BASIC CIVIL ENGINEERING

1. Gypsum is a

a) mechanically formed sedimentary rock

b) igneous rock

c) chemically precipitated sedimentary rock

d) metamorphic rock

Ans: c

2. Which of the following sedimentary rocks changes into quartzite by metamorphic action ?

a) sand stone

b) lime stone

c) shale

d) gypsum

Ans: a

3. Which of the following represents a metamorphic rock?

i) slate

ii) shale

iii) quartzite

The correct answer is

a) only (iii)

b) both (i) and (iii)

c) both (ii) and (iii)

d) all (i), (ii) and (iii)

Ans: b

4. Quartitze is a

a) silicious rock

b) argillaceous rock

c) calcareous rock

d) aqueous rock

Ans: a

5. Which of the following is a mineral ?

a) basalt

b) granite

c) quartz

d) syenite

Ans: c

6. Slate is formed by metamorphic action on

a) shale

b) lime stone

c) sand stone

d) granite

Ans: a

7. Sandstone is a

i) sedimentary rock

ii) aqueous rock

iii) silicious rock

The correct answer is

a) only (i)

b) both (i) and (ii)

c) both (ii) and (iii)

d) all (i), (ii) and (iii)

Ans: d

8. Which of the following is a rock ?

a) quartz

b) mica

c) gypsum

d) none of the above

Ans: c

9. Based on the following rocks and minerals, select the correct statement, quartz, shale, basalt, granite, marble, gypsum, mica

