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B TECH
(SEM VIII) THEORY EXAMINATION 2017-18
TRANSPORTATION ENGINEERING - II

Time: 3 Hours   **Total Marks: 100**

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. **Attempt *all* questions in brief.**   **2 x 10 = 20**

   a. Write a short note on MRTS.
   b. List the merits of electric traction?
   c. When would you recommend 'Pusher Gradient' in Railway tracks?
   d. What do you understand by Littoral Drift?
   e. What do you understand by Sleeper Density?
   f. State the purpose of shunting signals.
   g. What do you understand by the term 'dry dock'?
   h. What is the function of breakwaters in a harbour?
   i. List the components of an airport?
   j. List any four factors considered in site selection for an airport.

SECTION B

2. **Attempt any *three* of the following:**   **10 x 3 = 30**

   a. What do you understand by permanent way explain its components with neat diagram.
   b. Calculate the super elevation and maximum permissible speed for a 2^0 BG transitioned curve on a high speed route with a maximum sanctioned speed of 110 kmph. The speed foe calculating the equilibrium super elevation as decided by the chief engineer is 80 kmph and the booked speed of goods trains is 50 kmph.
   c. What are the different systems of controlling the movement of trains in India? Give the advantages of CTC system.
   d. At an airport site at sea level with standard atmospheric conditions, the runway lengths required for takeoff and landing are 2000 m and 2400 m respectively. The proposed airport is situated at an altitude of 150 m. If the airport reference temperature is 25^0C and if the effective runway gradient is 0.35 %, calculate the length of runway to be provided.
   e. What is the role of the following processes in harbor layout and suggest remedies
      i. Wind wave
      ii. Tidal current

SECTION C

3.   **Attempt any *one* part of the following:**   10 x 1 = 10

  (a) Give the list of various types of track fittings and fastening. What is fish plate? Write the requirement of fish plate.

  (b) Discuss the following:
       i.   Creep in Rails
       ii.   Sources of water on Track drainage
       iii. Negative Cant & Cant deficiency
       iv.   Location of reception signals (with diagram)

4.   **Attempt any *one* part of the following:**   10 x 1 = 10

  (a) Illustrate with neat sketches the function and working principle of Marshalling Yard.

  (b) Calculate all the elements required to set out a 1 in 12 turnout taking off from a straight BG track with its curve starting from the toe of the switch i.e.tangential to the gauge face of the outer main rail and passes through TNC, given the heel divergence as 11.4 cm.

5.   **Attempt any *one* part of the following:**   10 x 1 = 10

  (a) How the signals are classified? Explain the different types of signals used in station yards.

  (b) What are the essentials of interlocking? Distinguish between direct and indirect interlocking. What purposes does the lock bar serve?

6.   **Attempt any *one* part of the following:**   10 x 1 = 10

  (a) Explain the types of parking system of aircrafts and state the advantages and disadvantages of Nose-In / Nose out parking.

  (b) An airport is proposed at an elevation of 600 m above Mean Sea Level where the mean of maximum and mean of average daily temperatures of the hottest month are 45.6° C and 28.2°C respectively. The maximum elevation difference along the proposed profile of the runway is 6.3 m. If the basic length of the runway is 1550 m, determine the actual length of runway to be provided.

7.   **Attempt any *one* part of the following:**   10 x 1 = 10

  (a) What are a Harbour and a port? Briefly explain Harbour site investigation and site analysis.

  (b) Explain the following coastal protection works with neat sketches.
       i.   Sea walls
       ii.   Riprap
       iii. Groins
       iv.   Dolphins