

Govt. Polytechnic Bopalangire
Subj. - Highway Engineering
Sem - 4th.

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- ① 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.
- ② The sequence of four stages of survey in a highway alignment is
- (a) reconnaissance, map study, preliminary survey & detailed survey.
(b) map study, preliminary survey, reconnaissance & detailed survey.
(c) map study, reconnaissance, preliminary survey & detailed survey.
(d) preliminary survey, map study, reconnaissance & detailed survey.

Q3 Match List-I with List-II and select the correct answer by using codes given below the lists.

List-I

- A. Central Road fund
- B. Indian Road congress
- C. Motor Vehicle Act
- D. Nagpur Road conference

List-II

- 1. 1939
- 2. 1943
- 3. 1934
- 4. 1st March 1929

codes

	A	B	C	D
(a)	4	3	1	2
(b)	1	4	2	3
(c)	2	3	4	1
(d)	1	2	3	4

- ④ According to Lucknow Road Plan what will be the length of NH & SH respectively
- (a) 200 km & 325 km
 (b) 300 km & 325 km
 (c) 300 km & 600 km
 (d) None of these

- ⑤ What will be the total length of Rural Ponds (Tertiary System)
- (a) 12,900 km
 (b) 13,200 km
 (c) 11,900 km
 (d) 12,800 km

- ⑥ The full width of land acquired before finalising a highway is known as
- (a) width of formation
 (b) right of way
 (c) carriage way
 (d) road way

- ⑦ The ~~maximum~~ 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

8) Given that

speed of a vehicle = V kmph

Brake reaction time = t second.

Efficiency of the brakes = η

Then stopping distance of the vehicle is

(a) $0.28 V^2 t + \frac{V}{0.01 \eta}$

(b) $28 V^2 t + \frac{V^2}{0.01 \eta}$

(c) $-28 V^2 t + \frac{0.01 V^2}{\eta}$

(d) $0.28 V^2 t + \frac{0.01 \eta V^2}{\eta}$

9) The design speed of a highway is 100 km/h. Assuming other data as per IRC, which one of the following is the approximate adequate sight distance.

(a) 55.5 m

(b) 66.7 m

(c) 61.2 m

(d) 44.5 m

10) For the total reaction time of 2.5 seconds coefficient of friction 0.85, design speed 80 km/h, what is the stopping sight distance on a highway.

- (a) 124 m (b) 132 m
(c) 76 m (d) 56 m

11) What is the superacceleration of a horizontal highway curve of radius 500m & speed 100 km/h in mixed traffic condition.

- (a) 8.9 % (b) 6.2 %
(c) 7 %
(e) 0

12) For a vehicle moving with a speed of 80 km/hr brake reaction time in ordinary cases is

- (a) 1 sec (b) 1.5 sec
(c) 2.0 sec (d) 2.5 sec

(13) 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 & inner side equally

(d) less on the outer side & more on the inner side.

(14) Maximum super-elevation on hill roads should not exceed

(a) 5%

(b) 7%

(c) 8%

(d) 10%

(15) As per IRC minimum length of transition curve is

(a) 39m

(b) 25.1m

(c) 35.1m

(d) 30m.

(16) For a N.H the minimum formation width is

(a) 12m

(b) 9.5m

(c) 7.5m

(d) 6m.

(17) As per IRC recommendation the maximum width of a road vehicle is limited to

(a) 1.75m

(b) 2.0m

(c) 2.44m

(d) 2.5m.

18) Which one of the following expressions gives intermediate sight distance as per IRC, standard? (SSD = stopping sight distance, OSD = overtaking sight distance)

- (a) $2SSD$
- (b) $(SSD+OSD)/2$
- (c) $(OSD-SSD)/2$
- (d) $2OSD$

19) Match List-I (Type of road surface) with List-II (percentage of camber in areas of heavy rainfall) and select the correct answer by using the codes given below the lists.

List I

- A. Cement concrete
- B. Thin Bituminous surface
- C. Water bound Macadam
- D. Earth road

List-II

- 1. 4.0%
- 2. 3.0%
- 3. 2.0%
- 4. 2.5%

- | | A | B | C | D |
|---|---|---|---|---|
| (a) | 4 | 3 | 2 | 1 |
| (b) | 3 | 2 | 1 | 4 |
| (c) | 4 | 3 | 2 | 1 |
| <input checked="" type="checkbox"/> (d) | 3 | 4 | 2 | 1 |

- (20) The advantages of super elevation are
1. It allows design speed to be maintained on a curve as on a straight portion.
 2. Helps in keeping the vehicles to their correct side.
 3. Lessens the danger of skidding at bends.
 4. Keeps the pressure on the wheels as equally distributed.

The correct answer is

- (a) 1, 2 & 3 (b) 1, 3 & 4
(c) 2, 3 & 4 (d) 1, 2, 3 & 4.

- (21) The angularity number for aggregate to be used in road construction should be between.

- (a) 10 to 20 (b) 15 to 25
(c) 0 to 11 (d) 8 to 18

- (22) A good quality aggregate to be used in base course should not have crushing value.

- (a) more than 45 (b) more than 75
(c) less than 45 (d) less than 100

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

(a) 50%
(b) 30%
(c) 25%
(d) 60%

24) Bitumen of grade 30/40 means.

(a) its penetration value is 3 to 4 mm
(b) its penetration value is 30 to 40 mm
(c) " " " is 3 mm.
(d) " " " is 4 mm.

25) Bituminous materials are used in highway construction primarily because of their

(a) cementing & waterproofing properties.
(b) load carrying capacity.
(c) high specific gravity.
(d) black colour which facilitates road marking.

26) Which one of the following is the correct statement.

Penetration to know bitumen grade is measured in

(a) one hundredth of mm

(b) one tenth of mm

(c) one tenth of an inch

(d) One micron.

(27) If the pressure carried by a CBR specimen at 2.5 mm penetration is 3.5 N/mm^2 , the CBR of the soil is.

(a) 10%

(b) 35%

(c) 50%

(d) 70%

(28) In cement concrete pavements, tie bars are provided -

(a) near the top of the slab across expansion joints.

(b) near the bottom of the slab across contraction joints.

(c) at mid depth of slab across longitudinal joints.

(d) near the bottom of slab across longitudinal joints.

29 Design of Flexible pavement involves.

- (a) wheel loads
- (b) intensity of traffic
- (c) climate of the region and subgrade conditions.
- (d) all of the above.

30 The life of a concrete pavement is taken as

- (a) one year
- (b) five years
- (c) 10-15 years.
- (d) 20-40 years.

31 As per latest IRC guidelines for design flexible pavement by CBR method the load parameter required is-

- (a) number of commercial vehicles per day.
- (b) cumulative standard axles in msa.
- (c) equivalent single axle load.
- (d) number of vehicles (all types) during design life.

32) Along a hill road, side drains are provided on outer side

- 32) Stability of hill slopes depends upon:
- a) nature of the slope
 - b) angle of the slope
 - c) geological conditions
 - d) All of the above

31) As per latest IRC guidelines for design flexible pavement by CBR method the load parameter reported is:

- a) number of commercial vehicles per day
- b) cumulative standard axle in msa
- c) equivalent single axle load
- d) number of vehicles per day