a) basalt and marble are the only metamorphic rocks

b) there is no sedimentary rock

c) granite is the only igneous rock

d) quartz and mica are minerals

Ans: d

10. A heavy stone is suitable for

a) arches

b) rubble masonry

c) roads

d) retaining walls

Ans: d

11. The stone suitable for rubble masonry should be.

a) hard

b) tough

c) heavy

d) light

Ans: a

12. Which of the following metamorphic rocks has the most weather resisting characteristics?

a) marble

b) quartzite

c) slate

d) lime stone

Ans: b

13. A good building stone should not absorb water more than

a) 5%

b) 10%

c) 15%

d). 20%

Ans: a

14. Which of the following has more fire resisting characteristics ?

a) marble

b) lime stone

c) compact sand stone

d) granite

Ans: c

15. The important test to be conducted on a stone used in docks and harbors is-

a) hardness test

b) work ability test

c) weight test

d) toughness test

Ans: c

16. The predominant constituent which is responsible for strength in granite is

a) quartz

b) feldspar

c) mica

d) none of the above

Ans: a

17. Granite is not suitable for ordinary building purpose because

a) it can not be polished

b) it is not a fire proof material

c) it is costly

d) it has less crushing strength

Ans: c

18. Which of the following stone is best suited for construction of piers and abutments of a railway bridge ?

a) granite

b) sand stone

c) lime stone

d) quartzite

Ans : a

19. The preparation of surface of stone to obtain plain edges or to obtain stones of required size and shape is known as

a) quarrying of stones

b) blasting of stones

c) seasoning of stones

d) dressing of stones

Ans: d

20. Crushing strength of a good building stone should be more than

a) 50 MPa

b) 100 MPa

c) 150 MPa

d) 200 MPa

Ans: b

21. Specific gravity for most of the building stones lies between

a) 1.5 to 2.0

b) 2.0 to 2.5

C) 2.5 to 3.0

d) 3.0 to 3.5

Ans: c

22. A first class brick when immersed in cold water for 24 hours should not absorb water more than

a) 15%

b) 20%

c) 22%

d) 25%

Ans: b

23. Crushing strength of a first class brick should not be less than

a) 3.5 N/mm2

b) 7.0 N/mm2

c) 10.5 N/mm2

d) 14.0 N/mm2

Ans: c

24. The main function of alumina in brick earth is

a) to impart plasticity

b) to make the brick durable

c) to prevent shrinkage

d) to make the brick impermeable

Ans: a

25. The percentage of alumina in a good brick earth lies between

a) 5 to 10%

b) 20 to 30%

c) 50 to 60%

d) 70 to 80%

Ans: b

26. Excess of alumina in brick earth makes the brick

a) impermeable

b) brittle and weak

c) to lose cohesion

d) to crack and warp on drying

Ans: d

27. The nominal size of the modular brick is

a) 190 mm x 90mmx 80 mm

b) 190 mm x 190 mm x90 mm

c) 200 mm x 100 mm x 100 mm

d) 200 mm x 200 mm x 100 mm

Ans: c

28. Percentage of silica in a good brick earth lies between

a) 5 to 10%

b) 20 to 30%

c) 50 to 60%

d) 70 to 80%

Ans: c

29. Excess of silica in brick earth results in

a) cracking and warping of bricks

b) loss of cohesion

c) enhancing the impermeability of bricks

d) none of the above

Ans: b

30. Which of the following ingredients of the brick earth enables the brick to retain its shape ?

a) alumina

b) silica

c) iron

d) magnesia

Ans: b

31. Which of the following pairs gives a correct combination of the useful and harmful constituents respectively of a good brick earth ?

a) lime stone and alumina

b) silica and alkalies

c) alumina and iron

d) alkalies and magnesium

Ans: b

32. The process of mixing clay, water and other ingredients to make brick is known as

a) kneading

b) moulding

c) pugging

d) drying

Ans: a

33. Advantage of a clamp compared to a kiln for burning bricks is that

a) it takes less time for burning

b) it gives more output of first class bricks

c) it has less initial cost

d) it is suitable when bricks are required in large numbers

Ans: c

34. The internal size of mould used in brick preparation is

a) equal to the size of a fully burnt brick

b) smaller than the size of a fully burnt brick

c) greater than the size of a fully burnt brick

d) none of the above

Ans: c

Module: 2

QUESTION 1

Which of the following true about Chain survey?

A. It is a system of surveying in which sides of various triangles are measured directly in the field and NO angular measurements are taken
B. It is adopted when Level of accuracy required is not high
C. In this survey only measurements are taken in the field, and the rest work, such as plotting calculation etc. are done in the office
D. All of the above

Ans : D

Explanation: All of the above true about Chain survey

Question 2

The preliminary inspection of the area to be chain surveyed is called ?

A. Marking stations
B. Reconnaissance
C. Reference sketches
D. None of the above

Ans : B

Explanation: The preliminary inspection of the area to be chain surveyed is called reconnaissance.

Question 3
Survey stations are of _____ kinds.

A. 2
B. 3
C. 4
D. 5

Ans : A

Explanation: Survey stations are of two kinds: Main Stations, Subsidiary or tie

Question 4
How many kinds of obstacles of chaining are there?

A. 1
B. 2
C. 3
D. 4

Ans : C

Explanation: Obstacles of chaining are of three kinds. They are obstacles to ranging, obstacles to chaining, obstacles to both chaining and ranging.

Question 5
Which of the following is not one among the three major kinds of obstacles of chaining?

A. obstacles to ranging
B. obstacles to chaining
C. obstacles to ranging and chaining
D. obstacles to levelling

Ans : D

Explanation: Obstacles to levelling is not a kind of obstacles to chaining. Obstacles of chaining are of three kinds. They are obstacles to ranging, obstacles to chaining, obstacles to both chaining and ranging.

Question 6
What is the lateral distance of an object or ground feature measured from a survey line?

A. Perpendicular distance
B. Offset
C. Side distance
D. Perpendicular offset

Ans : B

Explanation: An offset is the lateral distance of an object or ground feature measured from a survey line. When the angle of the offset is 90°, it is called perpendicular offset.

Question 7
Chain survey is the simplest method of surveying.

A. TRUE
B. FALSE
C. Can be true or false
D. Can not say

Ans : A

Explanation: True, Chain survey is the simplest method of surveying.

Question 8
What triangles are generally preferred to get good results in plotting?

