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DEPARTMENT OF CIVIL ENGINEERING

SECOND YEAR (SY)

SCHEME: I **SEMESTER: III**

NAME OF SUBJECT: HIGHWAY ENGINEERING

Subject Code: 22302

UNIT WISE MULTIPLE CHOICE QUESTIONS BANK

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DEPARTMENT OF CIVIL ENGINEERING

Question Bank for Multiple Choice Questions

Program: Diploma in Civil engineering	**Program Code:- CE**
Scheme:-I	**Semester:- 3**
Course:- Highway Engineering	**Course Code:- 22302**

01 – Introduction to Highway Engineering	**Marks:-04**

Content of Chapter:-

1.1 Importance of roads in India. Classification of roads according to Nagpur plan (Location and function), and third road development plan.

1.2 Traffic and tonnage, Ideal requirements of alignment fixing the alignment of road, factors affecting alignment of road.

1.3 Ideal requirements of alignment,

1.4 Drawings required for road project- Key map, Index map, Preliminary survey plan and detailed location survey plan,

1.5 L-section and C/S sections cross drainage work.

1. Which is the most flexible type of transportation available?

a) Roadway b) Railway c) Waterway d) Airway

Answer: a

Explanation: The other 3 types of transport systems have to depend upon the roads to reach their destination point from the terminals that is railway station, harbours and airports.

2. The transportation system that requires a low initial investment among the following is?

a) Roadway b) Railway c) Harbour d) Airport

Answer: a

Explanation: The Roadway requires a cheaper initial investment when compared to the other 3 networks and it is the only system that provides equal facility for everyone in the society.

3. The current road length in India is in which position in the world?

a) 1st
b) 2nd
c) 3rd
d) 4th

Answer: b

Explanation: The total roadway length in India is around5, 532,482km in march 2015 which is the 2nd largest network in the world.

4. The current highway development works in India are undertaken by?

a) NHAI
b) Govt. of India
c) State governments
d) NHDP

Answer: a
Explanation: The highway works all across the country are undertaken by NHAI, It was formed in 1988 and it has mandate to follow all the NHDP (national highway development program) which is implemented in phases.

5. The cross slopes provided for drainage water under Macadam's construction road is?
a) 1 in 10
b) 1 in 20
c) 1 in 36
d) 1 in 40

Answer: c
Explanation: The slope provided is 1 in 36, it was proposed by Macadam. He also completely changed the construction methods that were used earlier.

6. The Indian Roads Congress was formed in the year?
a) 1928
b) 1934
c) 1929
d) 1930

Answer: b
Explanation: The Indian Roads Congress was formed in the year 1934 after a recommendation from the jayakar committee after a meeting in year 1928 and CRF was formed in 1929.

7. The first 20 year development plan is also called as?
a) Nagpur road plan
b) Lucknow road plan
c) Bombay road plan
d) Delhi road plan

Answer: a
Explanation: The First 20 year development plan conference was held in Nagpur, hence it is also called a Nagpur road plan, second was held in Mumbai and third in Lucknow.

8. Primary system of roads consists of?
a) National highway
b) Expressway
c) National highway and Expressway
d) State highway

Answer: c
Explanation: The Primary system consists of National Highway and expressway. The secondary system consists of State highway and other Major District Roads.

9. The Nagpur plan classified the roads based on _____
a) Location
b) Function
c) Location and function
d) Annual daily traffic

Answer: c
Explanation: The Nagpur plan classified the roads based on location and function into 5 categories namely National Highway, State Highway, Major District Road, Other District Road, Village Road.

10. The arterial roads are a classification of which type of roads?
a) Rural roads
b) Urban Rods
c) National highway
d) State highway

Answer: b
Explanation: Urban roads are classified into Arterial roads, Sub arterial roads, Collector streets and Local streets.

11. Expressways should be constructed along _____
a) Congested cities
b) Major traffic corridors
c) Along with highways
d) Small cities

Answer: b
Explanation: Expressways should be constructed along major traffic corridors for the convenience of passengers to travel safely and comfortably.

12. The improper alignment of road will not result in _____
a) Increase in construction cost
b) Increase in maintenance cost
c) Increase of population
d) Increase in accidents

Answer: c
Explanation: The increase of population does not depend on the alignment of the road, whereas improper construction and maintenance lead to accidents.

