B.E. (Civil Engineering) Seventh Semester (C.B.S.)

Transportation Engineering - II

P. Pages : 2 **NIR/KW/18/3526**

Time : Three Hours * 1 9 0 2 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Diagrams and chemical equations should be given whenever necessary.
11. Illustrate your answers whenever necessary with the help of neat sketches.
12. Use of non programmable calculator is permitted.

1. a) Using sleeper Density of N + 7, find out the number of sleepers required for the constructing a Railway Track 1.2km long. (MG) **6**

b) Define Gauge of Railway Track. What are the factor which affects the selection of a Gauge? **7**

OR

2. a) What do you understand by "Permanent way" ? Discuss the requirement of ideal permanent way. **6**

b) A locomotive on MG Track has Three pair of Driving wheel each carry 20 T. What Maximum load can it Draw on a level Track with a Curvature of 2º at speed of 52.7 Kmph. What speed can be attained By a Train. Carrying the same load on the upgradient of 1 in 200? **7**

3. a) A 4º curve branches in B.G layout of Railway yard. if the speed on Branch line is restricted to 30 kmph, Calculate the Maximum speed that can be permitted on the Main line. Assume Cant Deficiency = 75 mm. **6**

b) What are the objectives of providing Ballast in the permanent way. Also Discuss the various Types of Ballast. **7**

OR

4. a) Explain the various Types of Rail with their advantages & Disadvantages. **6**

b) What would be the permissible speed on the curve if on 8º MG Track the average speed of Different Train 50 kmph and allowable cant Deficiency is half that of Maximum Cant Deficiency. **7**

5. a) Draw a Neat Diagram of Left Hand turnout and show its various components parts. **8**

b) What is the Necessity of direct Track Maintenance? Discuss. **6**

OR

6. a) Explain in detail the various signal used in railway. **6**

b) Write short note on. **8**
   i) Interlocking.
   ii) Marshalling yard.

7. a) Discuss the various Factors which are to be considered while selecting a suitable site for an airport. **6**

b) An Airport is proposed at an elevation of 400 m above MSL where the mean of maximum and mean of average Daily Temperature of Hottest month are 44º8ºC and 26º2ºC repetitively The Maximum elevation Difference along the proposed profile runway is 6.3. If the Basic runway length is 1260 m, Determine the actual length of Runway to be provided. **7**

OR

8. a) Explain wind Rose Diagram in detail. **7**

b) Discuss the characteristics of an aircraft that influences the planning & Design of airport facilities. **6**

9. a) What do you understand by Terminal area? What facilities are provided in this area? **7**

b) Explain the Need of air Traffic control. **6**

OR

10. a) Discuss with Neat sketch, 'Runway Lighting'. **7**

b) Explain in Detail about the various Runway marking. **6**

11. Write short note on **any three.** **14**
   i) Tunnel lining.
   ii) Drainage in Tunnel.
   iii) Lighting in Tunnel
   iv) Economics of Tunneling

OR

12. a) What are the object of Tunnel ventilation? Discuss the requirement of a ventilating system. **7**

b) What are the objects of providing a Tunnel with permanent lining? Discuss in brief the various material used for lining. **7**

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B.E. (Civil Engineering) Seventh Semester (C.B.S.)

Transportation Engineering - II

P. Pages : 2 **NJR/KS/18/4581**

Time : Three Hours Max. Marks : 80

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Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.

1. a) What do you understand by "Permanent Way"? Discuss the requirements of ideal permanent way. **7**

b) A locomotive on M. G. Track has a three pairs of driving wheels each carrying 17.27 tonne. What maximum load can it draw on a level track with a curvature of $2^{\underline{o}}$ at a speed of 48.3 Kmph. What speed can be attained by a train, carrying the same load on an up gradient of line 250? **6**

OR

2. a) What are the possible causes of creep? Discuss in brief comment on prevention of creep. **6**

b) What is mean by coning of wheel? Explain with Diagram. **7**

3. a) What are the objectives of providing ballast in the permanent way. Also discuss the various types of ballast. **6**

b) A 6 degrees curve branches off from a 3 degrees main curve in an opposite direction in the layout of a B. G. Yard. If the speed on branch line is limited to 35 kmph, determine the speed restriction on the main line. **7**

OR

4. a) Discuss the various types of rail failures with sketches. **7**

b) On a B. G. 3 degree curve, "the equilibrium cant" is provided for a speed of 70 kmph. **6**
- a) Calculate the value of the equilibrium cant.
- b) Allowing a maximum cant deficiency, what would be the maximum permissible speed on the track.