A. Isosceles
B. Obtuse angled
C. Equilateral
D. Acute angle

Ans : C

Explanation: To get good results in plotting, the frame work should consist of triangles which are as nearly equilateral as possible.

Question 9

Which of the following true about Compass surveying?

A. Compass surveying is the branch of surveying
B. If the surveying area is large, chain surveying is not adopted for surveying rather compass surveying is employed.
C. If there is a time limit for surveying, compass surveying is usually adopted
D. All of the above

Ans : D

Explanation: All of the above true about Compass surveying.

Question 10
Compass surveying can be used in places which contain iron core, power lines

A. TRUE
B. FALSE
C. Can be true or false
D. Can not say

Ans : B

Explanation: Compass surveying is not used in places which contain iron core, power lines.

Question 11
How many Major types of magnetic compass there?

A. 1
B. 2
C. 3
D. 4

Ans : C

Explanation: Major types of magnetic compass are: Prismatic compass, Surveyor's compass, Level compass

Question 12
Magnetic compass is used to find out the magnetic bearing of survey lines. The bearings measured in ?

A. W.C.B.
B. Q.B.
C. P.C.
D. Both A and B

Ans : D

Explanation: Magnetic compass is used to find out the magnetic bearing of survey lines. The bearings may either measured in Whole Circle Bearing (W.C.B) system or in Quadrantal Bearing (Q.B) system based on the type of compass used.

Question 13

How many type of adjustments of prismatic compass?

A. 2
B. 3
C. 4
D. 5

Ans : A

Explanation: Two types of adjustments: Temporary adjustment, Permanent adjustment

Question 14
Which of the following are Disadvantages of Compass surveying?

A. They are portable and light weight
B. It is less precise compared to other advanced methods of surveying.

C. They have fewer settings to fix it on a station
D. It is suitable to retrace old surveys

Ans : B

Explanation: It is less precise compared to other advanced methods of surveying be the Disadvantages of Compass surveying.

Question 15

Which of the following is not a part of the prismatic compass?

A. Agate cap
B. Prism cap
C. Jewel bearing
D. Brake pin

Ans : C

Explanation: Prism cap, prism, brake pin, spring brake, pivot, agate cap etc are parts of the prismatic compass. Jewel bearing is one of the parts of surveyor's compass.

Question 16

In which of the following compass needle does not act as an index?

A. Prismatic compass
B. Surveyor's compass
C. Theodolite
D. Sextant

Ans : A

Explanation: In the case of prismatic compass needle does not act as an index. In the case of surveyors, compass needle acts as an index.

Question 17
Which of the following is a part of surveyor's compass?

A. Agate cap
B. Prism cap
C. Brake pin
D. Jewel bearing

Ans : D

Explanation: Prism cap, prism, brake pin, spring brake, pivot, agate cap etc are parts of the prismatic compass. Jewel bearing is one of the part of surveyor's compass.

Question 18
In which of the following compass needle acts as an index?

A. Prismatic compass
B. Surveyor’s compass
C. Theodolite
D. Sextant

Ans : B

Explanation: In case of surveyors compass needle acts as an index. In the case of a prismatic compass needle doesn’t acts as index.

When magnetic meridian is left side to true meridian, then Magnetic Declination is said to be _____

A. Eastern
B. Western
C. Southern
D. Northern

Ans : B

Explanation: When magnetic meridian is left side to true meridian, then Magnetic Declination is said to be negative or western. Magnetic Declination is horizontal angle between true meridian and magnetic meridian.

Question 19

Magnetic bearings support moving parts without physical contact.

A. TRUE
B. FALSE
C. Can be true or false
D. Can not say

Question 20
When magnetic meridian is right side to true meridian, then Magnetic Declination is said to be _____

A. Eastern
B. Western
C. Southern
D. Northern

Ans : A

Explanation: When magnetic meridian is right side to true meridian, then Magnetic Declination is said to be positive or eastern. Magnetic Declination is horizontal angle between true meridian and magnetic meridian.

