

UNIT-1

Q/N		S/W	Marks
1.	Explain working principle of 4-stroke S.I. Engine using P-V and valve timing diagram.	S-18	7
2.	Draw a neat sketch of chassis layout and its components. Write the function of any five components in brief.	S-18	7
3.	State the necessity of cooling an engine. Explain with neat sketch thermostatically controlled cooling system.	S-18	7
4.	What is the necessity of lubrication system in an automobile? Explain with neat sketch wet sump lubrication system.	S-18	7
5.	Explain with neat sketch, pressure feed wet sump lubrication system. Give its advantages over dry sump lubrication.	W-17	7
6.	Describe valve timing diagram for 4S petrol engine. Give importance of valve timing diagram.	W-17	7
7.	Explain with neat sketch working & construction of simple carburetor. State its limitations.	W-17	7
8.	Classify cooling system used in automobile explain with neat sketch. Thermosyphon cooling system.	W-17	7
9.	Draw a neat sketch of chassis layout and its components Write the function of any five components in brief.	S-17	8
10.	Explain working of Electric car and write down its advantages.	S-17	6
11.	What are the requirement of engine cooling system? With neat sketch explainThermosyphon water cooling system with its advantages.	S-17	7
12.	What is the necessity of lubrication system in automobile. Explain with neat sketch dry sump lubrication system.	S-17	7
13.	With the help of neat explain the working of electric car and write down its advantages.	W-16	8
14.	Enlist the various components of Chassis and brief out their functions.	W-16	6
15.	What is the necessity of lubrication system in auto mobile. Explain with neat sketch dry sump lubrication system.	W-16	7

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| 16. | Explain with neat sketch working and construction of Solex carburetor. | W-16 | 7 |
| 17. | Enlists different types of chassis frames. Give the advantages of ladder frame chassis over other. | S-16 | 4 |
| 18. | Describe valve timing diagram for 4-S petrol engine. Give importance of valve timing diagram. | S-16 | 6 |
| 19. | What is the function of thermostatic valve in engine cooling system?
Explain with neat sketch wax type thermostat valve. | S-16 | 4 |
| 20. | What is necessity of fuel supply system in automobile. Explain with neat sketch SU carburetor. | S-16 | 7 |
| 21. | Classify lubrication systems. Explain with neat sketch splash- pressure feed lubrication. | S-16 | 7 |
| 22. | Enlist the component of SI engine. Brief out the details of them with suitable sketches | W-15 | 7 |
| 23. | Explain with neat sketch in detail pressure feed wet sump lubrication system. Give its advantages over dry sump lubrication. | W-15 | 7 |
| 24. | What are the requirement for fuel supply system? Sketch and explain fuel supply system for petrol engine. | W-15 | 7 |
| 25. | Explain with neat sketch construction and working of fuel injector. | W-15 | 7 |

UNIT-2

Q/N		S/w	Marks
26.	State the functions of clutch. Explain single plate clutch with a neat sketch.	S-18	7
27.	Explain the need of gear box. Discuss with a neat sketch construction and working of constant mesh type gear box.	S-18	6
28.	Explain with a neat sketch working of fluid flywheel and state its advantages.	S-18	6
29.	Classify gear boxes. Used in automobile transmission system. Explain with neat sketch construction and working of sliding mesh type gear box.	S-18	7
30.	State the functions of clutch. Explain with neat sketch Multi plate clutch.	W-17	7
31.	Explain with neat sketch construction and working of sliding mesh Gearbox.	W-17	6
32.	With neat sketch explain working of fluid flywheel.	W-17	6
33.	Enlist the types of gear selector mechanism, Explain any one with neat sketch.	W-17	7
34.	Explain necessity of clutch in automobile and with neat sketch write working of multiplate clutch.	S-17	7
35.	With neat sketch explain working of fluid flywheel and write its advantages.	S-17	6
36.	Explain the need of gear box? Explain with neat sketch working of constant mesh type of gear box.	S-17	7
37.	With neat sketch explain working of transfer gear box.	S-17	6
38.	Explain necessity of clutch in automobile and with neat sketch write working of multiplane clutch.	W-16	7
39.	Discuss the working of synchromesh Gear box.	W-16	6
40.	Explain the need of gear box. Also discuss the working of constant mesh type gear box with neat sketch.	W-16	7
41.	Enlist the type of Gear selector mechanism. Explain any one with neat sketch.	W-16	6
42.	State the operation principle of clutch. Give the requirements for clutch and clutch plates.	S-16	4
43.	Explain with neat sketch spring loaded ball type gear selector mechanism	S-16	6

with interlocking mechanism in it.

