

Total No. of Questions : 10]

SEAT No. :

**P21**

[Total No. of Pages : 3

**[5871]-521**

**B.E. (Civil)**

**AIRPORT AND BRIDGE ENGINEERING**  
**(2015 Pattern) (Semester - II) (Elective - III)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Answer Q.1 or Q.2, or Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10.*
- 2) *Figures to the right indicates full marks.*
- 3) *Draw neat figures wherever necessary.*
- 4) *Assume necessary data.*
- 5) *Use of scientific calculators is allowed.*

**Q1) a)** Describe the method of plotting wind rose diagram showing direction, duration and Intensity of wind to fix the orientation of runway in an Airport. **[6]**

b) What are the characteristics Aircraft? **[4]**

OR

**Q2) a)** Discuss the following. **[6]**

- i) Apron turntable
- ii) Hanger site locations.

b) What is Air traffic control Network system? **[4]**

**Q3) a)** What are the roles and responsibilities of ICAO and FAA? **[6]**

b) What is Normal Approach and Landing? **[4]**

OR

**Q4) a)** The length of the runway under the Standard condition is 1600 m. The airport site has an Elevation of 320m. And the reference temperature of the airport is 33.60°C. It is decided to construct the runway with an effective Gradient of 0.25%. Determine the Corrected length of the Runway. **[6]**

b) What are the Characteristics of good airport layout. **[4]**

**P.T.O.**

- Q5)** a) What steps are necessary to develop a heliport? [5]  
b) With suitable sketch explain the Approach Lighting System of heliport. [6]  
c) With suitable sketch discuss the Tie-down Configuration. [5]

OR

- Q6)** a) What is VTOL? Are there different types of VTOL? [5]  
b) Write note on the following : [6]  
i) Hovering Flight  
ii) Vertical Flight  
iii) Forward Flight  
c) What are the factors that influence the choice of bridge super structure? [5]

- Q7)** a) The catchment area of a stream is of sandy soil with light vegetation cover and the area of the catchment is 12000 hectare. The length of the catchment is 25 km and the fall in level from critical point to the bridge site is 180 m. Calculate the peak runoff for designing the bridge. The rainfall in 4 hours is recorded 18 cm. Area factor = 0.70 and coefficient to account for losses due to absorption = 0.20. [6]  
b) What are the forces acting on abutment? [4]  
c) Differentiate the followings - [6]  
i) U- abutment and T- abutment  
ii) Pile bent and trestle bent

OR

- Q8)** a) What is the classification of bridges according to [6]  
i) Road engineers  
ii) Indian Railways  
b) The flood discharge under a bridge is  $750 \text{ m}^3/\text{sec}$ . The bridge site is at right angled bend. Assuming Lacey's silt factor for river bed as 0.85, calculate the maximum scour depth. [5]  
c) What are the different forces acting on components of a bridge? [5]

- Q9)** a) What are the functions of bearings in bridges? [6]
- b) Define the causeway and describe its types. [6]
- c) Why the cantilever bridges are more suitable for long spans and deep valleys? [6]

OR

- Q10)** a) Why the cable stayed decks are less prone to the wind induced oscillations than the suspension bridges. [6]
- b) Define temporary bridge and mention the materials and fastenings employed in its construction. [6]
- c) Write brief notes on following : [6]
- i) Neoprene bridge bearing
  - ii) Rubber bearing

