# 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  |

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