**431** Register No.: _____

# April 2018

*Time – Three hours*
*(Maximum Marks: 75)*

*[N.B: (1) Q.No. 8 in PART – A and Q.No. 16 in PART – B are compulsory. Answer any FOUR questions from the remaining in each PART – A and PART – B*

*(2) Answer division (a) or division (b) of each question in PART – C.*

*(3) Each question carries 2 marks in PART – A, 3 marks in Part – B and 10 marks in PART – C. ]*

## PART – A

1. What are the different types of frames?
2. What is the function of a clutch?
3. What is an over drive?
4. What is the function of a final drive?
5. What are the main components of integral power steering system?
6. What are helper springs?
7. Name any two brake shoe adjusters.
8. What is the purpose of tandem rear axle?

## PART – B

9. What are the functions of chassis frame?
10. What are the advantages and disadvantage of a fluid coupling?
11. Explain the Hotch Kiss drive with a neat sketch.
12. Sketch the Ackerman principle of steering and explain briefly.
13. State the merits of independent front suspension system.
14. Explain the method of bleeding of brakes.
15. Compare cross ply and radial ply tyres.
16. What are the various forces acting on rear axles?

[Turn over.....

PART – C

17. (a) Draw the layout of a conventional chassis and explain briefly the main components.

*(Or)*

(b) Explain with a neat sketch the construction of front axle and also list its type.

18. (a) Explain the construction and working of semi-centrifugal clutch with the aid of neat sketch.

*(Or)*

(b) Explain the construction and working of sliding mesh gear box with a neat sketch.

19. (a) Explain with neat sketch, the construction and working of Rzeppa constant velocity universal joint.

*(Or)*

(b) Explain with a neat sketch the construction and working of a conventional differential unit.

20. (a) With the help of neat sketches explain the following terms pertaining to front wheel geometry: (i)Caster angle (ii)Camber angle (iii)King pin inclination and (iv)Toe-in.

*(Or)*

(b) Briefly explain the construction and working of an air suspension system with the help of a neat sketch.

21. (a) Explain with a neat sketch the construction and operation of a disc brake.

*(Or)*

(b) (i) What are the different types of wheels used in automobiles?
(ii) Explain any two types of wheel with simple sketches.

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