13. The basic requirement of alignment should be _____
a) Short
b) Easy
c) Safe
d) Short, easy, safe and economical

Answer: d
Explanation: The alignment of the road should be short, safe, easy and economical for users and engineers.

14. Obligatory points through which the alignment should not pass are _____
a) Religious structure and costly structures
b) Intermediate towns
c) Important cities
d) Important places of worship

Answer: a
Explanation: The obligatory points through which alignment should not pas include religious structures and costly structures because destroying them would require a lot of compensation.

15. The coefficient of lateral friction as recommended by IRC is_____
a) 0.15
b) 0.40
c) 0.35
d) 0.30

Answer: a
Explanation: The coefficient of lateral friction recommended by IRC is 0.15 and it lies between 0.3-0.4 for longitudinal friction.

16. The index map shows _____
a) Topography
b) Soil
c) Area of the site
d) Plan

Answer: a
Explanation: Index map is used for general topography. They are usually prepared in 32*20 cm map.

17.The sequence of four stages of survey in a highway alignment is
a) Reconnaissance, map study, preliminary survey and detailed survey
b) Map study, preliminary survey, reconnaissance and detailed survey
c) Map study, reconnaissance, preliminary survey and detailed survey
d) Preliminary survey, map study, reconnaissance and detailed survey

Answer : c
Explanation: No explanation Available

18. The main objective of transportation is?
a) Economical transport of goods
b) Economical transport of passengers
c) To generate revenue
d) Safe economical and efficient transport of goods and passengers

Answer: d
Explanation: The main objective of a good transportation system is to provide safe economical, efficient transportation for the facility of passengers and the transport of goods.

19. The highway research Board was set up in which year?
a) 1947
b) 1953
c) 1963
d) 1973

Answer: d
Explanation: The highway research board was set up in the year 1973 by IRC to give good guidance for road development in India.

20. Highway should be planned for _____
a) Present requirements
b) Traffic developments
c) Traffic studies
d) Present requirements and future requirements

Answer: d
Explanation: A highway should be planned such that the present and future requirements of the highway are satisfied.

21. Nagpur road plan formulae were prepared by assuming
a) Rectangular or block road pattern
b) Radial or star and block road pattern
c) Radial or star and circular road pattern

d) Radial or star and grid pattern

22. Select the correct statement
a) Nagpur road plan formulae take into account the towns with very large population.
b) Nagpur road plan has a target road length of 32km per 100sq.m
c) Second 20-year plan has provided 1600km expressways out of the proposed national highway.
d) Second 20-Years plan allowed deduction of length of railway track in the area while calculating length of roads.
Answer: C

23. The shoulder provided along the road edge should be
a) Rougher than the traffic lanes
b) Smoother than the traffic lanes
c) Of same colour as that of the pavement
d) Of very low load bearing capacity

24. The roads within town are called as urban roads
a) True
b) False
Answer: A

25. The portion of the road surface, which is used by the vehicular traffic is known as
a) carriage-way
b) Express way
c) Arterial streets
d) Sub-arterial streets
Answer: A

26. The roads connecting capital cities of states is called
a) National highway
b) Express way
c) State highway
d) Capital highway
Answer: C

27. The Indian Road congress is set up in
a) 1930
b) 1934
c) 1948
d) 1956
Answer: B

28. The state highways should have 8m wide carriage way with 2m wide shoulder on each side
a) Right
b) Wrong
Answer: A

29. The strength and durability of the road is depending upon its subgrade.
a) True
b) False
Answer: A

30. The road surfacing should be
a) Impervious
b) Durable
c) Stable
d) All of these
Answer: D

31. The cross slope of the line joining the crown and edge of the road surface is known as
a) cross-fall
b) cross-slope
c) Camber
d) Any one of these
Answer: D

32. In Nagpur conference, the minimum width of village roads was recommended as
a) 2m
b) 2.25m
c) 2.45m
d) 3.2m
Answer: C

33. The period of long term plan for the development of roads in India, known as Bombay Plan is
a) 5 years
b) 10 years
c) 15 years
d) 20 years
Answer: D

