

# Automobile Chassis & Transmission

## 1. CHASSIS FRAME, FRONT AND REAR AXLE

### Part – A

1. Define chassis?
2. Define clutch?
3. What is super structure?
4. What is the purpose of propeller shaft?
5. What is the function of wheels?
6. What is the purpose of steering?
7. What is full forward chassis?
8. What is 4x4 wheel drive chassis?
9. What is inertial load?
10. What is impact load?
11. What is overload?
12. Write the types of floating axles?
13. What is a stub axle?

### Part – B

1. What is the purpose of gear box?
2. What is the main purpose of suspension system?
3. What are the three types of frame?
4. What is swivel pin?
5. What are the types of stub axle?
6. What is torque reaction?
7. What is floating axle?
8. What are the various loads acting on the frame?
9. What are the various forces acting on live rear axle?
10. What is the purpose of rear axle?
11. What is the difference between semi floating and full floating rear axle?

### Part – C

1. Write in brief about the construction of different layout of the chassis?
2. Briefly explain the functions of the chassis frame?
3. Give the classification of auto chassis and explain?
4. Write in brief about the various loads acting on the frame?
5. Describe about the front axle and their types?
6. Describe the construction and operation of various front axle arrangements?
7. What are the components of front axle? Explain in detail.
8. Write in brief about the construction and operation of stub axle?
9. Differentiate semi floating and full floating axle?
10. Explain the construction and working of different floating axles?
11. Write in brief about the layout and main components of chassis?
12. Explain the construction and working of rear axle?

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### 2. CLUTCH AND GEAR BOX

#### Part – A

1. Write the main parts of a single plate clutch?
2. What lining materials are used in clutch plate?
3. What is a wet clutch?
4. Why are clutch plates perforated?
5. Define clutch drag?
6. Why is free play given in clutch?
7. What is the purpose of gear box?
8. What types of gears are used in the gear box?
9. Why is sliding mesh gear box not preferred?
10. What is transfer case?
11. Write the advantages of foot shifting mechanism?
12. Define tractive Effort?
13. Why is sliding mesh gear box so called?
14. What is air resistance?
15. Why a vehicle is initially moved with first gear?

#### Part – B

1. What is the function or purpose of a clutch?
2. What are the requirements of a good quality clutch?
3. What are the features of a good quality clutch lining?
4. What are the defects in clutch?
5. What is the function of a gear box?
6. Why constant mesh gear box is so called?
7. How are different speeds are obtained in a planetary gear box?
8. What do you mean by over drive?
9. Write the advantages of steering mechanism?
10. What are the different types of resistances experienced by a vehicle in motion?

#### Part – C

1. Describe with the help of neat sketch the clutch actuating mechanism?
2. Write a note on the principle of clutch?
3. Describe the construction and working of a multi plate clutch?
4. Write in brief about multi plate wet clutch?
5. Explain with a neat sketch the working of a multi plate dry clutch?
6. With a neat sketch explain the construction and working of a semi centrifugal clutch?
7. Write in brief about the construction and working of a centrifugal clutch with a neat sketch?
8. With neat sketch explain the working principle of a fluid coupling?
9. Mention any six troubles causes and remedies of clutch?
10. With a simple sketch explain sliding mesh gear box?

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### 3. UNIVERSAL JOINTS, PROPELLER SHAFT, DIFFERENTIAL

#### Part – A

1. Define universal joint?
2. What is the advantage of the constant velocity universal joint?
3. What is the function of a propeller shaft?
4. What is a slip joint?
5. What is the purpose of a slip joint in the lines?
6. What is a Hotchkiss drive?
7. What is a spider?
8. What is a "Differential"?
9. What will happen if differential is not used?
10. What is the material used to make propeller shaft and why?

#### Part – B

1. What are the various joints in use?
2. What is a constant velocity type universal joint?
3. What is the necessity of propeller shaft?
4. What is the final drive called as such?
5. What are the different types of gears used in final drive?

