



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad - 500 043

CIVIL ENGINEERING

QUESTION BANK

Course Name	:	Transportation Engineering
Course Code	:	A60132
Class	:	III- II
Branch	:	Civil Engineering
Year	:	2017 – 2018
Course coordinator	:	Mr. D.M.V.Praneeth, Assistant Professor
Course lecturers		Mr. D.M.V.Praneeth, Assistant Professor Mr. SV Konda Reddy Satti Assistant Professor

OBJECTIVE:

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.

S. No	QUESTION	Blooms Taxonomy Level	Course Outcome
UNIT-I			
HIGHWAY DEVELOPMENT AND PLANNING			
Part - A (Short Answer Questions)			
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 do you understand by obligatory points?	Remember	1
4	What is highway alignment?	Understand	1
5	What is meant reconnaissance?	Understand	3
6	Explain the classification of Roads as per Nagpur road plan?	Remember	2
7	What are the main objectives of preliminary survey?	Remember	2
8	What is a key map?	Remember	2
9	Write short notes on Highway project report.	Understand	2
10	Write about index map.	Remember	2
11	What are express ways?	Remember	1
12	Explain about the classification of urban roads?	Understand	1
13	Explain the significance of central road research institute?	Remember	3
14	What are the general methods for classification of roads?	Remember	3

15	What are the disadvantages of improper road alignment?	Remember	1
16	Explain National highway Act.		
Part-B (Long Answer Questions)			
1.	Discuss the basic requirements of an ideal alignment.	Understand	3
2.	Explain the classification of roads.	Understand	2
3.	Discuss the classification of roads as per Nagpur road plan.	Remember	3
4.	Explain the classification of road patterns with neat sketches.	Understand	2
5.	Explain the salient features of second twenty year road plan.	Remember	3
6.	What are the economic and financial studies to be carried out in highway planning?	Understand	3
7.	What are the road use and engineering studies to be carried out in highway planning?	Understand	1
8.	What are the factors controlling highway alignment?	Understand	3
9.	Explain in detail regarding Map study?	Understand	1
10.	Discuss the necessity of re alignment?	Remember	2
PART-C(Critical thinking Questions)			
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?	Understand	1
2.	Determine the length of different categories of roads in a state in India by the year 2001 using third road development concept, the following data given. 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.	Understand	3
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?	Understand	2
4.	Calculate the lengths of National and State highways required in a district with a total area of 7200 km ² , Developed, Semi-developed & Undeveloped areas being 30,45 &25 percent of the respectively 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?	Understand	2
UNIT-II GEOMETRIC DESIGN			
Part- A (Short Answer Questions)			
1.	What is Camber?	Understand	4
2	Write about kerbs?	Understand	5
3	What do you understand by right of way?	Remember	6
4	Explain head light sight distance?	Understand	4
5	What is lag distance?	Remember	5
6	What is breaking distance?	Understand	4
7	What do you understand by design speed	Understand	5
8	What do you understand by overtaking zones? Explain in one-way and two way roads	Understand	6
10	What do you understand by mechanical widening?	Remember	4
11	What is set back distance?	Understand	6
12	What is gradient?	Remember	5
13	Explain about total reaction time?	Understand	5
14	What is equilibrium super elevation?	Understand	6

Part - B (Long Answer Questions)			
1	What are the factors controlling geometric design?	Understand	4
2	Explain PIEV theory?	Understand	6
3	Derive an expression for stopping sight distance with the help of neat sketches?	Understand	6
4	Derive an expression for overtaking sight distance with the help of neat sketches?	Understand	5
5	Derive the expression for super elevation and explain with the help of neat sketches?	Understand	7
6	Explain different types of gradients?	Understand	4
7	What is skid resistance and what are the factors on which it depends?	Understand	6
8	Write about Design of Transition curves in detail? Explain the concept of shift?	Understand	6
9	Explain the factors on which overtaking sight distance depends?	Understand	6
10	Explain skid resistance? What are the factors affecting it?	Understand	4
Part - C (Critical thinking Questions)			
1	Calculate the safe stopping sight distance for design speed of 50 kmph for two way traffic on a two lane road.	Understand	5
2	Calculate the safe stopping sight distance for design speed of 100 kmph for two way traffic on a single lane road.	Understand	5
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	Understand	6
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?	Understand	4
UNIT 3 TRAFFIC ENGINEERING & REGULATION			
Part - A (Short Answer Questions)			
First half			
1.	What is traffic Density?	Understand	7
2.	How the traffic volume data is collected and presented in traffic engineering?	Understand	7
3.	Write about spot speed studies?	Understand	8
4.	What is design speed?	Understand	9
5.	What do you understand by 85 th percentile speed	Understand	9
6.	What is journey time	Remember	8
7.	Write about origin and destination studies	Remember	9
8.	What are different types of parking facilities?	Understand	8
9.	What is parking accumulation?	Understand	6
10.	Write about parking index?	Remember	5
11	What is basic roadway capacity?	Remember	4
12	What is traffic volume?	Understand	5
13	What is space mean speed		

