

JK-LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, May 2016
B. Tech. in Mechanical Engineering, Semester VI

Roll No.....:.....

ME 624: AUTOMOBILE ENGINEERING

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	Which one of the following is located between the engine and gear box? (a) Clutch (b) Differential (c) Propeller shaft (d) None of these	
ii.	A two-piece propeller shaft requires (a) one universal joint (b) a center support bearing (c) the shaft to be solid (d) none of the above	
iii.	Increase of torque in a vehicle is obtained by (a) decreasing speed (b) decreasing power (c) decreasing petrol consumption (d) all of the above	
iv.	The function of master cylinder in hydraulic system is (a) To increase pressure equally in all cylinders (b) To increase pressure unequally in all cylinders (c) To increase power equally in all cylinders (d) To decrease power equally in all cylinders.	
v.	Most popular manual steering gear for cars today is (a) rack and pinion type (b) worm and wheel type (c) cam and roller type (d) worm and nut type	
vi.	The colour of tail light in a car is (a) White (b) Yellow (c) Green (d) Red	
vii.	CO is generated when engines run on (a) Lean mixture (b) Rich mixture (c) Stoichiometric A:F ratio (d) Cruising speed	
viii.	Which part is not common in SI and CI engines (a) Air cleaner (b) Dynamo (c) Silencer (d) Fuel injector	
ix.	Brake lining is mounted on (a) Brake drum (b) Wheel cylinder (c) Brake shoe (d) Any of the above	
x.	The circumferential grooves on tyres (a) Increases load carrying capacity (b) Provides good traction (c) Reduces the danger of skidding (d) All of the above	
Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
i.	What is gear ratio? How is it obtained?	
ii.	List the components included in the chassis.	
iii.	Define a 'transmission system'.	
iv.	What are the functions of a clutch?	
Q.3A	What is Night Vision System, how does it work?	05
Q.3B	Explain the working of a semi-centrifugal clutch.	05

Q.4A	Describe the features of universal joints used in automobile propeller shafts.	05
Q.4B	Explain the chemical reactions which take place inside a storage lead-acid storage battery during charging and discharging.	05
Q.5A	Describe the working of a hydraulic torque converter.	05
Q.5B	Describe briefly with a neat sketch the working of a single plate clutch.	05
Q.6A	Explain with a neat sketch the function of the drop arm.	05
Q.6B	Describe the operation of a hydraulic braking system of an automobile with the help of a neat diagram.	05
OR		
Q.6B	Write down the advantages of MacPherson strut suspension system.	05
Q.7A	Write a note on under-inflation and over-inflation.	05
Q.7B	Explain Ackerman's steering principle with a sketch.	05
OR		
Q.7B	Make a neat sketch of a common type of steering gear box and explain how it works.	05
Q.8	Draw a neat sketch of a steering system, mark all important parts on it and explain how the system works.	10
Q.9	Draw a line sketch of a differential showing the internal parts and explain how it functions.	10
Q.10	Prepare a schematic diagram to show a car air-conditioning system with thermostatic control.	10
OR		
Q.10	With the help of a neat sketch explain the working of a fluid coupling.	10

-----ALL THE BEST-----