Question 21

Horizontal angle between true meridian and magnetic meridian is _____

A. True bearing
B. Magnetic Bearing

C. Arbitrary bearing
D. Magnetic Declination

Ans : D

Explanation: Magnetic Declination is a horizontal angle between true meridian and magnetic meridian. Arbitrary bearing of a line is the horizontal angle which it makes with the Arbitrary Meridian through one of the extremities of the line.

Question 22

Horizontal angle with the Arbitrary Meridian through one of the extremities of the line is called _____

A. True bearing
B. Magnetic Bearing
C. Arbitrary bearing
D. Magnetic Declination

Ans : C

Explanation: Arbitrary bearing of a line is the horizontal angle which it makes with the arbitrary meridian through one of the extremities of the line. Angle measured always keeping magnetic north as reference is called magnetic bearing.

MODULE: 3

1. Soils transported by gravitational force
A. Talus
B. Lacustrine
C. Alluvial
D. Muc
Ans. Talus

2. The following type of soil is not glacier-deposited
A. Drift
B. Till
C. Outwash
D. Bentonite
Ans. Bentonite

3. The ratio of the volume of voids to the total volume of soil is
A. Voids ratio
B. Degree of saturation
C. Air content
D. Porosity
Ans. Porosity

4. Dry density of soil is equal to the

A. Mass of solids to the volume of solids
B. Mass of solids to the total volume of soil
C. Density of soil in the dried condition
D. None of the above

B. Mass of solids to the total volume of soil

5. Colluvial soils (talus) are transporated by
A. Water
B. Wind
C. Gravity
D. Ice
Ans. Gravity

6. In case of cereal crops, the irrigation is generally done by
A. Check method
B. Furrow method
C. Sprinkler method
D. Border method
Ans. Check method

7. Irrigation for cereal crop is generally done by
A. Check flooding
B. Basic flooding
C. Furrow
D. Subway surface irrigation
Ans. Check flooding

8. A channel which is designed to irrigate all the year round is called
A. All weather channel
B. Green channel
C. Permanent channel
D. Perennial channel
Ans. Perennial channel

9. Crop ratio
A. Area irrigated in Rabi season to Kharif season
B. Area irrigated in Kharif season to Rabi season
C. Area irrigated under perennial crop to total area
D. Area irrigated under non-perennial crop to that under perennial crop
Ans. Area irrigated in Rabi season to Kharif season

Question 10

A foundation is a _____ portion of building structure

A. lower
B. above
C. middle
D. None of the above

Ans : A

Explanation: A foundation is a lower portion of building structure that transfers its gravity loads to the earth.

Question 11

Foundations are generally broken into _____ categories.

A. 1
B. 2
C. 3
D. 4

Ans : B

Explanation: Foundations are generally broken into two categories: shallow foundations and deep foundations.

Question 12
Which of the following is the most common type of foundation used for building construction?

A. Individual footing
B. Isolated footing
C. Combined Footing
D. Both A and B

Ans : D

Explanation: Individual footing or an isolated footing is the most common type of foundation used for building construction. This foundation is constructed for a single column and also called a pad foundation.

Question 13
Once the foundation has been packed down tightly, or dried hard, we can begin to build the building superstructure.

A. TRUE
B. FALSE
C. Can be true or false
D. Can not say

Ans : A

Explanation: True, Once the foundation has been packed down tightly, or dried hard, we can begin to build the building superstructure

Question 14
Which Foundation is used when the wall carries light loads or when the safe bearing pressure is very high?

A. Simple pad footing
B. Simple Strip footing
C. Grillage footing
D. Strap footing

Ans : B

Explanation: In that case, a simple strip footing is provided. The wall directly rest on the concrete base, and no masonry offset are provided since spread is not required.

Question 15
Which foundations are the types of foundation which are spread across the entire area of the building to support heavy structural loads from columns and walls?

A. Raft
B. Mat
C. Both A and B
D. None of the above

Ans : C

Explanation: Raft or mat foundations are the types of foundation which are spread across the entire area of the building to support heavy structural loads from columns and walls.

Question 16
In the case of waterlogged area, the loading on the soil is limited to _____ KN/m^2.

