

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI EXAMINATION – SUMMER 2025

Subject Code: 3160213

Date: 30-05-2025

Subject Name: Special Purpose Vehicle

Time: 10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	MARKS
<b>Q.1</b> (a) Describe following types of SPV'S in short:	<b>03</b>
(i) Hauling (ii) Hoisting (iii) Conveying	
(b) Compare wheeled vehicle with tracked vehicle on the basis of;	<b>04</b>
(i) Ground pressure (ii) Suspension (iii) Steering (iv) Speed	
(c) Write a note on ergonomic considerations in SPV.	<b>07</b>
<b>Q.2</b> (a) Discuss the effects of flywheel size in a power system of SPV.	<b>03</b>
(b) Describe economics of special purpose vehicle utilization.	<b>04</b>
(c) Explain working principle and design consideration of lubrication system of SPV.	<b>07</b>
<b>OR</b>	
(c) Explain working principle and design consideration of hydraulic control circuits of SPV.	<b>07</b>
<b>Q.3</b> (a) Give the selection criteria of earth moving machines.	<b>03</b>
(b) Explain three way tipper mechanism.	<b>04</b>
(c) Draw a diagram and explain the operation of power shovel.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) Give the types of forklift and explain each in short.	<b>03</b>
(b) Explain the various types of excavator buckets.	<b>04</b>
(c) Explain construction and working of backhoe with neat sketch.	<b>07</b>
<b>Q.4</b> (a) Discuss the selection criteria of a tractor.	<b>03</b>
(b) Write a short note on power take off unit.	<b>04</b>
(c) Describe three point linkage type tractor hitches with neat sketch.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Give the types of tractor drawn implements.	<b>03</b>
(b) Write a short note on power tiller.	<b>04</b>
(c) Draw a layout of a power transmission of a tractor and give the functions of differential unit.	<b>07</b>
<b>Q.5</b> (a) Classify cranes and give the characteristics of truck crane.	<b>03</b>
(b) Describe fifth wheel arrangement of a truck.	<b>04</b>
(c) Explain telescopic crane with neat diagram.	<b>07</b>
<b>OR</b>	
<b>Q.5</b> (a) List out various types of semi trailers.	<b>03</b>
(b) Write a short note on fire extinguishing vehicle.	<b>04</b>
(c) Explain the lattice boom crawler crane with neat sketch.	<b>07</b>

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