34. 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: D

35. 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: D

36. According to Nagpur plan, Indian roads have been classified into how many categories?
a) 4
b) 5
c) 6
d) 7
Answer: B

37. Which one is ot a road pattern?
a) Block pattern
b) Star and block pattern
c) Hexagonal pattern

d) Diamond pattern
Answer: D

38. What does the primary system of roads consist of?
a) State highway
b) Expressway
c) National Highway
d) National Highway & Expressway
Answer: D

39. The current highway development works in India are undertaken by?
a) NHAI
B) NHDP
c) Government of India
d) State Government
Answer: A

40. Which of the following transportation system has required a low initial investment?
a) Airport
b) Harbor
c) Railway
d) Roadway
Answer: D

41. Highway should be planned for _____
a) Traffic studies
b) Present requirements
c) Present requirements and future requirements
d) Traffic developments
Answer: C

42. Which of the following types of roads are most preferred for highways?
a) Unpaved surfaces
b) Bituminous roads
c) Cement concrete roads
d) Gravel roads

Answer: B
Explanation: The most preferred type of road is bituminous roads. They are cheap for initial construction when compared to other types of surfaced roads.

43. During the construction of highway, more highway lighting preference is given to _____
a) Intersections
b) City
c) Village
d) Town

Answer: A
Explanation: During the construction of highway, more highway lighting preference is given to intersections, as it is the most critical place.

44. The removal of earth for highway formation is _____

a) filling
b) Excavation
c) Embankment
d) Sub grade

Answer: B

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02 – Geometric Design of Highway	**Marks:-16**

Content of Chapter:-

2.1 Camber- definition, purpose, types, IRC – specifications. Kerbs, road margin, road formation, right of way.
2.2 Design speed- IRC – specifications Gradient – definition, types, IRC specifications
2.3 Sight distances– definition, types- SSD, OSDs, ISD, IRC specification, problems Curves–Necessity, types– horizontal, vertical and transition curves.
2.4 Extra Widening of roads on Horizontal curve.
2.5 problems Super Elevation – definition, formula for calculating super elevation, minimum and maximum values of super elevation, and methods of providing super elevation,
2.6 problems Sketching of standard C/S of national highway in embankment and cutting

1. The most raised portion of the pavement is called _____
a) Super elevation
b) Camber
c) Crown
d) Kerb

Answer: c
Explanation: The most elevated or the highest portion of a pavement is called as a crown, whereas camber is the portion that is raised for drainage purposes.

2. The extra width of pavement is provided on _____
a) Horizontal curve
b) Width of pavement
c) Length of pavement
d) Super elevation

Answer: a
Explanation: Extra width of the pavement is provided on horizontal curve to avoid the skidding, if the vehicle negotiates the curve then the centrifugal force will act towards outside and there is a chance of skidding, to avoid this extra width is provided.

3. A part of pavement raised with respect to one side keeping the other side constant is called _____
a) Footpath
b) Kerb
c) Super elevation
d) Camber

Answer:c
Explanation: The super elevation is a portion of pavement raised on outer edge with respect to inner edge or both edges raised with respect to centre.

4. The camber is not provided in which of the following shape?
a) Straight
b) Parabolic
c) Combination of straight and parabolic
d) Circular

Answer: d
Explanation: The camber is a raised portion, it has to be either straight or parabolic no other shape of camber is possible.

5. A median is also called as _____
a) Traffic separator
b) Traffic junction
c) Traffic check post
d) Traffic flow

Answer: a
Explanation: The median may be a physical marking, divided area or protected by physical structure to avoid head on collisions.

6. The minimum shoulder width recommended by IRC is _____
a) 1.0m
b) 1.5m
c) 2.0m
d) 2.5m

Answer: d
Explanation: The minimum shoulder width is 2.5m recommended by IRC, the shoulder provides lateral stability and act as emergency lanes for vehicles.

7. The length visible to driver at any instance of time is called_____
a) Sight distance
b) Visibility limit
c) Head light distance
d) Overtaking sight distance

Answer: a
Explanation: The length of the road that is visible to the driver at any time is called sight distance, in night visibility it is headlight sight distance and in zone which it can be overtaken is called overtaking sight distance.