5. Write notes on **any three.** **14**
- i) Heel divergence.
- ii) Throw of switch.
- iii) Tongue rail.
- iv) Objects of signaling.
- v) Interlocking.

OR

6. Write notes on **any three.** **14**

i) Check rails.
ii) Home signal.
iii) Starter signal.
iv) Marshaling Yards.
v) Left hand Turn-out.

7. a) Calculate the actual runway length required if the new airport is to be developed at a site having following details. **7**

i) Elevation = 1400m.
ii) ART = 37^{o} C.
iii) Baric Runway length = 2500m.
iv) Effective gradient = 0.38%.

Check the correction as per the ICAO aircraft.

b) Define the terms: **6**

i) Cross-Wind component   ii) Wind coverage.

OR

8. a) Enumerate the various factors which are to be considered while selecting a suitable site for an airport. Explain in brief. **7**

b) Discuss the characteristics of an aircraft that influences the planning & design of airport facilities. **6**

9. a) What do you understand by terminal area? What facilities are provided in this area? **7**

b) Write short notes on: **6**

i) Approach lighting.   ii) Runway markings.

OR

10. a) What are the characteristics of an ideal airport layout? **7**

b) The length of runway under standard conditions is 1620m. The airport site has an elevation of 270m. Its reference temperature is 32.90^{o} C. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. **6**

11. Write notes on **any three.** **14**

i) Tunnel lining.
ii) Drainage in Tunnels.
iii) Lighting in Tunnel.
iv) Economics of Tunneling.

OR

12. a) Write in detail Tunnel Surveying. **7**

b) Why ventilation is needed during & after the tunnel construction? How it is provided? Explain. **7**

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B.E. (Civil Engineering) Seventh Semester (C.B.S.)

Transportation Engineering - II

P. Pages : 2 **NRJ/KW/17/4581**

Time : Three Hours Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.

1. a) What do you understand by "Permanent Way"? Discuss the requirements of ideal permanent way. **7**

b) What is coning of wheel? Discuss its importance. **6**

OR

2. a) Enumerate and explain the various resistances that have to be overcome by a moving train. **7**

b) What are the possible causes of creep? Discuss in brief. **6**

3. a) What are the objectives of providing ballast in the permanent way? Describe in brief, various types of ballast. **7**

b) Derive the relationship of super elevation with gauge, speed and radius of a curve. **6**

OR

4. a) On a B. G. 3 degree curve, "The equilibrium cant" is pounded for a speed of 70 kmph. **7**
- a) Calculate the value of the equilibrium cant.
- b) Allowing a maximum cant deficiency, what would be the maximum permissible speed on the track.

b) Write short notes on **any two.** **6**
- i) LWR
- ii) Rail failures
- iii) Sleeper density
- iv) Fishplate & Fishbolt

5. a) Draw the neat sketches of various types of crossings in use on Indian railways. Explain in brief. **7**

b) Discuss the marshalling yard & its types. **7**

OR

6. Write notes on **any three.** **14**
i) Heel divergence
ii) Throw of switch
iii) Tongue rail
iv) Semaphore signal
v) Repeater signal
vi) Warner signal

7. a) Name the different characteristics of aircraft. How do they affect the planning and design of airport? **7**

b) Define the terms: **6**
i) Cross wind component.
ii) Wind coverage.

OR

8. a) Explain the procedure of orienting the runway. **7**

b) Enumerate the various factors which are to be considered while selecting a suitable site for an airport. **6**

9. a) What do you understand by terminal area? What facilities are provided in this area? **7**

b) What are the different parking systems for an aircraft? Discuss any one in detail. **6**

OR

10. a) Explain in brief with neat sketch the "I. L. S. system". **7**

b) What is ATC? What En-route aids are provided thought A.T.C. **6**

11. a) Write notes on **any three.** **14**
i) Tunnel lining
ii) Drainage in Tunnels
iii) Lighting in tunnels
iv) Economics of Tunneling

OR

12. a) What are the ways in which the ventilation can be provided in the tunnel? Explain. **7**

b) Write in detail tunnel surveying. **7**

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B.E. Seventh Semester (Civil Engineering) (C.B.S.)

