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**Question Paper Code : 57188**

**B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016**

**Sixth Semester**

**Civil Engineering**

**CE6604-RAILWAYS, AIRPORTS AND HARBOUR ENGINEERING**

**(Regulations 2013)**

**Time : Three Hours**

**Maximum : 100 Marks**

**Answer ALL questions.**

**PART – A (10 × 2 = 20 Marks)**

1. What is meant by permanent way ?
2. What are the various types of gradients that are adopted in laying a railway track ?
3. What are the different methods of plate laying ?
4. What is a Mono rail ?
5. What are the advantages of air transport compared to other modes of transportation ?
6. Write the classification of airport as per ICAO.
7. What is the difference between a runway and taxiway ?
8. List the various types of runway marking.
9. What is the difference between a harbour and a port ?
10. What is the objective of Coastal Regulation Zone notification ?

**PART – B (5 × 16 = 80 Marks)**

11. (a) (i) What are the ideal requirements of a permanent way? (8)  
(ii) What is the function of a sleeper? Compare different types of sleepers. (8)

**OR**

- (b) (i) Explain the different surveys involved in fixing the alignment of railway tracks. (8)  
(ii) A 5° curve diverges from a 3° main curve in reverse direction in the layout of a B.G yard. If the speed on the branch line is restricted to 35 kmph, determine the restricted speed on the main line. (8)

12. (a) Write short notes on :

- (i) Track drainage (8)  
(ii) Tunneling methods (8)

**OR**

- (b) How are railway stations classified? Explain the features of each station. (16)

13. (a) Draw an airport layout and explain its components. (16)

**OR**

- (b) (i) What are the facilities to be provided in the terminal building of an international Airport? (8)  
(ii) What are the different systems of aircraft parking? Explain the suitability of each system. (8)

14. (a) (i) Explain the role of wide rose diagram in the orientation of runways. (8)  
(ii) The length of a runway at mean sea level, standard temperature and zero gradient is 600 m. The site has an elevation of 100 m, with a reference of 28 °C. The runway has to be constructed with an effective gradient of 0.5%. Determine the actual length of the runway at site. (8)

**OR**

- (b) (i) Explain in detail about airport zoning. (8)  
(ii) Explain the elements of airport lighting with neat sketches. (8)

15. (a) (i) What are the factors to be considered for the selection for harbour? (8)  
(ii) Explain the coastal protection works. (8)

**OR**

- (b) Explain the different types of breakwaters with neat sketches. (16)