

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

Subject Code: 3160213

Date:25-11-2025

Subject Name: Special Purpose Vehicle

Time: 02:30 PM TO 05:00 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
Q.1	(a) Write the advantages and disadvantages of special purpose vehicles.	03
	(b) Discuss the selection criteria of tracked type and wheeled type vehicles.	04
	(c) Describe various provisions of adapted vehicles for the differently challenged persons.	07
Q.2	(a) Enlist the main purposes of lubrication system in SPV.	03
	(b) Give the requirements of a good steering system of SPV.	04
	(c) Discuss design considerations of engine for special purpose vehicles.	07
	OR	
	(c) Discuss design considerations of final drive for special purpose vehicles.	07
Q.3	(a) Classify tractor with details.	03
	(b) Explain the working of differential unit of a tractor.	04
	(c) Describe three point linkage hitch of a tractor with neat sketch.	07
	OR	
Q.3	(a) Explain various types of tractor implements with detail.	03
	(b) Write a short note on power tiller.	04
	(c) Explain the hydraulic control system of a tractor with neat sketch.	07
Q.4	(a) List out the different types of loader.	03
	(b) Describe set of controls of a forklift.	04
	(c) Explain bulldozers with neat sketch.	07
	OR	
Q.4	(a) Give the types of scraper and write applications of it.	03
	(b) Explain tipping mechanism of a dumper.	04
	(c) Show the main parts of excavators in a diagram and explain function of each part.	07
Q.5	(a) Explain stability and control systems of a mobile crane.	03
	(b) Discuss the effects of noise, vibration and thermal stresses on human performance.	04
	(c) Explain the features of oil tankers with detail.	07
	OR	
Q.5	(a) List out the basic characteristics of truck cranes.	03
	(b) Describe economics of special purpose vehicle utilization.	04
	(c) Write a note on articulated vehicles.	07

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VI (NEW) EXAMINATION – WINTER 2024

Subject Code:3160213

Date:05-12-2024

Subject Name:Special Purpose Vehicle

Time:02:30 PM TO 05:00 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
Q.1 (a) Define special purpose vehicle and give the advantages of it.	03
(b) Discuss the selection criteria of tracked type and wheeled type vehicles.	04
(c) Explain various types of semi-trailers with its applications.	07
Q.2 (a) Describe the effects of flywheel size in a power system of SPV.	03
(b) Point out the basic goals of ergonomics in design of special purpose vehicle.	04
(c) Discuss design considerations of final drive for special purpose vehicles.	07
OR	
(c) Discuss design considerations of engine for special purpose vehicles.	07
Q.3 (a) Enlist the selection criteria for earth movers.	03
(b) Write a short note on dumpers.	04
(c) Explain constructional and working features of backhoe with neat sketch.	07
OR	
Q.3 (a) Describe the working of three-way tipper mechanism in short.	03
(b) Explain different types of road rollers.	04
(c) Draw a diagram of dragline and discuss special working features of it.	07
Q.4 (a) Classify tractor with details.	03
(b) Explain working of differential unit of a tractor.	04
(c) Describe three-point linkage hitch of a tractor with neat sketch.	07
OR	
Q.4 (a) Explain various types of tractors implements with detail.	03
(b) Write a short note on a power tiller.	04
(c) Explain hydraulic control system of a tractor with neat sketch.	07
Q.5 (a) Discuss the effects of noise, vibration and thermal stresses on human performance.	03
(b) Explain the various types of buckets used with excavators.	04
(c) Write a short note on fire extinguishing vehicle.	07
OR	
Q.5 (a) Write a function of following. (i) Ripper (ii) Tipper (iii) Trencher (iv) Scraper (v) Compactor (vi) Grader	03
(b) Explain articulated vehicle with its advantages.	04
(c) Describe working features of Ambulance with detail.	07

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2023****Subject Code:3160213****Date:13-12-2023****Subject Name: Special Purpose Vehicle****Time:02:30 PM TO 05:00 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