8. The stopping sight distance does not depend on _____
a) Break reaction time
b) Speed of vehicle
c) Length of vehicle
d) Friction

Answer: c
Explanation: $SSD=0.278vt+v^2/(254f)$
In this equation t is the reaction time taken by driver for stopping the vehicle, v is the speed of the vehicle and f is the coefficient of friction, so the SSD is independent of the length of the vehicle.

9. The reaction time considered in SSD is _____
a) 1.5 sec
b) 2 sec
c) 2.5 sec
d) 3 sec
Answer: c
Explanation: The reaction time considered in SSD unless and until specified is 2.5 sec; it is based on PIEV theory.

10. The extra widening is the sum of _____
a) Mechanical widening and psychological widening
b) Two times of mechanical widening
c) Two times of psychological widening
d) Mechanical widening – physical widening

Answer: a
Explanation: The extra widening is the sum of mechanical widening and physiological widening, the mechanical widening is done for the safety of vehicles and psychological widening is done for the comfort of passengers.

11. The ruling gradient required for plain or rolling terrain is _____
a) 1 in 15
b) 1 in 20
c) 1 in 30
d) 1 in 40

Answer: c
Explanation: The ruling gradient value required for plain and rolling terrain type of road is 1 in 30 or 3.3%.

12. Camber in the road is provided for
a) Effective drainage
b) Counteracting the centrifugal force
c) Having proper sight distance
d) None of the above

Answer: a
Explanation: No explanation Available

13. The stopping sight distance depends upon
a) Total reaction time of driver
b) Speed of vehicle
c) Efficiency of brakes
d) all of the above

Answer: d
Explanation: No explanation Available

14. Which of the following is equal to super elevation?
a) Sinθ
b) Cosθ
c) Tanθ
d) Secθ

Answer: c
Explanation: The transverse inclination to the pavement surface is called as super elevation or cant banking which is equal to tanθ.

15. The stopping sight distance is always _____ overtaking sight distance.

a) Equal to
b) Less than
c) Greater than
d) None of the above

Answer: b
Explanation: no available

16. Exceptional gradient should not be provided in a length more than

a) 10 m
b) 20 m
c) 50 m
d) 100 m

Answer: d

17. 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 gradientAnswer:
Answer: d

18. The minimum design speed of various types of highways in plain terrain is the same as the rulingdesign speed of

(A) Rolling terrain
(B) Mountainous terrain
(C) Steep terrain
(D) None of these
Answer: Option A

19. 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: D

20. 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: C

21. 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: C

22. 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: C

24. 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: C

(E)

25. 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: A

26. 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: D

(E)

27. 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: D

28. 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: D

29. Reconnaissance is best done with the help of

(A) Aerial photographic survey

(B) Cadastral surveys

(C) Topographical surveys

(D) Triangulation surveys

Answer: A

30. Bottom most layer of pavement is known as

(A) Wearing course
(B) Base course
(C) Sub-base course
(D) Sub-grade
Answer: D

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

(E) (A) 2.2 %
(F) (B) 2.5 %
(G) (C) 3.0 %
(H) (D) 3.5 %

Answer: B

33. Thickness of a pavement may be reduced considerably by

(A) Compaction of soil
(B) Stabilization of soil
(C) Drainage of soil
(D) Combination of all the above
Answer: D

34. The distance travelled by a moving vehicle during perception and brake reaction times, is knownas

(A) Sight distance
(B) Stopping distance
(C) Lag distance
(D) None of these
Answer: C

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

(A) Plain
(B) Rolling
(C) Mountainous
(D) Steep Answer:
Answer: A

36. 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: D

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

(A) 4 %
(B) 5 %
(C) 6 %
(D) 7 %
Answer: D

38. 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: D

39. 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: D

40. Width of the shoulders of carriage way is generally kept

(A) 100 cm
(B) 125 cm
(C) 150 cm
(D) 250 cm
Answer: D

41. If cross slope of a country is 10% to 25%, the terrain is classified as

(A) Rolling
(B) Mountainous
(C) Steep
(D) Plain Answer:
Answer: A

42. 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: D

43. 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: D

44. Width of vehicles affects the width of

(A) Lanes
(B) Shoulders
(C) Parking spaces
(D) All the above
Answer: D

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03 – Construction of Road Pavement	**Marks:-16**

Content of Chapter:-

3.1 Types of road materials and Tests – soil, aggregates, bitumen, Cement Concrete.

3.2 Test on soil sub grade- C.B.R. test, Test on Aggregate – Los Angeles abrasion, impact, and shape test. Tests on bitumen- Penetration, Ductility and Softening point test.

