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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; Aug. / Sep. - 2020

Earth Moving Equipments and Tractors

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **TWO** full questions, selecting **ONE** full question from **UNIT - I** and **UNIT - II**.

ii) Answer any **THREE** full questions, choosing from **UNIT - III**, **UNIT - IV** and **UNIT - V**.

UNIT - I

- 1 a. Sketch and explain the working of Bulldozer. 10
- b. List the types of compactors and explain the working principles of vibratory compactor. 10

OR

- 2 a. Determine expected dragline production based on the following information: 10
- Dragline size = 1.53 m^3
- Swing angle = 120°
- Average depth of cut = 2.4 m
- Job efficiency = 50 min/hr
- Soil swell = 25%
- Ideal output = 176 BCM/hr
- Optimum depth of cut = 3.0 m
- Swing-depth factor = 0.90
- b. List and explain the various tractor attachments with necessary sketches. 10

UNIT - II

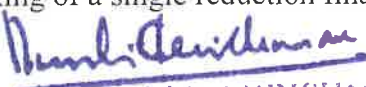
- 3 a. Briefly discuss the functions of different under carriage components. 10
- b. Compare the advantages and disadvantages of tracked vehicles with wheeled vehicles. 10

OR

- 4 a. What are the types of maintenance? Mention the various functions and advantages of Preventive maintenance. 10
- b. Explain the rubber spring and air spring suspension systems. 10

UNIT - III

- 5 a. Distinguish Twin and Triple counter shaft transmission. 10
- b. Explain eight speed constant mesh Gear box with two speed front mounted splitter Gear box. 10
- 6 a. Explain the PTO shaft drive used in tractor with sketch. 10
- b. Explain the construction and working of a single reduction final drives. 10


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UNIT - IV

- 7 a. List and explain the basic components of a hydraulic system with advantages and disadvantages of hydraulic system. 10
- b. List the types of positive displacement Gear pumps and explain any one of the types with applications. 10
- 8 a. Explain briefly :
- i) Two way spool valve 10
- ii) Butterfly valve
- b. With schematic diagram explain the working of Gerotor pump. 10

UNIT - V

- 9 a. Explain the Integral type power steering. 10
- b. Explain the Planetary steering system. 10
- 10 a. Explain with neat sketch clutch/brake steering system. 10
- b. Briefly discuss the working of disc brake in tractors. 10

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