#### Part – C

1. Briefly explain any two types of Universal joints in detail?
2. With neat sketch explain propeller shaft in detail?
3. Write a note on construction of heavy vehicle propeller shaft?
4. Describe the construction of Hotchkiss, torque tube propeller shaft?
5. Write in brief about the various types of final drive gears?
6. Explain with sketch the construction and working of differential assembly?
7. Briefly explain the construction and action of non slip differential with help of neat sketch?
8. Explain about the differential lock?
9. Write a note on trouble shooting of differential?

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## 4. STEERING SYSTEM & SUSPENSION SYSTEM

### Part – A

1. What do you mean by steering?
2. What is the function of steering?
3. What are the causes of vehicle wandering?
4. What do you mean by steering ratio?
5. What is wheel wobbling?
6. What are the causes of hard steering?
7. What is caster?
8. Why are kingpins inclined?
9. What is the purpose of the tie rod in the rear end suspension?
10. What do you mean by 'wishbone'?
11. What is meant by 'shackle' in suspension?
12. What is the purpose of a leaf spring in rear suspension?

### Part – B

1. What are qualities of a good steering?
2. What is effect of excessive caster?
3. Define camber?
4. What is kingpin inclination?
5. What is the necessity of power steering?
6. What is meant by suspension system?
7. What is helper spring?
8. What do you mean by independent suspension?
9. How are leaf springs lubricated?
10. Write the type of springs used in automobile?
11. Give the types of leaf spring?
12. Write is meant by sprung weight?
13. Write a note on un sprung weight?

### Part – C

1. Explain the following front end geometry a) Caster b) camber c) kingpin inclination d) toe in e) toe out?
2. Explain the recalcitrating ball type steering gear box?
3. With neat sketch explain the cam and peg type of steering gear box?
4. With neat sketch explain the rack and pinion type of steering gear box?
5. Describe Ackerman principle of steering?
6. Describe the construction and working principle of linkage booster type power steering?
7. Explain the trouble shooting of steering system?
8. Explain the rigid axle suspension system?
9. Write in brief about the independent suspension system?

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### 5. BRAKES AND TYRES

#### Part – A

1. What is a brake?
2. What is the principle of hydraulic brake?
3. What is the function of master cylinder?
4. What is bleeding of brake?
5. What is the basic principle of the air braking system?
6. What is meant by servo brake?
7. Write a note on beads?
8. State two advantages of a tubeless tyre?
9. What are piles in the tyre?
10. What are the types of disc brake?
11. Define ABS?
12. Give the components ABS?
13. Write any 2 brake shoe adjustment mechanisms?
14. What are the types of wheel?
15. What is a tubeless tyre?

#### Part – B

1. What is the function braking system?
2. Give the draw backs of hydraulic brake?
3. Write a note on hand brake?
4. What is the function brake shoe?
5. What is the function of an unloaded valve?
6. What is the function of a wheel cylinder?
7. Write the function of the brake lining?
8. Write a note on power brakes?
9. What is the function of braking valve in air brake?
10. What is the function of a tyre?

#### Part – C

1. Briefly explain the construction and operation of master cylinder?
2. Briefly explain the construction and operation of tandem master cylinder?
3. Briefly explain the construction and operation of wheel cylinder?
4. Write in brief about stopping distance?
5. Explain how bleeding of brakes is done?
6. Briefly explain the different types of brake shoe adjustment mechanism?
7. Write the troubles and their cause and remedies of vehicle braking system?
8. Compare drum and disc brake?
9. Describe the construction and working principle of hydraulic brake system with neat sketch?
10. Explain the construction and working principle of air brake system?
11. Write down the differences between cross ply and radial ply tyre?
12. Explain the construction of a conventional tube tyre?
13. Compare tube and tubeless tyre?
14. Explain the purpose of tandem rear axle?
15. Write in brief about anti lock braking system?