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| 44. | Explain the necessity of transmission system in automobile with simple sketch. | S-16 | 3 |
| 45. | Classify gear boxes. Explain in detail construction and working of epicyclic (planetary) Gear box. | S-16 | 7 |
| 46. | Explain with neat sketch in detail Torque converter. Give the advantages of torque converter over other types of clutches. | S-16 | 6 |
| 47. | Explain with neat sketch construction and working of centrifugal clutch. Why are such clutches used in mopeds, comment on it? | W-15 | 7 |
| 48. | Explain in detail, Semi-automatic and Automatic transmission system with help of line diagram also draw its advantages and disadvantages over manual/conventional transmission system. | W-15 | 6 |
| 49. | Classify gear boxes used in automobile transmission system. Explain in detail, sliding mesh Gear Box. | W-15 | 7 |
| 50. | What are the functions of transfer Gear Box in four wheeler? Explain with neat sketch construction and working of Transfer Gear Box. | W-15 | 6 |

UNIT-3

Q/N		S/w	Marks
51.	Discuss the necessity of differential in an automobile. Explain its construction and working with neat sketch.	S-18	6
52.	Describe with a neat sketch construction and working of hydraulic brake system with its advantages.	S-18	7
53.	Explain the working principle of propeller shaft with a neat sketch.	S-18	6
54.	Explain the requirement of good braking system describe with a neat sketch. Working of Disc brake system.	S-18	7
55.	Explain with neat sketch construction & working of constant velocity joint, also state it's advantages & Limitations.	W-17	7
56.	Explain construction & operation of Differential.	W-17	6
57.	Explain with neat sketch construction & working of Hydraulic brake. How this braking system works.	W-17	7
58.	Compare Disc Brake with Drum Brake.	W-17	6
59.	Explain Hotchkiss drive with neat sketch. Detail all the components.	S-17	6
60.	Explain the construction and operation of differential.	S-17	7
61.	Describe with neat sketch working of hydraulic brake system with its advantages.	S-17	7
62.	Compare Disc brake with drum brake.	S-17	6
63.	What is differential? Explain the working of differential in Automobile.	W-16	7
64.	With the help of neat sketch explain the working of torque tube drive.	W-16	6
65.	Describe with neat sketch working of hydraulic brake system with its advantages.	W-16	7
66.	Explain with neat sketch vaccume brakes.	W-16	6
67.	With the help of simple sketches show and explain the effect of horizontal and vertical forces on semifloating, three quarter floating and full floating axle.	S-16	6
68.	Differentiate between Hotchkiss and torque tube drive also comment on why Hotchkiss drive is preferred for heavy load application.	S-16	3

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| 69. | Why differential is essential in four wheeler? Explain with simple sketches. | S-16 | 4 |
| 70. | Explain with neat sketch construction and working of vacuum brake. How this braking systems works. | S-16 | 7 |
| 71. | Enlist the components of Hydraulic braking system. Explain in detailed Tandem Master cylinder. | S-16 | 6 |
| 72. | Explain with neat sketch construction and workingof constant velocity joint. Afao draw its advantagesand limitations of CV joint. | W-15 | 7 |
| 73. | Explain with neat sketch construction and workingof constant velocity joint. Afao draw its advantagesand limitations of CV joint. | W-15 | 6 |
| 74. | What are the functions performed by differential inautomobile ? Explain construction and working ofdifferential with neat sketch. | W-15 | 7 |
| 75. | Explain in detail, construction and working ofHydraulic braking system. Also draw its limitations. | W-15 | 6 |

UNIT-4

Q/N		S/w	Marks
76.	Define and explain the following. 1) Camber angle. 2) Caster angle. 3) King pin inclination. 4) Toe in 5) Toe out.	S-18	7
77.	Explain with neat sketch Macpherson stud suspension system.	S-18	6
78.	Explain the principle of steering with neat sketch. Also explain worm and worm wheel type steering gear box.	S-18	7
79.	Explain briefly the independent type front suspension. Also state its salient features.	S-18	6
80.	Classify the steering gearboxes. Explain the construction & working of worm & sector gearbox.	W-17	7
81.	How suspension helps to improve performance of vehicle? Explain in detail leaf- spring with neat sketch.	W-17	7
82.	Explain with neat sketch telescopic shock absorber.	W-17	7
83.	Explain briefly Rack and pinion steering gear with neat sketch.	W-17	7
84.	Explain the term: Camber, castor and steering axis inclination with its effect on steering characteristics.	S-17	7
85.	Explain briefly working of rack & pinion steering gear with neat sketch.	S-17	7
86.	Write down function of suspension system. Explain with neat sketch Macpherson strut suspension system.	S-17	7
87.	Explain with neat sketch Air suspension system and write their advantages.	S-17	7
88.	What are the factors affecting on the wheel alignment? Explain them in detail.	W-16	7
89.	Explain briefly working of rack and pinion steering gear with neat sketch.	W-16	7
90.	Explain with neat sketch Air suspension system and write its advantages.	W-16	7
91.	Explain with neat sketch working of telescopic shock absorber	W-16	7
92.	Compare Ackermann and Davis steering.	S-16	4
93.	What is center point steering? What is the effect of center point steering on vehicle performance?	S-16	4
94.	Explain in detail construction and working of electronic power steering.	S-16	6