A. 160-200
B. 30-40
C. 600-800
D. 50-60

Ans : D

Explanation: Water logged areas have very low bearing capacity of soil. Hands to overcome this we cannot use steel beams which may get corroded due to subsoil water therefore Timber grillage Foundation is preferred.

Question 17
_____ is the method of increasing the bearing power of soil when load coming on the soil is practically uniform.

A. Grillage Foundation
B. Raft foundation

C. Inverted arch foundation
D. Mat foundation

Ans : B

Explanation: The raft is design as an inverted RCC roof with uniformly distributed load of soil pressure and supported by walls, beams and columns. This method consists of providing and RCC slab of suitable thickness and with necessary reinforcement with help in increasing the bearing power of soil.

Question 18
To make a foundation, we normally dig a trench in the ground.

A. TRUE
B. FALSE
C. Can be true or false
D. Can not say

Ans : A

Explanation: To make a foundation, we normally dig a trench in the ground, digging deeper and deeper until we come to subsoil, which is more solid than the topsoil that is used to grow plants and crops. When the trench is deep enough, we fill it with any strong, hard material we can find.

Question 20
What is the value of angle of response for clay(dry) soil

A. 10 degree
B. 20 degree
C. 30 degree
D. 40 degree

Ans : C

Explanation: The depth of footing should also be such that the rate of angle of spread of the load from the wall base to the outer edge of ground bearing does not exceed the permissible value.

MODULE: 4

1. 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
Explanation: The changes in gradient and vertical curves are covered under the vertical alignment, whereas the remaining three are covered under horizontal alignment.

2. 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
View Answer
Answer: c
Explanation: The increase of population does not depend on the alignment of the road, whereas improper construction and maintenance lead to accidents.

3. 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.

4. The economical option during the construction of a road around a hill is _____
a) Cut the hill
b) Provide a tunnel
c) Provide a road around the hill
d) Look for other alternative approaches

Answer: c
Explanation: The most economical option is to provide a road around the hill. In this alternative approach is not advisable as it has to pass either through the hill or nearby the hill.

5. 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.

6. The desire lines are prepared for the study of _____
a) Traffic flow
b) Origin and destination
c) Growth of traffic in the future
d) Anticipated traffic flow

Answer: a
Explanation: The desire lines are lines which study the traffic flow from origin and destination.

7. Which of the following types of roads are most preferred for highways?
a) Cement concrete roads
b) Gravel roads
c) Bituminous roads
d) Unpaved surfaces
Answer: c
Explanation: The most preferred type of road is bituminous roads. They are cheap for initial construction when compared to other types of surfaced roads.
8. The stability of slopes is considered while designing?
a) National highway
b) State highway
c) Hill roads
d) District roads

Answer: c
Explanation: The slope stability is important during the design of hill roads, because it may have a danger of landslides.

9. 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.

10. The resisting length should be kept _____
a) minimum
b) Maximum
c) Depends on gradient
d) Depends on rise and fall

Answer: a
Explanation: The resisting length should be kept as low as possible for gradient purposes, if it is maximum then there will be a problem with the gradient.

11. As per the Nagpur plan, the un-surfaced roads were meant for _____
a) National highway
b) State highway
c) Major district road
d) Other district road and village road

Answer: d
Explanation: The Nagpur plan classified the roads into two categories, category one was meant for the

national highway, state highway and major district road. The un-surfaced roads were meant for other district roads and village roads.

12. The total length of the first category roads was calculated by adding up the sum of _____
a) NH+SH+MDR
b) NH+SH
c) SH*2
d) NH+2SH+MDR

Answer: a
Explanation: The category one type of roads consisted of national highway, state highway and major district roads. The length was calculated by adding all the three types of roads.

13. What was the development allowance assumed in the Nagpur plan?
a) 10%
b) 20%
c) 15%
d) 25%

Answer: c
Explanation: The development allowance was assumed as 15% and in this plan the length of the railway track also was deducted, this was not like the previous 20 year plan.

