

KADI SARVA VISHWAVIDHYALAYA

BE SEMESTER: 4TH

EXAMINATION (OCT/2015)

SUBJECT CODE: CV 404

SUBJECT NAME: HIGHWAY ENGINEERING

DATE: 29/10/2015

TIME: 10.30 TO 1.30 p.m.

TOTAL MARKS: 70

INSTRUCTIONS:

1. Answer each section in separate Answer book
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate clearly the options you attempted along with its respective question number.
5. Use the last page of main supplementary for rough work.

SECTION: I

Q : 1 (ALL COMPULSORY)

- | | | |
|-----|---|----|
| (A) | Give Classification of Roads. | 05 |
| (B) | Discuss various factors affecting road alignment. | 05 |
| (C) | Write short note on : Super elevation | 05 |

OR

- | | | |
|-----|--|----|
| (C) | Sketch cross section of divided highway in urban area. | 05 |
|-----|--|----|

Q : 2 Answer the following questions.

- | | | |
|-----|---|----|
| (A) | Describe factors affecting sight distance | 05 |
| (B) | Explain water absorption test for aggregate | 05 |

OR

- | | | |
|-----|--|----|
| (A) | Write short note on : shoulders, kerbs | 05 |
| (B) | Calculate the values of ruling minimum and absolute minimum radius of horizontal curve of a National Highway in plain terrain. Assume ruling design speed and minimum speed values as 90 and 70 kmph respectively. | 05 |

Q : 3 Answer the following questions.

- | | | |
|-----|--|----|
| (A) | Compare tar and bitumen. | 05 |
| (B) | Explain with neat sketch penetration test for bitumen. | 05 |

OR

- | | | |
|-----|---|----|
| (A) | Briefly explain the crushing value test with recommended IRC values for the different layers and type of roads. | 05 |
| (B) | Enumerate advantages and disadvantages of WBM roads | 05 |

SECTION: II

Q : 4 (ALL COMPULSORY)

- (A) Discuss the factor affecting the design of pavement 05
- (B) Describe the maintenance of bituminous roads. 05
- (C) Write short Note no: Road user characteristics 05

OR

- (C) Write short Note on : Vehicular characteristics 05

Q : 5 Answer the following questions.

- (A) What are the objects of road side arboriculture? What are its disadvantages? 05
- (B) Explain importance of highway drainage. 05

OR

- (A) Explain design factors for highway lighting 05
- (B) What are the advantages and disadvantages of traffic signals? 05

Q : 6 Answer the following questions.

- (A) Explain highway financing and taxation in India. 05
- (B) Write causes of accident. 05

OR

- (A) What is meant by PPP? What are the salient features of PPP 05
- (B) Explain methods of off-street parking. 05

All the Best

KADI SARVA VISHWAVIDHYALAYA

BE SEMESTER: 4TH

EXAMINATION (MAY/2014)

SUBJECT CODE: CV 404

SUBJECT NAME: HIGHWAY ENGINEERING

DATE: 15/05/2014

TIME: 10.30 TO 1.30

TOTAL MARKS: 70

INSTRUCTIONS:

1. Answer each section in separate Answer book
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate clearly the options you attempted along with its respective question number.
5. Use the last page of main supplementary for rough work.

SECTION: I

Q : 1 (ALL COMPULSORY)

- (A) Give classification of roads as per Nagpur Road development plan. 05
- (B) Draw a cross-section of road structure showing its components and explain function of any three. 05
- (C) Calculate the lengths of National Highways and state highways in a district with a total area of 5400 km², developed semi-developed and undeveloped areas being 25, 35, 20% of the district. 05

Number of towns and villages in different population ranges are as below.

Population(lakhs)	>1.0	0.5-1.0	0.2-0.5	0.1-0.2
Number of villages and towns	3	8	12	20

Use second 20-year road plan formulae.

OR

- (C) A horizontal circular curve has radius 80m. If the design speed of vehicle is 50kmph and $f=0.15$, (a) calculate super elevation (b) Lateral friction coefficient if no super elevation is provided. (c) Equilibrium super elevation if pressure on outer and inner wheel is equal. 05

Q : 2 Answer the following questions.

- (A) Describe various engineering surveys to be carried out for location of highway alignment. 05
- (B) Explain the desirable properties of aggregates to be used in the different types of pavement construction. 05

OR

- (A) Enumerate advantages and disadvantages of WBM roads. 05

- (B) Explain with neat sketch penetration test for bitumen 05
- Q : 3 Answer the following questions.
- (A) What you mean by soil stabilization .What is necessity of that. Explain any two methods of soil stabilizations. 05
- (B) Describe aggregate impact value test with IRC limits 05
- OR
- (A) Compare tar and bitumen 05
- (B) Explain types of gradient. 05

SECTION: II

- Q : 1 (ALL COMPULSORY)
- (A) Write short note on: Road User Characteristic. 05
- (B) Explain in detail the PPP model of highway financing in India. 05
- (C) Explain G.I. method for flexible pavement design. 05
- OR
- (C) Give the requirements of good road drainage system 05
- Q : 2 Answer the following questions.
- (A) Explain design factors for highway lighting. 05
- (B) Describe the maintenance of bituminous roads 05
- OR
- (A) Write Short note on : Road arboriculture 05
- (B) List traffic control devices. Explain in detail any one types of sign 05
- Q : 3 Answer the following questions.
- (A) Write causes of accident. 05
- (B) Find out CBR value for soil subgrade for 1100 ADT or commercial vehicles. 05
Annual growth rate of traffic is 8 %, construction period is 2.5 years. Loads at 2.5 mm and 5.00 mm penetration are 55 and 78 kg respectively. Also find out number of vehicles per day for design. Standard loads at 2.5mm and 5.00 mm penetration is 1370kg and 2055 kg respectively.
- OR
- (A) Explain the term traffic volume. Enumerate the different methods of carrying out traffic volume studies. What are uses of same? 05
- (B) Differentiate between flexible pavement and rigid pavement. 05

All the Best

KADI SARVA VISHWAVIDHYALAYA

BE SEMESTER: 4TH

EXAMINATION (NOV/2014)

SUBJECT CODE: CV 404

SUBJECT NAME: HIGHWAY ENGINEERING

DATE: 08/11/2014

TIME: 10.30 TO 1.30

TOTAL MARKS: 70

INSTRUCTIONS:

1. Answer each section in separate Answer book
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate clearly the options you attempted along with its respective question number.
5. Use the last page of main supplementary for rough work.