3.3 Pavement – objective of pavement, structure of pavement, function of pavement components, types of pavement. Construction of earthen road – general terms used- borrows pits, spoil bank, lead and lift, balancing of earthwork. Construction procedure. Soil stabilized roads – necessity, methods of soil stabilization and brief details of mechanical soil stabilization.

3.4 Water bound macadam roads – materials used, size and grading of aggregates and screening, construction procedure including precautions in rolling. Construction of bituminous roads. Terms used– bitumen, asphalt, emulsion, cutback, tar, common grades adopted for construction.

3.5 Types of bituminous surface – prime coat, tack coat, seal coat, Surface dressing – procedure of construction bituminous penetration macadam, and Bitumen / Tar carpets – procedure of construction. Cement concrete pavements- Construction procedure and equipment's, Construction joints, joint filler, joint sealer.

1. The layer which is constructed above embankment is called _____

a) Sub grade
b) Fill
c) Base
d) Sub base

Answer: a

Explanation: The embankment is the lowest layer and it is below the sub grade, base is above sub base, sub base is above the sub grade.

2. Bitumen is a by-product of _____

a) Wood
b) Petroleum
c) Kerosene
d) Coal

Answer: b

Explanation: Bitumen is obtained by burning the petroleum at high temperatures, it is mostly used in the construction of flexible pavements.

3. The sum of flakiness index and elongation index should not exceed _____

a) 15
b) 20
c) 30
d) 40

Answer: c

Explanation: IRC recommends the combined flakiness and elongation index not to exceed 30% for the aggregate that should be used in a highway.

4. The flaky aggregates should not exceed _____
a) 1/2 of mean dimension
b) 3/4th of mean dimension
c) 3/5th of mean dimension
d) 1/8th of mean dimension

Answer: c
Explanation: The flaky aggregate is usually considered as 3/5th of its mean lateral dimension, the flaky aggregates should not be used in pavements.

5. The bitumen is completely soluble in _____
a) Carbon monoxide
b) Carbon dioxide
c) Carbon sulphide
d) Carbon disulphide

Answer: d
Explanation: Bitumen is completely soluble in carbon disulphide and carbon terachloride, these are the chemical substances in which bitumen dissolves completely.

6. The sub-base course is placed immediately above the _____
a) Sub-grade
b) base
c) Wearing course
d) None of the above

Answer: a
Explanation: From below sequence is as sub-grade, sub-base, base course, wearing course.

7. A water bound macadam road is an example of
a) Rigid pavement
b) Semi rigid pavement
c) Flexible pavement
d) None of the above

Answer: c
8. Weight of vehicle affects
a) Passing sight distance
b) Extra widening
c) Pavement thickness
d) Width of lanes

Answer: c

9. The minimum thickness of the base of a flexible pavement is kept as
a) 5 cm
b) 10 cm
c) 15 cm
d) 20 cm

Answer: c
10. The layer which is in direct contact with tyres of vehicle
a) Sub-grade
b) Sub-base

c) Base course
d) Wearing course

Answer: d

11. The pavement layer is considered superior if it distributes load like a _____
a) Point load
b) Uniformly distributed load
c) Uniformly varying load
d) Triangular load
Answer: a

12. Which of the following pavement has greater life?
a) Bituminous pavements
b) Cement concrete pavements
c) Gravel roads
d) Earth roads
Answer: b

13. Which of the following requirement is given most importance in highway design?
a) Structural
b) Functional
c) Seasonal
d) Maintenance
Answer: a

14. The surface of the pavement should be _____
a) Smooth
b) Rough
c) Sufficient enough to resist skid
d) Very rough
Answer: c

