



## OBJECTIVES:

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

### 1. Group - A (Short Answer Questions)

S. No	QUESTION	Blooms Taxonomy Level	Outcome
<b>UNIT-I HIGHWAY DEVELOPMENT AND PLANNING</b>			
1	What is the Necessity for highway planning in our country?	Remember	1
2	Write about Jayakar Committee and its Recommendations?	Understand	1
3	What are the salient features of Second Twenty year road development plan?	Remember	1
4	What are the salient features of First Twenty year road development plan?	Analyze	1
5	What are the salient features of Third Twenty year road development plan?	Understand	1
6	Explain the classification of Roads?	Remember	2
7	List various factors controlling alignment?	Remember	2
8	List out advantages of good road?	Remember	2
9	Write short notes on Highway project report?	Understand	2

10	Draw neat sketches of various road patterns.	Remember	2
<b>UNIT-II HIGHWAY GEOMETRIC DESIGN</b>			
1.	What is Camber?	Understand	3
2.	What is the need of camber on pavement and its recommendations?	Analyze	3
3.	What is skid resistance?	Remember	3
4.	What are the factors on which skid resistance depends?	Analyze	3
5.	What is Stopping sight distance?	Remember	3
6.	What is over taking sight distance?	Analyze	3
7.	Write about over taking zones?	Understand	4
8	Write about Intermediate sight distance and head light sight distance?	Understand	4
9.	Write about Transition curve?	Understand	4
10.	Write about Vertical curves?	Remember	4
<b>UNIT-III TRAFFIC ENGINEERING AND REGULATION</b>			
1.	Define Traffic Density.	Understand	5
2.	How the traffic volume data is collected and presented in traffic engineering?	Analyze	5
3.	Write about spot speed studies?	Analyze	5
4.	What is the need for road markings?	Analyze	6
5.	Show various types of traffic signs with neat sketches.	Understand	6
6.	Define On street and off street parking?	Remember	6
7.	Describe various causes for road accidents?	Remember	6
8.	What are the different types of traffic signal systems?	Understand	6
9.	What is origin and destination data?	Understand	6
10.	List out various measures that may be taken to prevent accidents?	Remember	5
<b>UNIT-IV INTERSECTION DESIGN</b>			
1	Define intersection? What are the types of Intersections?	Understand	7
2	What are the basic forms of Intersection?	Understand	7
3	What are the various types of at grade Intersections?	Understand	7
4	What are various types of Grade separated Intersections?	Analyze	8
5	What is Channelization?	Remember	8
6	Write about Rotary Intersection?	Analyze	8
7	What are the advantages of Rotary Intersection?	Understand	9
8	What are the Limitations of Rotary Intersection?	Analyze	9
10	What are the requirements of at grade Intersection?	Analyze	9
<b>UNIT-V HIGHWAY MATERIALS, CONSTRUCTION AND MAINTENANCE</b>			
1	Define the characterization of highway material?	Analyze	10
2	Write about sub grade soil and stone aggregates	Understand	10
3	Write short notes on surface dressing?	Understand	10

4	Give the difference between wbm and gravel roads.	Understand	10
5	Write notes on cement concrete roads.	Analyze	10
6	How will you consider the drainage considerations in highway?	Remember	10
7	Write the steps involved in construction of roads?	Remember	10
8	What are stone aggregates?	Remember	10
9	How will you consider the maintenance of highway?	Remember	10
10	What is bituminous concrete?	Remember	10

## 2. Group - II (Long Answer Questions)

S. No	UNIT-I HIGHWAY DEVELOPMENT AND PLANNING	Blooms Taxonomy Level	Outcome
1	What is the Necessity for highway planning in our country? Write about Jayakar committee and its Recommendations?	Remember	1
2	Write short notes on the following a) Nagpur road plan and its salient features along with two plan formulas b) Central Road Fund	Remember	1
3	Write about Jayakar Committee and its Recommendations and write about I.R.C in detail?	Understand	2
4	Explain the classification of Roads and also list five advantages of Roads?	Understand	2
5	What are the different plans to be prepared after planning surveys are carried out?	Remember	1
6	Write a short notes on Highway project report and Explain the steps for a new Highway project?	Analyze	1
7	a) Discuss the Third twenty year road plan and its objectives	Analyze	1
	b) Compare First & Second Twenty year Road Development plans?		2
8	What are the characteristics of good road and the need for a good road?	Analyze	2
9	Explain in detail about Road development plans in India?	Analyze	2
10	What is an Highway alignment and various factors controlling alignment?	Remember	2
	<b>UNIT-II HIGHWAY GEOMETRIC DESIGN</b>		
1	What is Camber and explain its need on highway?	Analyze	3
2	What is over taking sight distance? Also derive an expression for OSD	Understand	3
3	Write about Intermediate sight distance and head light sight distance and explain them in detail?	Understand	3
4	Write about Design of Transition curves in detail? Explain the concept of shift?	Analyze	4