Transportation Engineering – II

P. Pages : 2 **NKT/KS/17/7442**

Time : Three Hours Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.
10. Use of non programmable calculator is permitted.

1. a) What do you understand by "Permanent Way"? **7**
Discuss the requirements of ideal permanent way.

b) A locomotive on M.G. Track has a three pairs of driving wheels each carrying 17.27 tonne. What maximum load can it draw on a level track with a curvature of 2° at a speed of 48.3 Kmph. What speed can be attained by a train, carrying the same load on an upgradient of lin 250? **6**

OR

2. a) What are the possible causes of creep? Discuss in brief comment on prevention of creep. **6**

b) What is mean by coning of wheel? Explain. **7**

3. a) What are the objectives of providing ballast in the permanent way. Also discuss the various types of ballast. **6**

b) A 6 degrees curve branches off from a 3 degrees main curve in an opposite direction in the layout of a B.G. Yard. If the speed on branch line is limited to 35kmph, determine the speed restriction on the main line. **7**

OR

4. a) On a B. G. 3 degree curve, "The equilibrium cant" is pounded for a speed of 70kmph. **7**

a) Calculate the value of the equilibrium cant.
b) Allowing a maximum cant deficiency, what would be the maximum permissible speed on the track.

b) Write short notes on **any two.** **6**

i) LWR
ii) Rail failures
iii) Sleeper density
iv) Fishplate & Fishbolt

5. a) Draw the neat sketches of various types of crossings in use on Indian railways. Explain in brief. **7**

b) Discuss the marshalling yard & its types. **7**

OR

6. Write notes on **any three.** **14**

- i) Heel divergence
- ii) Throw of switch
- iii) Tongue rail
- iv) Semaphore signal
- v) Repeater signal
- vi) Warner signal

7. a) Calculate the actual runway length required if the new airport is to be developed at a site having following details. **8**
   - i) Elevation = 1400m.
   - ii) ART = 37ºC.
   - iii) Baric Runway length = 2500m.
   - iv) Effective gradient = 0.38%.

   Check the correction as per the ICAO aircraft.

   b) Define the terms: **6**
   - i) Cross-Wind component.
   - ii) Wind coverage.

OR

8. a) Enumerate the various factors which are to be considered while selecting a suitable site for an airport. Explain in brief. **7**

   b) Discuss the characteristics of an aircraft that influences the planning & design of airport facilities. **7**

9. a) What do you understand by terminal area? What facilities are provided in this area? **7**

   b) Write short notes on: **6**
   - i) Approach lighting.
   - ii) Runway markings.

OR

10. a) Explain in brief with neat sketch the "I.L.S system". **7**

    b) What is ATC? What En-route aids are provided though A.T.C. **6**

11. a) Write notes on **any three.** **13**
    - i) Tunnel lining
    - ii) Drainage in Tunnels.
    - iii) Lighting in tunnels
    - iv) Economics of Tunneling.

OR

12. a) What are the ways in which the ventilation can be provided in the tunnel? Explain. **6**

    b) Write in detail tunnel surveying. **7**

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B.E.(Civil Engineering) Semester Seventh (C.B.S.)

Transportation Engineering - II

P. Pages : 2 **KNT/KW/16/7442**

Time : Three Hours Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Assume suitable data whenever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.
10. Use of non-programmable calculators and drawing instruments is permitted.

1. a) What do you understand by "Permanent Way"? Discuss the requirements of ideal permanent way. **7**

b) What is Coning of wheel? Discuss its importance. **6**

OR

2. a) Enumerate and explain the various resistances that have to be overcome by a moving train. **7**

b) What are the possible causes of creep? Discuss in brief. **6**

3. a) What are the objectives of providing ballast in the permanent way? Describe in brief, various types of ballast. **7**

b) Derive the relationship of super elevation with gauge, speed and radius of a curve. **6**

OR

4. a) Discuss the various types of rail failures with sketches. **7**

b) On a B.G. 3 degree curve, "the equilibrium cant" is provided for a speed of 70 kmph. **6**

a) Calculate the value of the equilibrium cant.

b) Allowing a maximum cant deficiency, what would be the maximum permissible speed on the track.

