Code : 021724

B.Tech.7th Semester Special Examination,2016

Automotive Mechanics

Time : 3 hours *Full Marks : 70*

Instructions :

*(i) There are **Nine** questions in this paper.*

*(ii) Attempt **Five** question in all.*

*(iii) **Questions No.1** is compulsory.*

(iv) The marks are indicated in the right hand margin.

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1. Write short notes any seven of the following: 2×7=14

   (a) Torque converter

   (b) Propeller shaft

   (c) Universal joint

   (d) Camber

   (e) Toe-in

   (f) Caster

   (g) Master cylinder

   (h) Carburetion

   (i) Octane number

   (j) Cetane number

P.T.O.

(x) What are the load and forces to be considered in the design of piers of a bridge?

2. (a) Discuss the role of Indian Railways in the social and economic development of the country. 7

(b) Define railway track Gauge. How many gauses exist in Indian Railways ? Give their widths and route kilometres. 7

3. (a) Draw a typical cross-section of a BG double track in embankment and show there in all the components of the track. 7

(b) Give the name of the rail section general used in P-way. What are the reasons for this preference in relation to other types of rail sections? 7

4. (a) What do you mean by Negative Super elevation and Grade Compensation on curves. 7

(b) Calculate the maximum permissible speed on a curve of a high speed BG group A-route having the following particulars.

Degree of the curve=1°, super elevation=80 mm, length of transition curve =120 m, maximum speed likely to be sanctioned for the section=160 km/hr. 7

5. (a) Discuss the functions of Turnout and enumerate the constituent of a BG track turnout. 7

(b) Two BG tracks cross each other at an angle of 1 in 10. Calculate the important dimensions of the diamond crossing. 7

6. (a) What are the objectives of signalling in railway transportation system? Discuss the coloured light signals. 7

(b) What are marshalling yards ? With the help of a neat sketch explain how goods train arriving at such a yard from different directions could be rearranged into their proper order. 7

7. (a) What are the components of a bridge structure ? Give a neat sketch for a typical RCC bridge and indicate their names. 7

(b) Distinguish between vertical clearance and freeboard. Why should a vertical clearance above HFL be provided? 7

8. (a) What is the significance of the impact factor and how is it estimated for design of superstructure and substructure? 7

(b) State what you understand by and elastomeric pot bearing and describe its working and applications. 7