the above

Answer: Option D

Question No. 284

The width formation of a road means the width of

(A) Carriageway

(B) Pavement and shoulders

(C) Embankment at ground level

(D) Embankment at the top level

Answer: Option D

Question No. 285

The maximum safe speed on roads, depends on the

(A) Type of road surface

(B) Type of curves

(C) Sight distance

(D) All the above

Answer: Option D

Question No. 286

An exceptional grade may be provided upto 1 in 12 along hill roads, if the length does not exceed

(A) 45 m per km

(B) 60 m per km

(C) 75 m per km

(D) 90 m per km

Answer: Option B

Question No. 287

Shoulders for high traffic volume roads, should

(A) Be stable throughout the year to be used by vehicles in the case of emergency

(B) Support and protect the ends of carriage ways

(C) Not allow entrance of water to sub-grade

(D) All the above

Answer: Option D

Question No. 288

If the designed speed on a circular curve of radius 1400 m is 80 km/hour, no super-elevation is provided, if the camber, is

(A) 4 %

(B) 3 %

(C) 2 %

(D) 1.7 %

Answer: Option C

Question No. 289

If *d* is the thickness of a concrete pavement, the equivalent radius *b* of resisting section for an interior loading, is

(A) $b = \sqrt{(0.6 + d^2)} - 0.675\,d$

(B) $b = \sqrt{(1.6 + d^2)} + 0.675\,d$

(C) $b = \sqrt{(1.6 + d^2)} - 3.675\,d$

(D) $b = \sqrt{(1.6 + d^2)} - 0.675\,d$

Answer: Option D

Question No. 290

Roughness index of roads, is expressed as

(A) Size of the stone on the pavement

(B) Number of patches on the pavement

(C) Cumulative deformation of surface per horizontal distance

(D) Type of the road surface

Answer: Option C

Question No. 291

To indicate proper control of consistency of a freshly mixed concrete for pavement construction, the slump should be between

(A) 3 to 5 cm

(B) 4 to 6 cm

(C) 5 to 7 cm

(D) 7 to 10 cm

Answer: Option D

Question No. 292

If the cross slope of a country is 25% to 60%, the terrain is classified as

(A) Plain

(B) Rolling

(C) Steep

(D) Mountainous

Answer: Option D

Question No. 293

To prevent movement of moisture from sub-grade to road pavement at the same level as that of water-table, thickness of a cut off layer of coarse sand, is

(A) 15 cm

(B) 20 cm

(C) 30 cm

(D) 45 cm

Answer: Option A

Question No. 294

Retaining walls are generally constructed with dry rubble stones with 60 cm top width and

(A) 1 : 2 front batter

(B) 1 : 3 front batter

(C) 1 : 4 front batter

(D) 1 : 5 front batter

Answer: Option B

Question No. 295

Pick up the incorrect statement from the following:

(A) Tresguet did not provide the top camber for the drainage of surface water

(B) Tresguet provided the top camber for the drainage of surface water

(C) Telford provided two layers of stones in the central 5.4 m width and one layer was provided on the sides

(D) Macadam provided a camber to the formation at the dug-up state, to drain percolated water

Answer: Option A

Question No. 296

In cement concrete pavements, tensile stress is due to:

(A) Bending or deflection under wheel loads

(B) Difference in temperature of the top and bottom of pavement

(C) Contraction of slab during falling temperature

(D) All the above

Answer: Option D

Question No. 297

If *L* is the length of vehicles in metres, *C* is the clear distance between two consecutive vehicles (stopping sight distance), *V* is the speed of vehicles in km/hour, the maximum number *N* of vehicles/hour, is

  (A) $N = 1000\ V / (L + C)$
  (B) $N = (L + C) / 1000\ V$
  (C) $N = 1000\ L / (C + V)$
  (D) $N = 1000\ C / (L + V)$

  Answer: Option A

Question No. 298

Extra widening required at a horizontal curve on a single lane hill road of radius 80 m for a design speed of 50 km ph and for a vehicle with wheel base 6.0 m is

  (A) 0.225 m
  (B) 0.589 m
  (C) 1.250 m
  (D) None of these

  Answer: Option B

Question No. 299

When an up gradient of a highway meets a downgrade, the vertical curve provided, is known as

  (A) Valley curve
  (B) Sag curve
  (C) Summit curve
  (D) All the above

  Answer: Option C

Question No. 300

Customers prefer parking of their vehicles at

  (A) 90° to aisles
  (B) 85° to aisles
  (C) 80° to aisles
  (D) 75° to aisles

  Answer: Option D

Question No. 301

Parapet walls along hill roads, are provided

  (A) To retain the back filling
  (B) To prevent the hill from sliding
  (C) To prevent the wheels of the vehicle from coming on the retaining wall
  (D) None of these