5. Write Notes on **any three.** **14**

i) Heel divergence.

ii) Throw of switch.

iii) Tongue rail.

iv) Objects of signaling.

v) Interlocking.

OR

6. Write notes on **any three.** **14**

i) Check rails.
ii) Home signal.
iii) Starter signal.
iv) Marshaling Yards.
v) Left hand Turn-out.

7. a) Name the different characteristics of aircraft. How do they affect the planning and design of airport? **7**

b) Define the terms : **6**
i) Cross wind component.
ii) Wind coverage.

OR

8. a) Explain the procedure of orienting the runway. **7**

b) Enumerate the various factors which are to be considered while selecting a suitable site for an airport. **6**

9. a) What do you understand by terminal area? What facilities are provided in this area? **7**

b) What are the different parking systems for an aircraft? Discuss any one in detail. **6**

OR

10. a) What are the characteristics of an ideal airport layout? **7**

b) The length of runway under standard conditions is 1620m. The airport site has an elevation of 270m. Its reference temperature is 32.90ºC. If the runway is to be constructed with an effective gradient of 0.20 percent, determine the corrected runway length. **6**

11. Write notes on **any three.** **14**

i) Tunnel lining.
ii) Drainage in Tunnels.
iii) Lighting in Tunnel.
iv) Economics of Tunneling.

OR

12. a) Write in detail Tunnel Surveying. **7**

b) Why ventilation is needed during & after the tunnel construction? How it is provided? Explain. **7**

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B.E. (Civil Engineering) Seventh Semester (C.B.S.)

Transportation Engineering - II

P. Pages : 2 **TKN/KS/16/7529**

Time : Three Hours Max. Marks : 80

Notes : 1. All questions carry marks as indicated
2. Assume suitable data whenever necessary.

1. a) What do you understand by permanent way? Discuss the requirements of ideal permanent way. **7**

b) Define 'Gauge' of a railway track. What are the factors which affect the selection of a gauge. **6**

OR

2. a) Discuss the necessity and effects of coning of wheel. **6**

b) Calculate the maximum permissible train load, a locomotive of type 2-6-4 can pull with an axle load of 28 tonnes. The train has to run on a straight level track with 90kmph (BG track) what will be the reduction in speed if the train negotiate a 3º horizontal curve. **7**

3. a) Explain in detail 'Creep of rail'. **6**

b) Using the sleeper density of n+6.2, calculate the number of sleepers required for constructing a railway track 1280m long (BG track). **7**

OR

4. Write short notes on. **13**
i) Negative superelevation and cant Deficiency.
ii) Length of Transition curve.
iii) Tongue Rail.
iv) Heel clearance and Flange way Depth.

5. a) Draw a neat diagram of Left Hand Turnout and show its various component parts. **7**

b) What are the construction steps for Railway track? Discuss in brief. **7**

OR

6. a) What is the necessity of Track Maintenance? Discuss. **6**

b) Write short notes **any two**. **8**
i) Types of signals.
ii) Interlocking.
iii) Marshaling yard.

7. a) Discuss the various factors which are to be considered while selecting a suitable site for an airport. **6**

b) The length of runway under standard conditions is 1800m. The airport is to be provided at an elevation of 300m above msl. The airport reference temperature is 28ºC. If the effective gradient is 0.20%, determine the corrected runway length. **7**

OR

8. a) Explain the procedure of Runway orientation. **7**

b) Discuss in brief the runway geometric design standards. **6**

9. a) What do you understand by terminal area? What facilities are provided in this area? **7**

b) What are the different system of aircraft parking? Explain with a neat sketch, any one. **6**

OR

10. a) Discuss with a neat sketch, 'Runway Lighting'. **7**

b) Explain the need of air traffic control. **6**

11. a) What are the objects of Tunnel Ventilation? Discuss the requirements of a ventilating system. **7**

b) What are the objects of providing a tunnel with permanent lining? Discuss in brief the various materials used for lining. **7**

OR

12. Write short notes on. **14**

a) Drainage in Tunnels.
b) Tunnel Lighting.
c) Tunnel Survey.

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