5	What are the factors controlling the geometric elements?	Analyze	4
6	Write about the design of Vertical curves and Explain with an example?	Analyze	4
7	Write about over taking zones? Explain them with neat sketches.	Analyze	4
8	What is skid resistance and what are the factors on which it depends?	Analyze	3
9	What are the factors controlling the geometric elements ?	Analyze	4
10	What are the various types of cambers and explain the need of camber on pavement and its recommendations?	Remember	3

### UNIT-III

#### TRAFFIC ENGINEERING AND REGULATION

1.	Explain the procedure for conducting spot speed studies. How do you analyze the Spot speed data?	Remember	5
2.	Describe in detail about parking studies?	Analyze	5
3	Describe various causes for road accidents and write about measures that are to be taken to reduce the road accidents?	Remember	5
4.	Distinguish between On street and Off street parking?.	Analyze	5
5.	Explain various measures that may be taken to prevent accidents?	Remember	6
6.	What is Road Marking? What is the need for road markings and What are the types of road markings?	Analyze	6
7	Describe various types of traffic signs used in traffic control and regulation giving at least two examples for each type. Support your answer with suitable sketches and specifications for the signs	Analyze	6
8	Write about traffic volume studies and explain how the data is collected and presented in traffic engineering?	Analyze	5
9.	Show various types of traffic signs with neat sketches.Explain each in detail	Remember	5
10.	Explain the design procedure of Traffic signals according to Webster method?	Remember	5

### UNIT-IV

#### INTERSECTION DESIGN

1	Define intersection? What are the types of Intersections and explain the necessity of Intersections?	Remember	7
2	What are the basic forms of Intersection and explain each with two types?	Analyze	7
3	What are the various types of at grade Intersections and explain them with neat sketches?	Analyze	7
4	What are various types of Grade separated Intersections and explain them with neat sketches?	Analyze	7
5	What is Channelization and explain the importance with its advantages and disadvantages?	Analyze	8
6	Write about Rotary Intersection and explain with a neat sketch?	Remember	8
7	What are the advantages and limitations of Rotary Intersection?	Remember	8

8	What are the design factors that control the design of rotary intersection and explain them in detail?	Remember	9
9	Explain various safety measures to be taken to prevent accidents at Rotary?	Remember	9
10	What are the requirements of at grade Intersection and explain them?	Analyze	9
<b>UNIT-V</b>			
<b>HIGHWAY MATERIALS, CONSTRUCTION AND MAINTENANCE</b>			
1	Explain the construction of water bound macadam?	Analyze	10
2	Explain the construction of cement concrete roads?	Remember	10
3	Explain the construction of gravel roads?	Analyze	10
4	Explain the construction of bituminous pavements?	Analyze	10
5	How will construct the joints in cc pavements?	Remember	10
6	What is joint filler and seal?	Analyze	10
7	What are the different factors for failure of pavements?	Understand	10
8	What do you mean by surface dressing and what is the role of surface dressing in the construction of highway?	Evaluate	10
9	Give the difference between water bound macadam roads and bitumen bound macadam.	understand	10
10	How will do the maintenance of roads ?	Analyze	10

### 3. Group - III (Analytical Questions)

S.No	QUESTIONS	Blooms Taxonomy Level	Program Outcome
<b>UNIT-I HIGHWAY DEVELOPMENT AND PLANNING</b>			
1	The area of a certain district in India is 18,400 sq.km and there are 16 towns as per 1981 census. Determine the lengths of different categories of roads to be provided in this district by the year 2001?	Apply	1
2	Determine the length of different categories of roads in a state in india by the year 2001, using Third road Development plan formulae and the following data: Total area of the state = 80,000 sq.km Total number of towns as per 1981 census =86 Overall road density aimed at= 82 km per 100 sq.km area	Apply	1
3	The area of a certain district in India is 13,400 sq.km and there are 12 towns as per 1981 census. Determine the lengths of different categories of roads to be provided in this district by the year 2001?	Apply	2
4	Calculate the lengths of National and State highways required in a district with a total area of 7200 km <sup>2</sup> , Developed, Semi-developed & Undeveloped areas being 30,45 &25 percent of the district. The no of towns with population over 1.0,0.5- 1.0,0.2-0.5 and 0.1-0.2 lakhs are 3,7,12&20 respectively in a district using second twenty year plan?	Apply	2
<b>UNIT-II HIGHWAY GEOMETRIC DESIGN</b>			
1	Calculate the safe stopping sight distance for design speed of 50 kmph for two way traffic on a two lane road.	Apply	4
2	Calculate the safe stopping sight distance for design speed of 100 kmph for two way traffic on a single lane road	Apply	4
3	The radius of the horizontal circular curve is 100m. The design speed is 50kmph and the design coefficient of lateral friction is 0.15. a)Calculate the super elevation required if full lateral friction is assumed to develop b)Calculate the coefficient of friction needed if no Super elevation is provided	Apply	4

4	The speeds of overtaking and overtaken vehicles are 80 and 60 kmph respectively. If the acceleration of the overtaking vehicle is 2.5Kmph per second, Calculate the safe Overtaking sight distance for two way traffic?	Apply	4
5	Calculate the safe overtaking sight distance for design speed of 50kmph. assume all other data suitably.	Apply	4