Q.1	(a) Classify the special purpose vehicles.	03
	(b) Compare hydraulic and cable control system of bulldozer.	04
	(c) Explain construction and working principle of mobile crane with neat sketch.	07
Q.2	(a) Give the advantage and limitation of ripper.	03
	(b) Explain advantages & disadvantages of wheel type & track type vehicle.	04
	(c) Explain hydraulic system of tractor with neat sketch.	07
OR		
	(c) Explain any two steering gear box with neat sketch.	07
Q.3	(a) Explain forklift.	03
	(b) Explain the working of hover craft.	04
	(c) Explain Safety consideration during crane operations.	07
OR		
Q.3	(a) What is the function of power shovel?	03
	(b) What is baffle plate? Elaborate its significance in tanker.	04
	(c) Write short note on PTO shaft. Explain three standard types of PTO drives.	07
Q.4	(a) Explain any one type of construction equipment dumper.	03
	(b) Classify tractor with its application.	04
	(c) Explain working principle and design consideration of final drive.	07
OR		
Q.4	(a) What does mean by articulated vehicle?	03
	(b) Explain thermal stresses on human performance.	04
	(c) Explain purpose, construction and working tipper in detail.	07
Q.5	(a) List the types of crane.	03
	(b) Explain air brake system in SPV with neat sketch.	04
	(c) Write short note on excavator.	07
OR		
Q.5	(a) Explain the different features of Ambulance.	03
	(b) Explain Economics of special purpose vehicle utilization.	04
	(c) Draw a layout of tractor & give the name of main components used in tractor.	07

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI(NEW) EXAMINATION – WINTER 2022****Subject Code:3160213****Date:17-12-2022****Subject Name:Special Purpose Vehicle****Time:02:30 PM TO 05:00 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

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|------------|------------|---|-----------|
| Q.1 | (a) | Classification of Special Purpose Vehicles. | 03 |
| | (b) | Explain advantages & disadvantages of wheel type & track type vehicle. | 04 |
| | (c) | Explain Lubrication and Braking System used in Special Purpose Vehicles. | 07 |
| Q.2 | (a) | Make a layout of tractor & give the name of main components used in tractor. | 03 |
| | (b) | Write short note on multi axle vehicles. | 04 |
| | (c) | Explain pneumatic & hydraulic control circuits of Special Purpose Vehicle. | 07 |
| OR | | | |
| | (c) | Explain working principle and design consideration of final drive. | 07 |
| Q.3 | (a) | Explain any one type of construction equipment dumper. | 03 |
| | (b) | Draw the sketch showing the construction of an excavator & explain its purpose. | 04 |
| | (c) | Explain gear box used in tractor with neat sketch. | 07 |
| OR | | | |
| Q.3 | (a) | What does mean by articulated vehicle. | 03 |
| | (b) | Explain the different features of Ambulance. | 04 |
| | (c) | Explain purpose, construction and working tipper in detail. | 07 |
| Q.4 | (a) | Explain air brake system with neat sketch. | 03 |
| | (b) | Give advantage and limitation of fork lift. | 04 |
| | (c) | Write short note on excavator. | 07 |
| OR | | | |
| Q.4 | (a) | Write short note on PTO unit. | 03 |
| | (b) | Explain the working of hover craft. | 04 |
| | (c) | Explain hydraulic and cable control system of bulldozer. | 07 |
| Q.5 | (a) | Write short note on fire extinguishing vehicle. | 03 |
| | (b) | Explain different accessories of wheeled tractors. | 04 |
| | (c) | Explain human factor in SPV design with reference to vibration and thermal stress on human performance. | 07 |
| OR | | | |
| Q.5 | (a) | Explain Economics of special purpose vehicle utilization. | 03 |
| | (b) | Write short note on safety devices of crane. | 04 |
| | (c) | Explain stability and design features of Mobile cranes. | 07 |