14	What are measures required to be taken for accident rate reduction?	Remember	1
15	List out various measures that may be taken to prevent accidents?	Understand	9
16	What do you understand by the term Collision diagram?	Remember	8
17	What are regulatory signs?	Understand	
18	What are road conflict points and write their types?	Understand	9
19	Write about specifications of centre line markings on a roadway?	Remember	8
20	What do you understand by simultaneous signal system?	Remember	6
21	What do you understand by alternate signal system?	Remember	1
22	What are the basic elements involved in a traffic accident?	Understand	9
23	What is the basic difference between fatal and non-fatal collisions?	Remember	8
24	What is cycle length?	Remember	
25	What is clearance interval?	Remember	9
26	What do you understand by the term cycle in a traffic signal?	Understand	8
Part- B (Long Answer Questions)			
1.	Explain different kinds of speeds which we collect in speed studies.	Understand	5
2.	Describe in detail speed and delay studies?	Understand	5
3.	Distinguish between On street and Off street parking?.	Understand	7
4.	What is Road Marking? What is the need for road markings and What are the types of road markings?	Understand	1
5	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.	Remember	9
6	Write about origin and destination studies in detail?	Remember	8
8	Explain about parking studies in detail.	Understand	
UNIT-IV			
INTERSECTION DESIGN			
Part - A (Short Answer Questions)			
1	What do you understand by the term "At Grade intersection" ?	Understand	8
2	What do you understand by the term "Grade separated intersection"?	Understand	9
3	What is rotary ?	Understand	7
4	What is condition diagram?	Understand	9
5	What is road conflict point?	Remember	9
6	What is Channelization?	Remember	10
7	What are the Limitations of Rotary Intersection?	Understand	10
8	What is a traffic island?	Understand	11
9	What is weaving length?	Remember	11
10	What is parking index?	Remember	12
11	What is parking turnover?	Understand	11
12	What is overpass?	Understand	10
13	What is underpass?	Remember	11
Part - B (Long Answer Questions)			
1	Explain the design factors considered in rotary design.	Understand	5
2	List the advantages and disadvantages of rotary intersection?	Remember	6
3	Explain about road conflicts with neat sketches?	Remember	4

4	What are the regulatory signs?	Understand	4
5	What are the basic forms of Intersection and explain each with two types?	Understand	3
6	What are the various types of at grade Intersections and explain them with neat sketches?	Understand	4
7	What are various types of Grade separated Intersections and explain them with neat sketches?	Remember	5
8	What is Channelization and explain the importance with its advantages and disadvantages?	Remember	6
9	Explain in detail about on street parking?	Remember	4
10	Explain in detail about off street parking?	Remember	5

UNIT-V
HIGHWAY MATERIALS, CONSTRUCTION AND MAINTENANCE

Part-A (Short Answer Questions)

1	Explain the construction of water bound macadam?	Understand	11
2	Explain the construction of cement concrete roads?	Remember	11
3	What are the requirements of a good joint in CC Pavements?	Remember	10
4	Explain the classification of transverse joints?	Understand	11
5	What are the methods of construction of cement concrete slab?	Understand	11
6	What are the different types of highway construction?	Understand	10
7	What are the different factors for failure of pavements?	Remember	10
8	What is seal coat?	Evaluate	11
9	What are warping joints?	understand	11
10	What do you understand by the term alligator cracking?	Understand	10

Part - B (Long Answer Questions)

1	What are the general causes of pavement failures	Understand	10
2	Explain the classification of road maintenance works?	Remember	11
3	Explain the typical failures of flexible pavements?	Remember	11
4	Explain the construction of water bound macadam?	Understand	10
5	Explain the construction of cement concrete roads?	Understand	10
6	Explain the construction of gravel roads?	Understand	11
7	Explain the construction of bituminous pavements?	Remember	11
8	How will construct the joints in cc pavements?	Understand	10
9	What is joint filler and seal?	Remember	10
10	What do you mean by surface dressing and what is the role of surface dressing in the construction of highway?	Understand	11
11	What are the requirements of highway drainage system?	Understand	11

Prepared by

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