  Answer: Option C

Question No. 302

An ideal vertical curve is

(A) True spiral

(B) Cubic spiral

(C) Cubic parabola

(D) None of these

Answer: Option D

Question No. 303

For calculating the tractive force along an upgrade of an asphalt road, the most probable value of the co-efficient of traction resistance μ is assumed

(A) 1/10

(B) 1/20

(C) 1/30

(D) 1/100

Answer: Option D

Question No. 304

If the ruling gradient on any highway is 3%, the gradient provided on the curve of 300 metre radius, is

(A) 2.00 %

(B) 2.25 %

(C) 2.50 %

(D) 2.75 %

Answer: Option D

Question No. 305

If P is the number of vehicles per day at last census, r is the increase in traffic and n is the number of years passed after last census, number of vehicles A per day for design, is

(A) $P (1 + r)^n$

(B) $P (1 - r)^n$

(C) $P (1 + r)^{-n+5}$

(D) $P (1 + r)^{5n}$

Answer: Option C

Question No. 306

The period of long term plan for the development of roads in India, known as Bombay Plan (Aug. 1958), is

(A) 5 years

(B) 10 years

(C) 15 years

(D) 20 years

Answer: Option D

Question No. 307

California Bearing Ratio method of designing flexible pavements is more accurate as it involves

(A) Characteristics of soils

(B) Traffic intensities

(C) Character of the road making materials

(D) None of these

Answer: Option C

Question No. 308

The absolute minimum radius of horizontal curve for a design speed 60 kmph is

(A) 131 m

(B) 210 m

(C) 360 m

(D) None of these

Answer: Option D

Question No. 309

If *V* is the design speed of vehicles in km/hour, the change of radial acceleration in metres/sec^3, is

(A) $65/(70 + V)$

(B) $60/(70 + V)$

(C) $70/(65 + V)$

(D) $70/(60 + V)$

Answer: Option C

Question No. 310

If the number of lanes on the carriageway of a road is more than two, the total width of lane ways is equal to 3.0 m

(A) + 0.60 m

(B) + 0.70 m

(C) + 0.90 m

(D) + 1.50 m

Answer: Option B

Question No. 311

The convexity provided to the carriageway between the crown and edge of the pavement, is known as

(A) Super-elevation

(B) Camber

(C) Height of the pavement

(D) None of these

Answer: Option B

Question No. 312

If *N* is the algebraic difference of grades, *S* is the minimum sight distance in metres, the length (*L*) of a summit curve is

(A) $NS/4$

(B) $NS^2/4$

(C) $N^2S/4$

(D) $(NS)^2/4$

Answer: Option B

Question No. 313

If the elevations along a road increase, the slope of the road along the longitudinal direction, is known as

(A) Gradient

(B) Grade

(C) Positive grade

(D) Negative grade

Answer: Option A

Question No. 314

Cement grouted pavement is classified as

(A) Rigid pavement

(B) Semi-rigid pavement

(C) Flexible pavement

(D) None of these

Answer: Option B

Question No. 315

Non-passing sight distance along a road is the longest distance at which the driver of a moving vehicle, may see an obstacle on the pavement

(A) 10 cm high

(B) 25 cm high

(C) 50 cm high

(D) 100 cm high

Answer: Option A

Question No. 316

The perpendicular offset from the tan-get to the central point of the circular curve, is

(A) $R \sin \theta/2$

(B) $R \cos \theta/2$

(C) $R (1 - \cos \theta/2)$

(D) $R (1 - \sin \theta/2)$

Answer: Option C

Question No. 317

The width of pavement in addition to a gravelled berm 1 m on either side for a two directional traffic recommended by Nagpur Conference of Chief Engineers, is

(A) 4.7 m

(B) 5.7 m

(C) 6.7 m

(D) 7.7 m

Answer: Option C

Question No. 318

Minimum stopping distance for moving vehicles on road with a design speed of 80 km/hour, is

(A) 80 m

(B) 100 m

(C) 120 m

(D) 150 m

Answer: Option C

Question No. 319

The top height of a route marker above crown level is

(A) 1.50 m

(B) 1.75 m

(C) 2.00 m

(D) 2.25 m

Answer: Option D

Question No. 320

Along horizontal curves, if centrifugal force exceeds lateral friction, vehicles may

(A) Skid

(B) Slip

(C) Not be affected

(D) None of these

Answer: Option A

Question No. 321

Pick up the incorrect statement from the following. The super-elevation on roads is

(A) Directly proportional to width of pavement

(B) Directly proportional to velocity of vehicles

(C) Inversely proportional to acceleration due to gravity

(D) Inversely proportional to the radius of curvature

Answer: Option B

Question No. 322

For clear distinct vision, images of obstructions should fall on the retina with a cone of

