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**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**B.E. (Civil Engg.) IV Year I-Semester Main Examinations, December-2017**  
**Transportation Engineering-II**

Time: 3 hours

Max. Marks: 70

*Note: Answer ALL questions in Part-A and any FIVE from Part-B*

**Part-A (10 × 2 = 20 Marks)**

1. Briefly discuss about different gauges in India.
2. Illustrate with a neat sketch permanent way and its components.
3. Define a crossing and the requirement.
4. Detail about the need for widening of gauge on curved tracks.
5. List out the major stages in construction of railway track.
6. Briefly detail about necessity of maintenance of a track.
7. What is Apron and its function?
8. Illustrate with a sketch any typical airport layout.
9. List out the factors influencing runway length.
10. What are various airport parking configurations for aircraft?

**Part-B (5 × 10=50 Marks)**

11. a) Illustrate with a neat sketch cross section of a bull-headed rail and flat footed rail and mark the important dimensions. Discuss about the relative merits and demerits of these two types of rails. [5]
- b) Detail about the requirement of ballast on railway tracks and state the requirements to be fulfilled by an ideal material for ballast. Also discuss about various materials commonly used as ballast in railway tracks. [5]
12. a) Explain about cant deficiency and indicate the limits generally provided for Indian Railways. [4]
- b) On a B.G. trunk route involving high speeds, a 120 m transition curve has been laid and a super elevation of 75 mm has been provided. The degree of the curve 1° and the maximum sanctioned speed for the section is 150 kmph. Determine the maximum permissible speed. [6]
13. a) Discuss about requirements of sub-grade material for a railway track. [5]
- b) Illustrate with neat sketches the tasks of involved in maintaining the permanent way in respect of its surface, drainage, and track components. [5]
14. a) Detail about elements of Airport master plan. [5]
- b) Discuss about the various factors to be considered in selecting a suitable site for a new airport for a city which is surrounded by fast developing industries. [5]
15. a) Detail about the principal landing and take-off requirements on the basis of which safe runway lengths are determined. [4]
- b) Determine the actual runway length for a proposed airport site with an elevation of 400 meters above mean sea level. The airport reference temperature is 32°C and standard runway length is 1800 meters. The effective gradient is 0.22 percent. [6]

- 16. a) Detail about the function of fish plates and bearing plates in a railway track. [5]
- b) Draw a typical layout of a left hand turnout and explain the various components in a turnout. [5]
- 17. Answer any **two** of the following:
  - a) Detail about methods of packing of track. [5]
  - b) Discuss about classification of different airports. [5]
  - c) Briefly discuss about method of orientation of runway using wind rose diagram. [5]

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