15. Rough and uneven roads increase _____
a) Vehicle cost
b) Petrol cost
c) Accident cost
d) Vehicle operation cost
Answer: d

16. The drainage layer is _____
a) Surface course
b) Sub base
c) Base
d) Sub grade
Answer: b

17. The design period of cement concrete road is taken as _____
a) 20
b) 25
c) 30
d) 35

Answer: c

18. The layer not required in cement road is _____
a) Sub grade
b) Sub base
c) Base
d) Surface
Answer: c

19. The cement slab is provided with _____
a) Long joints
b) Longitudinal joints
c) Transverse joints
d) Both Longitudinal and transverse joints.
Answer: d

20. The drainage layer of pavement can _____
a) Increase the pavement life
b) Decrease the pavement life
c) Increase the pavement thickness
d) Decrease the pavement thickness
Answer: a

21. The spacing between construction joints in rigid pavement is?
a) 4.5 m
b) 5.0 m
c) 5.5 m
d) 6.0 m
Answer: b

22. The spacing of joint depends on _____
a) Type of joint
b) Type of construction
c) Type of material
d) Same for all joints

Answer: a

23. The pavement thickness is usually assumed in rigid pavement as _____
a) 20 cm
b) 25 cm
c) 30 cm
d) 35 cm

Answer: b

24. The dowel bars are provided _____
a) longitudinally
b) laterally
c) Any direction required
d) In base of pavement
Answer: a

25. The dowel should transfer _____
a) 40% of safe load
b) 40% of design load
c) 45% of safe load
d) 45% of design load

Answer: b

26. The design of the highway should satisfy _____
a) Structural requirement
b) Drainage system
c) Economical
d) All of the mentioned
Answer: d

27. The economical highway can be achieved by _____
a) Cheap aggregate
b) Good quality aggregate
c) Good aggregate and less transport cost
d) More transport cost and less quality aggregate

Answer: c

28. If the height of embankment increases _____
a) Slope stability increases
b) Slope stability remains constant
c) Slope has to reduced
d) Slopes need to be flattered

Answer: d

29. The settlement is due to _____
a) More compaction
b) Inadequate compaction
c) Temperature
d) Air pressure
Answer: b

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04 – Traffic Engineering	**Marks:-14**

Content of Chapter:-

4.1 Traffic Engg- Definition, Traffic characteristics PCU, Traffic density, traffic capacity.
4.2 Traffic volume study Accident Studies
4.3 Traffic control devices - road signs, marking, Signals,
4.4 Traffic island and its type's separator intersections.
4.5 Parking studies Suggest suitability of traffic control device with given situations

1. The hearing, visibility and reaction time are covered in which type of factors?
a) Physical
b) Mental
c) Psychological
d) Environmental

Answer: a
Explanation: The visibility, hearing and reaction time are related to the physical conditions of the road, they are covered under physical type.

2. The number of vehicles that pass through a transverse line of road at a given time in a specified direction is called _____
a) Traffic studies
b) Traffic flow
c) Traffic origin
d) Traffic destination

Answer: b
Explanation: The number of vehicles that pass through a transverse line of road at a given time in a specified direction is called as traffic flow or traffic volume expressed in PCU.

3. The clearance time is indicated by _____
a) Red
b) Amber
c) Green
d) White

Answer: b
Explanation: The clearance time is indicated by amber, in some places yellow and blue colour also used.

4. An intersection that is provided for different levels of road is called _____
a) Intersection at grade
b) Grade separated intersections
c) Channelized intersection
d) Rotary intersection

Answer: b
Explanation: An intersection that is provided for different levels of road is called grade separated intersection, thus eliminating the crossing manoeuvre.

5. Parking facilities may be classified into how many types?
a) One
b) Two
c) Three
d) Four

Answer: b
Explanation: The parking facilities are classified into two types, they are on street and off street parking.

6. The highway accidents occur mostly at _____
a) Day time
b) Night time
c) Both day and night
d) Early morning hours

Answer: b
Explanation: The highway accidents occur mostly at night time if adequate lighting is not provided.

7. What is the main cause of accidents in urban areas?
a) Improper planning
b) Extra wide roads
c) Additional thickness of the pavement
d) Traffic congestion

Answer: a
Explanation: The main cause of accidents in urban areas is improper planning, no adequate facilities and increase of traffic.