(A) 2°

(B) 3°

(C) 4°

(D) 5°

Answer: Option D

Question No. 323

The basic formula for determination of pavement thickness was first suggested by

(A) Spangler

(B) Picket

(C) Kelly

(D) Goldbeck

Answer: Option D

Question No. 324

If 'L' metres is the distance between extreme axles of a vehicle, its gross load should not exceed

(A) $1525 (L + 4.3) - 14.7 L^2$

(B) $1526 (L + 5.3) - 14.7 L^2$

(C) $1525 (L + 6.3) - 14.7 L^2$

(D) $1525 (L + 7.3) - 14.7 L^2$

Answer: Option D

Question No. 325

If x% is the gradient of an alignment and y% is the gradient after proper super-elevation along a curved portion of a highway, the differential grade along the curve, is

(A) $(x + y)$ %

(B) $(x - y)$ %

(C) $(y - x)$ %

(D) $(y + x)$ %

Answer: Option C

Question No. 326

If A_t is the area of steel cross-section, t is working stress, L is width of road and W is weight of slab per square metre, the spacing of the tie bars for a longitudinal joint, is

(A) $(100 A_t \times t)/WL$

(B) $100 A_t/tWL$

(C) $(100 WA_t \times t)/tL$

(D) $100 WL/A_t t$

Answer: Option D

Question No. 327

The shape of a vertical curve, is

(A) Parabolic

(B) Elliptical

(C) Circular

(D) Spiral

Answer: Option A

Question No. 328

If L is the length of the transition curves provided on either side of a circular curve of radius R, the maximum angle of deflection with tangent for the junctions of the transition curve and circular curve, is

(A) L/R

(B) $L/2R$

(C) $L/3R$

(D) None of these

Answer: Option D

Question No. 329
The inventor of road making as a building science, was

    (A) Sully

    (B) Tresguet

    (C) Telford

    (D) Macadam

    Answer: Option A

Question No. 330
The desirable camber for straight roads with water bound macadam or gravel surface, is

    (A) 1 in 33 to 1 in 25

    (B) 1 in 40 to 1 in 33

    (C) 1 in 150 to 1 in 140

    (D) 1 in 160 to 1 in 140

    Answer: Option B

Question No. 331
The pavement width of a road depends upon

    (A) Terrain

    (B) Type of traffic

    (C) Number of lanes

    (D) All the above

    Answer: Option C

Question No. 332
At a road junction, 16 cross conflict points are severe, if

    (A) Both are one-way roads

    (B) Both are two-way roads

    (C) One is two-way road and other is one-way road

    (D) None of these

    Answer: Option B

Question No. 333
Road makers along roads from the edge of a kerb should not be less than

    (A) 40 cm

    (B) 45 cm

    (C) 50 cm

    (D) 60 cm

    Answer: Option D

Question No. 334
In India the modes of transportation, in the order of their importance, are

    (A) Air transport, shipping, roads, railways

(B) Shipping, roads, railways, air transport

(C) Roads, railways, air transport, shipping

(D) Railways, roads, shipping, air transport

Answer: Option D

Question No. 335

The absolute minimum sight distance required for stopping a vehicle moving with a speed of 80 kmph, is

(A) 120 m

(B) 200 m

(C) 640 m

(D) None of these

Answer: Option A

Question No. 336

The usual width of side drains along Highways in hilly region, is

(A) 50 cm

(B) 60 cm

(C) 70 cm

(D) 100 cm

Answer: Option B

Question No. 337

Design of highways is based on

(A) Axle loads

(B) Axle spacings

(C) Wheel bases

(D) All the above

Answer: Option D

Question No. 338

The width of the right of way in urban area, is kept between 24 m to 60 m for

(A) National Highways

(B) State Highways

(C) Both (a) and (b)

(D) None of these

Answer: Option D

Question No. 339

Thickness of broken centre line markings for a four lane road, is generally kept

(A) 10 cm

(B) 12 cm

(C) 15 cm

(D) 18 cm

Answer: Option C

Question No. 340

On the recommendations of Nagpur Conference, the minimum width of a village road may be

(A) 2.45 m

(B) 2.75 m

(C) 3.66 m

(D) 4.90 m

Answer: Option A

Question No. 341

If *N* is deviation angle the length *L* of a parabolic vertical curve for overtaking sight distance *S*, is

(A) $NS^2/9.6$ if $L > S$

(B) $NS^2/9.6$ if $L < S$

(C) $2S - 9.6/N$ if $L < S$

(D) Both (A) and (C)

Answer: Option D

Question No. 342

Maximum super-elevation on hill roads should not exceed

(A) 5 %

(B) 7 %

(C) 8 %

(D) 10 %

Answer: Option D

Question No. 343

If *R* is the radius of a main curve and *L* is the length of the transition curve, the shift of the curve, is