95. How suspension helps to improve performance of vehicle? Explain in detailed Torsion bar suspension. S-16 7
96. Explain in detailed leaf spring suspension. Why it is used in heavy load vehicle. S-16 7
97. Define: W-15 7
- (i) Camber,
 - (ii) Caster
 - (iii) King pin Inclination.
- What are the effects of above on vehicle performance?
98. Classify the steering gear boxes. Explain the construction and working of worm and sector gearbox. W-15 7
99. Classify suspension system. Explain with neat sketch construction and working of McPherson's struts suspension. W-15 7
100. Explain the construction and working of hydraulic power steering. W-15 7

UNIT-5

Q/N		S/w	Marks
101.	Write short note on automobile air conditioning.	S-18	6
102.	State the essential requirement of wheels in case of automobile explain briefly various types of automobile wheels.	S-18	7
103.	What are the different instruments used on the panel board? Explain any one with neat sketch.	S-18	6
104.	Explain the battery ignition system used in automobile with neat sketch also state its salient features.	S-18	7
105.	With the help of neat sketch explain automobile air- conditioning system.	W-17	7
106.	Sketch & explain automobile electrical circuit.	W-17	6
107.	Elaborate & discuss various precautions to be taken for tyre& wheel balancing.	W-17	7
108.	Explain the components of Belted bias tyre in detail with the help of neat sketch.	W-17	6
109.	Explain various panel board Instrument display used in automobile with their importance.	S-17	6
110.	With the help of neat sketch, describe Electronic ignition system used in automobile.	S-17	7
111.	Explain Automobile Air-Conditioning system with neat sketch.	S-17	7
112.	Explain the various factors affecting Tyre life.	S-17	6
113.	Explain various panel board instrument display used in automobile with its importance	W-16	6
114.	With the help of neat sketch explain Automobile air conditioning system.	W-16	7
115.	Explain the various factors affecting Tyre life.	W-16	6
116.	Elaborate and discuss the various precautions to be taken for tyre and wheel balancing.	W-16	7
117.	Sketch and explain automobile electrical circuit.	S-16	6
118.	Explain in detailed Battery ignition system and draw comparison with magneto ignition system.	S-16	7

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| 119. | Explain the components of Belted Bias tyre in detailed with the help of neat sketch. | S-16 | 7 |
| 120. | What are the factor's affecting the tyre performance? Explain. How tyre life can be improved. | S-16 | 6 |
| 121. | Explain with neat sketch construction and workingof Lead Acid Battery. | W-15 | 7 |
| 122. | Enlists the components of automobile electrical system.What are the functions of starter motor, parking light and distributer in automobile. | W-15 | 6 |
| 123. | What is tyre inflation and aspect ratio what are theeffects of tyre inflation and aspect ratio on tyreperformance and tyrelife. | W-15 | 7 |
| 124. | Explain with neat sketch, construction and working of automobile air conditioning system. Also commenton its need. | W-15 | 6 |

UNIT-6

Q/N		S/w	Marks
125.	Explain with neat sketch. ABS (Antilock Braking system).	S-18	7
126.	Write short note on electronic power steering.	S-18	7
127.	Write short note on any three .	S-18	14
	i) Navigational aids.		
	ii) Intelligent vehicle highway system.		
	iii) Collision avoidance system.		
	iv) Intelligent lighting.		
	v) Active suspension.		
128.	Explain with neat sketch ABS.	W-17	6
129.	What are the body & safety consideration in automobile? Explain.	W-17	7
130.	Discuss about the various collision avoidance techniques used in automobile.	W-17	6
131.	Write short note one Electronic power steering.	W-17	7
132.	Write down the requirement of Automobile body and discuss what are the various materials used for Automobile bodies.	S-17	7
133.	What is ABS? Explain ABS with its importance.	S-17	6
134.	Explain what active Suspension system is. Write its working and importance.	S-17	6
135.	Discuss about the various collision avoidance techniques used in automobile.	S-17	7
136.	What are the body and safety consideration in automobile? Explain.	W-16	7
137.	With the help of neat sketch explain the working of electronic power steering.	W-16	6
138.	Explain what is active suspension system. Write its working and importance.	W-16	7
139.	Discussed in detail electronic brake distribution system used in automobile.	W-16	6
140.	What is the purpose of navigation system in automobile and how it works?	S-16	4
141.	Explain with neat sketch. How collision avoidance system works in automobile to reduce/avoid accidents.	S-16	5
142.	What are the safety considerations for driver's and passengers in automobile?	S-16	4
143.	With help of neat sketch explain construction & working of Antilock braking	S-16	7

system. Also explain its importance in vehicle safety.

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| 144. | What are the parameter's for selecting material for constructing vehicle body? | S-16 | 4 |
| 145. | What is intelligent lightning? | S-16 | 2 |
| 146. | Explain navigational aid and intelligent vehicle highwaysystem. | W-15 | 7 |
| 147. | Explain with neat sketch ABS (Antilock BrakingSystem). | W-15 | 6 |
| 148. | Explain intelligent parking system in automobile, withthe help of sketch. | W-15 | 7 |
| 149. | Explain in detail how engine is tuned. | W-15 | 6 |