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# P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

**Eighth Semester, B.E. - Automobile Engineering**

**Semester End Examination; July - 2021**

**Earth Moving Equipments and Tractors**

*Time: 3 hrs*

*Max. Marks: 100*

*Note: Answer any FIVE full questions.*

- 1 a. How do you classify dozers? Explain the working of bull-dozers with neat sketch. 10
- b. Explain the working of a Shovel with a neat sketch and give the classification of Shovels. 10
- 2 a. Name the different types of excavators. Explain characteristics of any two of them. 10
- b. With a neat layout, explain the working of a motor grader. 10
- 3 a. Discuss in detail the under carriage of a crawler tractor. 10
- b. Explain crawler and wheeled tractors and explain the advantage and disadvantages of each type. 10
- 4 a. Define tyre size. Sketch and explain tubed and tubeless tyres. 10
- b. List and explain the properties and application of tyres. 10
- 5 a. Explain the PTO drive transmission with neat sketch. 10
- b. Sketch and explain the triple counter shaft transmission. 10
- 6 a. Sketch and explain the double reduction final drive. 10
- b. Explain the planetary gear system used in earth moving equipment. 10
- 7 a. Sketch and explain positive displacement type of hydraulic pump. 10
- b. What are the main components of hydraulic system? Sketch and explain the working of centrifugal pump. 10
- 8 a. Discuss the different types of hydraulic control valves with neat sketches 10
- b. Sketch and explain the draft control mechanism used in tractors. 10
- 9 a. Sketch and explain the semi integral type power steering. 10
- b. Write a note on, clutch/brake steering system. 10
- 10 a. Explain the construction and working of hydraulic type retarder. 10
- b. Write a note on;
  - i) Engine brake 10
  - ii) Disc brake 10

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