14. During the development of the roads maximum priority is given to which type of road?
a) National highway
b) State highway
c) Major district road
d) Village road

Answer: a
Explanation: The maximum priority during construction of any road is given to national highway as they connect across length and breadth of the entire country.

15. The total length of highways in 2001 in km was _____
a) 56000
b) 56756
c) 56750
d) 57000

Answer: d
Explanation: The total length of NH achieved in 2001 was 5700km against a planned length of 66000km.

16. The total area of a state is 2500km. Calculate the length of MDR.
a) 100 km
b) 200 km
c) 300 km
d) 400 km

Answer: b
Explanation: Length of MDR=Area of the state/12.5=2500/12.5=200km.

17. The tertiary road system consists of _____
a) National highway
b) State highway
c) Major district road
d) Other district road and village road

Answer: d
Explanation: As per the 2nd 20 year road development plan the primary system consists of national highway and state highway. The secondary system consists of state highway. The tertiary system consists of other district road and village road.

18. The 'rural road development plan: Vision 2025' aims to provide basic access to villages in how many phases?
a) One
b) Two
c) Three
d) Four

Answer: c
Explanation: The Vision: 2025 aims at providing accessible facilities to villages in 3 phases by giving priority to the population in the village.

19. 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.

20. The maximum number of cities and towns are connected by which type of highway?
a) National highway
b) State highway
c) Major district road
d) Village road

Answer: a
Explanation: The national highway connects most of the cities and towns in the country. State highway connects in the state, village road in villages and other roads connect the remote areas.

21. Planning is based on _____
a) Factual data
b) Analysis
c) Scientific data

d) Factual data and analysis

Answer: d
Explanation: Planning based on factual data and analysis may be considered scientific and sound.

22. The planning survey consists of how many numbers of studies?
a) One
b) Two
c) Three
d) Four

Answer: d
Explanation: The planning survey consists of the four studies namely
Economic studies
Financial studies
Traffic studies
Engineering studies.

23. The estimates are studied in which type of studies?
a) Economic studies
b) Financial studies
c) Traffic studies
d) Engineering studies

Answer: a
Explanation: The details to be collected during economic studies are useful in estimating the requirements, cost involved in the project and economic justification.

24. The revenue from road transport sector is studied in which type of studies?
a) Economic
b) Financial
c) Traffic
d) Engineering

Answer: b
Explanation: The sources of income, excise duty, registration charges and tax all are studied in financial studies only.

25. The accident cost analysis is estimated by conducting _____
a) Origin and destination
b) Traffic survey
c) Transportation facilities
d) Geometric design

Answer: b
Explanation: The accident cost analysis, trends in road accidents and facilities all are estimated by conducting traffic survey, origin and destination studies are for trips and geometry for the facility.

26. The topographic survey is conducted to estimate which of the following characteristics?
a) Engineering
b) Traffic
c) Financial
d) Soil

Answer: a
Explanation: The engineering studies are conducted to assess topography, soil, location and classification of existing roads and other developments.

27. The master plan may not be prepared for _____
a) Village
b) City
c) State
d) Country

Answer: a
Explanation: The master plan is prepared after interpretation of small plans in different phases. It may be prepared for a city, district, state or even country.

28. The determination of optimum length is based on _____
a) Saturation system
b) Geometric design
c) Type of highway
d) Length of highway

Answer: a
Explanation: The determination of optimum length is based on the saturation system based on U.S system of highway planning.

29. The final step after fixing the optimum length of the road is?
a) Financing
b) Construction
c) Phasing
d) Preparation of master plan

Answer: c
Explanation: The final step after fixing the optimum length is phasing of the road program before the construction, after financing and master plan the construction is under taken.

30. The utility unit as per saturation system for a population of less 1001 to 2000 is?
a) 0.25
b) 0.50
c) 1.00
d) 2.00

Answer: c
Explanation: The utility unit is a factor that is used to decide the priority given to the users for optimum utilization of road and it is 1.00 for a population of 1001-2000, it increases based on the population.