

1st SEM.2016/2017

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**UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER**

PROGRAMME: BSC ABE. II

COURSE CODE: ABE205 / ABE 203

TITLE OF PAPER: FARM POWER

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

**INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO OTHER
QUESTIONS.**

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GRANTED BY THE CHIEF INVIGILATOR**

SECTION II ANSWER ANY TWO QUESTIONS

QUESTION 2

- a) Discuss the preference of diesel engines to petrol engines in agricultural tractors. [10 marks]
- b) A farmer consults an extension officer for advice on the choice of tractor that would be suitable on land that is marshy and predominantly clay.
 - i) What type of tractor(s) is most suitable? [4 marks]
 - ii) Give reasons for the choice of tractor in i) above. [6 marks]
- c) Explain the prestart checks a farmer should conduct on a tractor before setting out for field operations in the morning. [10 marks]

QUESTION 3

- a) State the functions of transmission systems in farming operation? [5 marks]
- b) Figure 3 shows the arrangement of gears responsible for transmission when the gear selection lever of a gearbox is at position 1. Calculate
 - i) The gear ratio for the mechanism [6 marks]
 - ii) The number of rotations of the output shaft D when input shaft rotates at 3000 rpm. [5 marks]

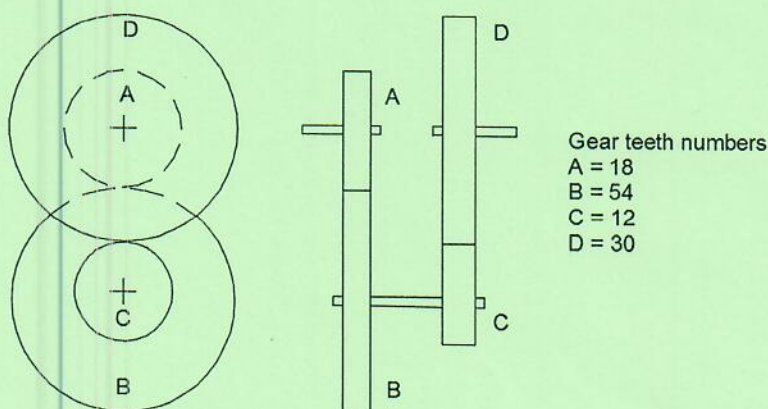


Figure 3 Gears for transmission in gear 1

- c) Discuss the advantages and limitations of using belt drives over chain drives in agricultural operations. [14 marks]

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QUESTION 4

- a) Briefly describe the features of tractors that are classified as four wheel drive. [5 marks]
- b) An engine oil can has the inscription SAE10W40. What is the interpretation of these letters and numbers? [5 marks]
- c) The sidewall of a tractor tyre has the inscription **235/75 R 15 10 PR.**
- i) What do the following inscriptions mean?
- | | |
|----------|-----------|
| 1. 235 | [2 marks] |
| 2. R | [2 marks] |
| 3. 15 | [2 marks] |
| 4. 10 PR | [2 marks] |
- ii) Determine the section height of the tyre described in (i) [5 marks]
- iii) Briefly describe the best practice for tyre storage on a farm. [7 marks]