SECTION: I

Q : 1 (ALL COMPULSORY)

- (A) Give classification of roads as per Nagpur Road development plan. 05
- (B) Draw a cross-section of road structure showing its components and explain function of any three. 05
- (C) Calculate the design speed of vehicle on a horizontal curve having radius of 100m with permissible super elevation of 7 %. Consider coefficient of friction 0.18. 05

OR

- (C) Calculate stopping sight distance for two way traffic in a single lane road. The design speed is 70kmph. Assume reaction time of driver is 2.5 sec and find coefficient of friction is 0.6. 05

Q : 2 Answer the following questions.

- (A) Describe various engineering surveys to be carried out for location of highway alignment. 05
- (B) Explain the desirable properties of aggregates to be used in the different types of pavement construction. 05

OR

- (A) Enumerate advantages and disadvantages of WBM roads. 05
- (B) Explain with neat sketch penetration test for bitumen 05

Q : 3 Answer the following questions.

- (A) Discuss the desirable properties of bitumen.. 05
- (B) Describe aggregate impact value test with IRC limits 05

OR

- (A) Compare tar and bitumen 05
(B) Explain the term: Skid and slip. 05

SECTION: II

Q : 4 (ALL COMPULSORY)

- (A) Write short note on: Road User Characteristic. 05
(B) Explain in detail the PPP model of highway financing in India. 05
(C) Explain CBR method for the design of flexible pavements. 05

OR

- (C) Give the requirements of good road drainage system 05

Q : 5 Answer the following questions.

- (A) Enumerate various deficiencies in flexible pavements. 05
(B) Describe the maintenance of bituminous roads 05

OR

- (A) Write Short note on : Road arboriculture 05
(B) List traffic control devices. Explain in detail any one types of sign 05

Q :6 Answer the following questions.

- (A) Write causes of accident. 05
(B) Explain methods of off-street parking. 05

OR

- (A) Explain the term traffic volume. Enumerate the different methods of carrying out traffic volume studies. What are uses of same? 05
(B) Write short not on: Prevention of land slide. 05

All the Best

KADI SARVA VISHWAVIDHYALAYA

BE SEMESTER: 4TH SEM CIVIL

EXAMINATION (MAY/2015)

SUBJECT CODE: CV 404

SUBJECT NAME: HIGHWAY ENGINEERING

DATE: 07/05/2015

TIME: 10.30 TO 1.30

TOTAL MARKS: 70

INSTRUCTIONS:

1. Answer each section in separate Answer book
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate clearly the options you attempted along with its respective question number.
5. Use the last page of main supplementary for rough work.

SECTION: I

Q : 1

- (A) Explain BOT projects for highway 05
- (B) Sketch cross section of divided highway in urban area. 05
- (C) A descending gradient of 1 in 40 meets and ascending gradient of 1 in 50 to from a valley curve. Determine the length of valley curve if stopping sight distance e is 130 m. 05

OR

- (C) A horizontal circular curve has radius 80m. If the design speed of vehicle is 40kmph and $f=0.15$, (a) calculate super elevation (b) Lateral friction coefficient if no super elevation is provided. (c) Equilibrium super elevation if pressure on outer and inner wheel is equal. 05

Q : 2 Answer the following questions.

- (A) Discuss about various road authorities working in highway planning and development in India. 05
- (B) Describe various engineering surveys to be carried out for location of highway alignment. 05

OR

- (A) Enumerate advantages and disadvantages of WBM roads. 05
- (B) Describe aggregate los angles abrasion value test with IRC limits. 05

Q : 3 Answer the following questions.

- (A) What you mean by soil stabilization .What is necessity of that. Explain any two methods of soil stabilizations. 05
- (B) Write short note on sight distance 05

OR

- (A) Explain flakiness and elongation index of aggregate. 05
- (B) Write short note on : Road side arboriculture 05

SECTION: II

Q : 4

- (A) Write short note on: Vehicular characteristics. 05
- (B) Describe the maintenance of bituminous roads. 05
- (C) Explain CBR method for flexible pavement design. 05

OR

- (C) Give requirement of good road drainage work. 05

Q : 5 Answer the following questions.

- (A) Write short not on : Traffic signals 05
- (B) List out various types of traffic surveys and explain any two of them in detail. 05

OR

- (A) List out design factors for highway lighting. Explain any three in detail. 05
- (B) Explain with neat sketch penetration test for bitumen. 05

Q : 6 Answer the following questions.

- (A) Explain design of filters in subsurface drains. 05
- (B) Evaluate wheel load stresses for a 18cm thick cement concrete pavement. Wheel load is 5000kg, Poisson's ratio of concrete is 0.15 ,Radius of contact area is 12 cm, Modulus of elasticity of cement concrete is $3.0 \times 10^5 \text{ kg/cm}^2$, Modulas of sub grade reaction is 6.0 kg/cm^3 05

OR

- (A) Explain highway financing and taxation in India. 05
- (B) Discuss the factors affecting the design of pavement. 05

All the Best