(A) $L/24\,R$

(B) $L^2/24\,R$

(C) $L^3/24\,R$

(D) $L^4/24\,R$

Answer: Option B

Question No. 344

The length of the side of warning sign boards of roads is

(A) 30 cm

(B) 40 cm

(C) 45 cm

(D) 50 cm

Answer: Option C

Question No. 345

Minimum permissible speed on high speed roads, is decided on the basis of

(A) 15 percentile cumulative frequency

(B) 20 percentile cumulative frequency

(C) 30 percentile cumulative frequency

(D) 40 percentile cumulative frequency

Answer: Option A

Question No. 346

For the administration of road transport, a Motor Vehicle Act was enacted in

(A) 1927

(B) 1934

(C) 1939

(D) 1947

Answer: Option C

Question No. 347

For maximum strength and durability minimum percentage of cement, by weight is

(A) 15 %

(B) 20 %

(C) 25 %

(D) 30 %

Answer: Option D

Question No. 348

Stability of hill slopes depends upon

(A) Nature of the slope

(B) Angle of the slope

(C) Geological conditions

(D) All the above

Answer: Option D

Question No. 349

The correct formula for calculating super-elevation for the hill roads, is

(A) $e = V^2/254\ R$

(B) $e = V^2/225\ R$

(C) $e = V^2/278\ R$

(D) $e = V^2/114\ R$

Answer: Option B

Question No. 350

Curves in the same direction separated by short tangents, are called

(A) Simple circular curves

(B) Compound curves

(C) Transition curves

(D) Broken-back curves

Answer: Option D

Question No. 351

The minimum width of the pavement of a National Highway should be

(A) 4.7 m

(B) 5.7 m

(C) 6.7 m

(D) 7.7 m

Answer: Option B

Question No. 352

On most smooth hard surfaced roads, rolling resistance to moving vehicles, ranges from

(A) 5 kg to 7 kg/tonne

(B) 7 kg to 9 kg/tonne

(C) 9 kg to 11 kg/tonne

(D) 11 kg to 13 kg/tonne

Answer: Option C

Question No. 353

Minimum radius of a simple circular curve deflecting through 5°, is

(A) 1618.9 m

(B) 1816.9 m

(C) 1718.9 m

(D) 1817.9 m

Answer: Option C

Question No. 354

Depth of reinforcement below the surface of a concrete pavement, is generally kept

(A) 5 cm

(B) 6 cm

(C) 7 m

(D) 9 m

Answer: Option A

Question No. 355

Degree of a road curve is defined as the angle in degrees subtended at the centre by an arc of

(A) 10 metres

(B) 20 metres

(C) 25 metres

(D) 30 metres

Answer: Option B

Question No. 356

Thickness of broken line markings on multi-lane road for lanes is generally kept

(A) 10 cm

(B) 12 cm

(C) 15 cm

(D) 18 cm

Answer: Option A

Question No. 357

If V is the velocity in kmph, t the brake reaction time in seconds and η the efficiency of the brakes, the stopping distance S of the vehicle, is

(A) $0.28V^2t + V/0.01\,η$

(B) $0.28Vt + V^2/0.1\,η$

(C) $0.28Vt + 0.01\,V^2η$

(D) $0.28Vt + 0.01\,V^2/η$

Answer: Option C

Question No. 358

If present A.D.T. is 5000 vehicles and annual increase is 10%, the average future flow after 5 years will be

(A) 6050 vehicles

(B) 7050 vehicles

(C) 8050 vehicles

(D) 9050 vehicles

Answer: Option C

Question No. 359

Pick up the correct statement from the following:

(A) Detailed survey is carried out for a strip of land about 30 m at sharp curves

(B) Levels are taken along the trace cut at an interval of 20 m

(C) Contour interval is generally adopted at 2 metres vertical interval

(D) All the above

Answer: Option D

Question No. 360

The maximum radial distance of a Lemniscate curve, having maximum polar angle a, is

(A) $3\,R\sin\alpha$

(B) $3\,R\sin^2\alpha$

(C) $3\,R\sin 2\alpha$

(D) $3\,R\sin\alpha/2$

Answer: Option C

Question No. 361

The minimum cross fall of shoulders is kept

(A) 0.5 %

(B) 1.0 %

(C) 1.5 %

(D) 3 %

Answer: Option D

Question No. 362

The ratio of maximum deviation angle and maximum polar deflection angle of a Lemniscate curve, is

(A) 2

(B) 3

(C) 4

(D) 5

Answer: Option B

Question No. 363

Roadway width for a National highways and State highways (two-lanes) is

(A) 12 m

(B) 9 m

(C) 9.5 m

(D) 15 m

Answer: Option A