Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2022

AU3EL10 Tractor & Farm Equipments

Programme: B.Tech. Branch/Specialisation: AU

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. A simple machine is a device that transforms the _____ of force. **1**

(a) Magnitude (b) Direction

(c) Both (a) and (b) (d) None of these

ii. In an epicyclic gearbox, overdrive is obtained by locking- **1**

(a) Planet carrier (b) Ring gear

(c) Planet gear (d) Sun gear

iii. Fundamental feature of hydraulic machine is- **1**

(a) Torque multiplication (b) Pressure Multiplication

(c) Velocity multiplication (d) All of these

iv. Pumps used in hydraulic applications are- **1**

(a) Positive displacement pump

(b) Variable displacement pump

(c) Fixed displacement pump

(d) All of these

v. The angular movement of the pitman arm in steering system is transmitted to the- **1**

(a) Steering gear box (b) Steering arm

(c) Pitman arm (d) Tie rod

vi. The advantage of using helical gears rather than spur gears in a transmission are- **1**

(a) High strength & low cost

(b) High strength & less end thrust

(c) High Strength & Low noise

(d) Low noise & economy

P.T.O.

vii. Lubricant used in tractor gearbox is- **1**
(a) SAE 30 (b) SAE 40 (c) SAE 90 (d) SAE 120

viii. A _____ can be used for construction work like to clear the site of work, to make the land level, etc- **1**
(a) Scraper (b) Bulldozer (c) Tractor (d) Angle Dozer

ix. Full form of OSHA is- **1**
(a) Organization safety and health administration
(b) Occupational safety and hazard administration
(c) Organization safety and hazard administration
(d) Occupational Safety and Health administration

x. The upper safe noise level for machine operator is- **1**
(a) 75 dB (b) 85 dB (c) 95 dB (d) 100 dB

Q.2 i. What is meant by soil? Write names of different types of soil. **2**
ii. What is meant by retarder? How it is different from brakes? **3**
iii. Explain the construction and working of intercooler with neat sketch. **5**
OR iv. Explain the construction and working of torque convertor with neat sketch. **5**

Q.3 i. Define Pascal's law. Write any one application of Pascal's law. **2**
ii. Explain open and closed center circuits in detail with sketch. **8**
OR iii. Explain any three components used in hydraulic system in detail with the help of neat sketch. **8**

Q.4 i. Write any three functions of power transmission system. **3**
ii. Explain different types of final drive reductions used in tractors. Which one of them is mostly used and why? **7**
OR iii. What is an under carriage? Compare tire and tracked vehicles discussing the advantages and disadvantages of each. **7**

Q.5 i. What is the need of maintenance in earth moving equipments? **4**
ii. Explain different types of maintenance schedule in detail. **6**
OR iii. Explain different methods of selection of earth moving equipment in detail. **6**

Q.6 Attempt any two:
i. Explain any two earthmover attachments with sketch. **5**
ii. Explain any five precautions required to prevent earthmover accidents. **5**
iii. Explain different life safeguarding equipments and accessories required while working with earthmovers. **5**

******

Marking Scheme
AU3EL10 Tractor & Farm Equipments

Q.1 i) A simple machine is a device that transforms the……of force:
Ans: c) Both a and b -1 Mark

ii) In an epicyclic gearbox, overdrive is obtained by locking:
Ans: d) Sun gear -1 Mark

iii) Fundamental feature of hydraulic machine is:
Ans: a) Torque Multiplication -1 Mark

iv) Pumps used in hydraulic applications are:
Ans: a) Positive displacement pump -1 Mark

v) The angular movement of the pitman arm in steering system is transmitted to the:
Ans: b) Steering arm -1 Mark

vi) The advantage of using helical gears rather than spur gears in a transmission are:
Ans: a) High Strength & Low cost -1 Mark

vii) Lubricant used in tractor gearbox is:
Ans: a) SAE 30 -1 Mark

viii) A _____ can be used for construction work like to clear the site of work, to make the land level, etc:
Ans: b) Bulldozer -1 Mark

ix) Full form of OSHA is:
Ans: d) Occupational Safety and Health administration -1 Mark

x) The upper safe noise level for machine operator is:
Ans: b) 85 dB -1 Mark

Q.2 i. What is meant by soil? Write names of types of soil.
What is meant by soil? -1 Mark
Write names of types of soil. -1 Mark

ii. What is meant by retarder? How it is different from brakes?
What is meant by retarder? -1.5 Marks
How it is different from brakes? -1.5 Marks

iii. Explain the construction and working of intercooler with neat sketch.
Construction -1 Mark
Working - 2 Marks
Sketch -2 Marks

OR iv. Explain the construction and working of torque convertor with neat sketch.
Construction -1 Mark
Working - 2 Marks
Sketch -2 Marks

Q.3 i. Define Pascal's law. Write any one application of Pascal's law.
Definition -1 Mark
Any one application -1 Mark

ii. Explain open and closed center circuits in detail with sketch.
Open Loop circuit explanation - 2 Marks
Closed Loop circuit explanation - 2 Marks
Open Loop circuit sketch - 2 Marks
Closed Loop circuit sketch - 2 Marks

OR iii. Explain any three components used in hydraulic system in detail with the help of neat sketch.
Explanation of three components -3*2=6 Marks
Sketch - 2 Marks

Q.4 i. Write any three functions of power transmission system.
Any three functions -3*1=3 Marks

ii. Explain different types of final drive reductions used in tractors. Which one of them is mostly used and why?
Explanation -4 Marks
Which one of them is mostly used - 1 Mark
Why - 2 Marks

OR iii. What is an under carriage? Compare tire and tracked vehicles discussing the advantages and disadvantages of each.
Under Carriage -1 Mark
Comparison of tire and tracked wheels -2 Marks
Advantages -2 Marks
Disadvantages -2 Marks

Q.5 i. What is the need of maintenance in earth moving equipments?
Any 4 needs of maintenance -4*1=4 Marks

ii. Explain different types of maintenance schedule in detail.
Detailed explanation -6 Marks

OR iii. Explain different methods of selection of earth moving equipment in detail.
Detailed explanation -6 Marks

Q.6 i. Explain any two earthmover attachments with sketch.
Explanation -2.5 Marks
Sketch -2.5 Marks

ii. Explain any five precautions required to prevent earthmover accidents.
Explanation in brief - 5*1=5 Marks

iii. Explain different life safeguarding equipments and accessories required while working with earthmovers.
Explanation -5 Marks

******