8. Which of the following method is more accurate for traffic analysis?
a) Manual count
b) Automatic count
c) Average of manual and automatic
d) Past records

Answer: b
Explanation: The automatic count is more accurate as it is done for 24 hours by machine; it is more reliable than manual counting.

9. The outgoing and incoming traffic are counted at _____
a) Traffic intersections
b) Highway
c) Urban roads
d) Traffic symbols

Answer: a
Explanation: The outgoing and incoming traffic are usually counted at traffic intersections as they are convenient to count.

10. The speed at any instant of time is called _____
a) Running speed
b) Travel speed
c) Spot speed
d) Space speed

Answer: c
Explanation: The speed at any instant of time is called as spot speed or instantaneous speed, running speed is during travel and the average speed of travel is travel speed.

11. The symbol when violated which may lead to offense is?
a) Cautionary
b) Mandatory
c) Informatory
d) both informatory and cautionary

Answer: b
Explanation: Mandatory symbol is a symbol which has to be followed at all times, if violated except for special cases, they may attract a penalty.

12. Give way sign is of _____
a) Triangular shape
b) Circular shape
c) Octagonal shape
d) Hexagonal shape

Answer: a
Explanation: Give way sign is of triangular shape and it is coloured with a red border and white background.

13. One of the disadvantages of traffic signals is?
a) Provide orderly moment at intersection
b) The quality of the traffic flow improves
c) Traffic handling capacity increases
d) The rear end collision increases

Answer: d
Explanation: The rear end collisions are common in very highly populated cities, if there is a sudden stoppage of vehicles there is a chance of rear end collision.

14. Which of the following is not an intersection at grade?
a) Un-channelized
b) Channelized
c) Rotary
d) Different level intersections

Answer: d
Explanation: The intersection at grade include un channelized, channelized and rotary intersections, the different level intersections are used for over pass and under pass.

15. The type of parking in which the vehicles are parked along the kerb is called _____
a) Kerb parking
b) Off-street parking

c) Parallel parking
d) Angle parking

Answer: a
Explanation: The type of parking in which the vehicles are parked along the kerb is called kerb parking.

16. The most inconvenient method for parking is _____
a) 30 degree parking
b) 45 degree parking
c) 90 degree parking
d) Parallel parking

Answer: a
Explanation: 30 degree parking is the most inconvenient as everyone cannot turn in this angle. 90 degree parking is convenient and in parallel most cars can be handled.

17. Level crossing is a
a) Regulatory sign
b) Warning sign
c) Informatory sign
d) None of the above

Answer: b
Explanation: no available

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05 – Hill Road	**Marks:-10**

Content of Chapter:-

5.1 Alignment survey for hill roads Geometric of hill road, construction of hill roads.
5.2 Drainage structures in hill roads, side drains, catch water drains
5.3 Landslides- causes Landslides- prevention.

1. In hill roads, minimum sight distance required is _____

a) Stopping sight distance
b) Passing sight distance
c) Braking sight distance
d) None of the above

Answer: a

2. The maximum super elevation on hill roads should not exceed

a) 7%
b) 8%
c) 9%
d) 10%

Answer: a

3. A curve whose radius gradually changes from an infinite value to finite value is called as

a) Circular curve
b) Transition curve
c) Parabolic curve
d) None of the above

Answer: b

4. _____ is considered to be best for the valley curves.

a) Cubic spiral
b) Cubic parabola
c) Lamniscate
d) None of the above

Answer: b

5. In case of hill roads, the extra widening is generally provided_____?

a) Equally on inner and outer sides of the curve
b) Fully on the inner side of the curve
c) Fully on the outer side of the curve
d) one-fourth on inner side and three-fourth on outer side of the curve

