

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 offinal 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