Answer: b

6. The camber for hill roads in case of bituminous surfacing is adopted as_____?

a) 2%

b) 2.5%

c) 3%

d) 4%

Answer: b

7. 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: c

8. 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: a

9. 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: b

10. The changes in gradient and vertical curve are covered under which type of alignment?

a) Horizontal alignment

b) Vertical alignment

c) Geometric design

d) Highway specifications

Answer: b

11. The general route for alignment is selected during _____

a) Reconnaissance

b) Trace cut

c) Detailed survey
d) Detailed project report
Answer: a

12. What is the width of a pavement of 2 lane national highway?
a) 7.0 m
b) 3.75 m
c) 8.80 m
d) 3.00 m

Answer: a

13. What is the minimum super elevation?
a) 7%
b) 10%
c) Camber
d) Longitudinal slope

Answer: c

14. What is the most important structure in a hill road?
a) Retaining wall
b) Pavement
c) Drainage
d) Security force

Answer: a

15. The best type of material for retaining wall is _____
a) Concrete
b) Brick masonry
c) Stone masonry
d) Composite
Answer: c

16. Catch water drains, sloping drain, road side drains, catch pit and culverts are periodically cleared to prevent _____
a) Landslide
b) Over flow of water
c) Earthquake
d) Snowfall
Answer: b

17. The landslide denotes _____
a) Downward and upward movement of hill slope material
b) Disintegration of rocks
c) Earthquake on hill
d) breaking of rock
Answer: a

18. The landslide doesn't take place due to _____
a) Sliding
b) Falling
c) Flowing
d) Breaking
Answer: d

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06 – Maintenance and Repairs of Road	**Marks:-10**

Content of Chapter:-

6.1 Importance of highway drainage
6.2 Surface drainage system in urban roads, cross drainage
6.3 Sub-surface drainage –Longitudinal drains and cross drains.
6.4 Causes of failure of pavements, Necessity of maintenance of roads
6.5 Classification of maintenance operation –routine and periodic maintenance, special repairs and resurfacing, Preventive measures
6.6 Maintenance of W.B.M., bituminous and cement concrete roads.

1. The process of removing and controlling excess surface and sub soil water within roadway is _____

a) Highway Engineering
b) Highway maintenance
c) Highway drainage
d) Highway finance

Answer: c
Explanation: No explanation Available

2.The removal and diversion of surface water from the roadway is called _____

a) Surface drainage
b) Sub surface drainage
c) Camber
d) Cross slope

Answer: a

3. The path of wheels cause damage in the form of _____

a) Undulations
b) Shear
c) Deflection
d) Ruts and corrugation

Answer: d

4. Catch water drains, sloping drain, road side drains, catch pit and culverts are periodically cleared to prevent _____

a) Landslide
b) Over flow of water
c) Earthquake
d) Snowfall

Answer: c

5. The frequent problem on the hill road is _____
a) Earthquake
b) Landslide
c) Soil erosion
d) Seepage

Answer: b

6. The maintenance works are not possible for _____
a) Shoulder
b) Pavement
c) Embankment
d) Sub grade

Answer: d

7. The maintenance of rigid pavement is _____
a) Easy
b) difficult
c) Very difficult
d) Neutral

Answer: a

8. The _____ of any one of the component pavement layers can lead to the failure of the pavement.
a) Change in width
b) Localized settlement
c) Change in thickness
d) Localized loading

Answer: b

9. The area surrounding a depression on the pavement surface is generally subjected to _____
a) Potholes
b) Heaving
c) Cracks
d) Rutting

Answer: b

10. Which of the below is not a reason for the failure of subgrade?
a) Inadequate stability
b) Lack of lateral confinement
c) Inadequate drainage
d) Excessive stress application

Answer: b

11. Which of the below options is different from the other options?
a) Map cracking

b) Alligator cracking
c) Block cracking
d) Fatigue cracking
Answer: c

12. The wearing of the surface course along the path of the wheel results in _____
a) Shallow rut
b) Deep rut
c) Longitudinal rut
d) Transverse rut

Answer: a

13. Excessive rate of pumping in the rigid pavement leads to which failure?
a) Corner breaks
b) Fatigue cracks
c) Shrinkage cracks
d) Joint breaks

Answer: a

14. Which of the below requirements can help in increasing the life of the pavement with little maintenance?
a) Drainage
b) Durability
c) Stability
d) Friction
Answer: b

15. The unevenness on the pavement surface is a discomfort for _____
a) Pedestrians
b) Cyclists
c) Heavy vehicles
d) Animal-driven vehicles
Answer: b

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