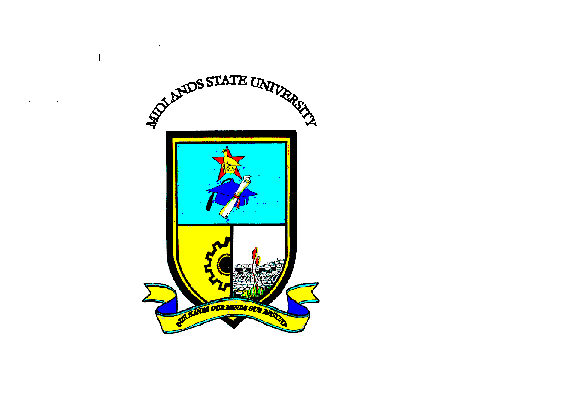
FACULTY OF SCIENCE & TECHNOLOGY

#### MIDLANDS STATE UNIVERSITY



**Mining and Mineral Processing Engineering Department**

**INNOVATION**

**CODE: HMIE 212**

### SESSIONAL EXAMINATIONS

**DECEMBER 2016**

**DURATION: 3 HOURS**

**EXAMINER: Dr I NYAMBIYA**

## INSTRUCTIONS

1. *Answer* ***all*** *questions from Section A and* ***any THREE*** *questions from Section B*
2. *Each question carries 25 marks*
3. *Total marks 100*

**Additional material**

*For QUESTION 3, See pages 4-8 for the paper entitled* ***Chapter 5: Innovation Policy: A Business Perspective*** *By Kai Engel and Justin Shepherd, A.T. Kearney; and Martin Ruppert.*

**SECTION A**

**Answer ALL questions in this Section**

**QUESTION 1**

(a) Briefly define the following terms in context of your knowledge of the innovation subject:

1. culture of things
2. discovery
3. imitation
4. utilitarianvalue
5. creativity [5 marks]

(b) How did Schumpeter describe the *five* types of innovation?

[5 marks]

(c) In what way does innovation represent both a *break and continuity* with the past according to Benoit Gordin? Give a contemporary example. [3 marks]

(d) What is the common sociological understanding of innovation? Explain

[2 marks]

(e) Make brief comments about the following statements:

1. *1605: (Invention of the) Newspaper (Relation): Johann Carolus in*[*Strassburg*](http://en.wikipedia.org/wiki/Strassburg)*, Holy Roman Empire of the German Nation.*
2. *1879 Thomas Edison produced the first practical bulb and was granted a U.S. patent.*

[2 marks]

(f) What are *disruptive technologies* in the gig economy? Give *two* examples of such and explain why you think they can be classified as such.

[3 marks]

(h) Describe briefly each of the *four* economic theories of innovation.

[5 marks]

**SECTION B**

**Answer any THREE questions**

Your ESSAY-type responses should be no more than ONE AND A HALF PAGES LONG of properly legible and grammatically correct sentences accompanied by correct punctuation and paragraphing. Failure to adhere to this INSTRUCTION will detract from the examiners efforts to properly assess your work and will attract penalties.

**QUESTION 2**

What is the importance of Intellectual Property Rights (IPRs) to national development **[25 marks]**

**QUESTION 3**

Summarize the paper ***Chapter 5: Innovation Policy: A Business Perspective*** *By Kai Engel and Justin Shepherd, A.T. Kearney; and Martin Ruppert.* This paper should be no more than *one* page and should adequately bring out the main points contained there-in.

**QUESTION 4**

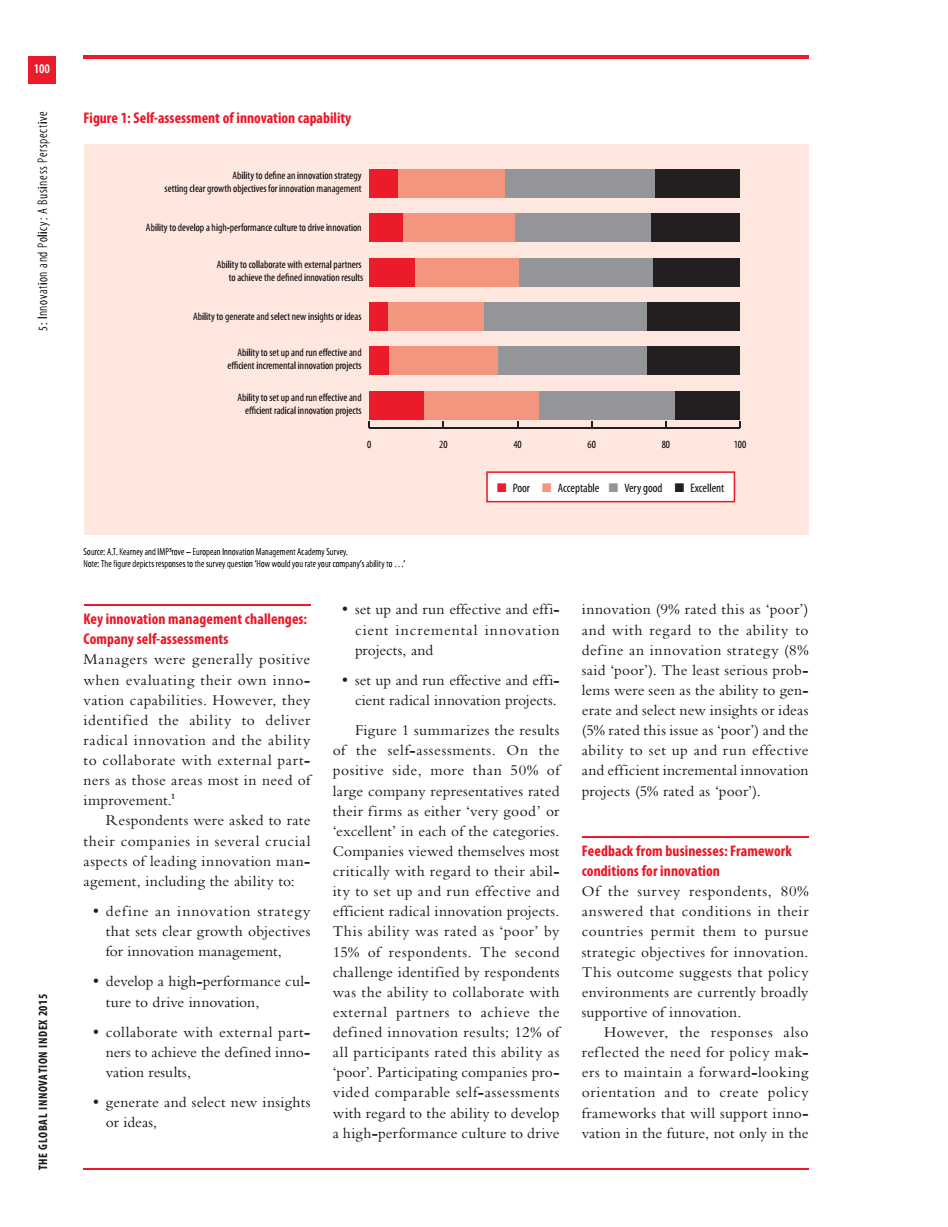
Compare and contrast the circle and linear models of innovation. **[25 marks]**

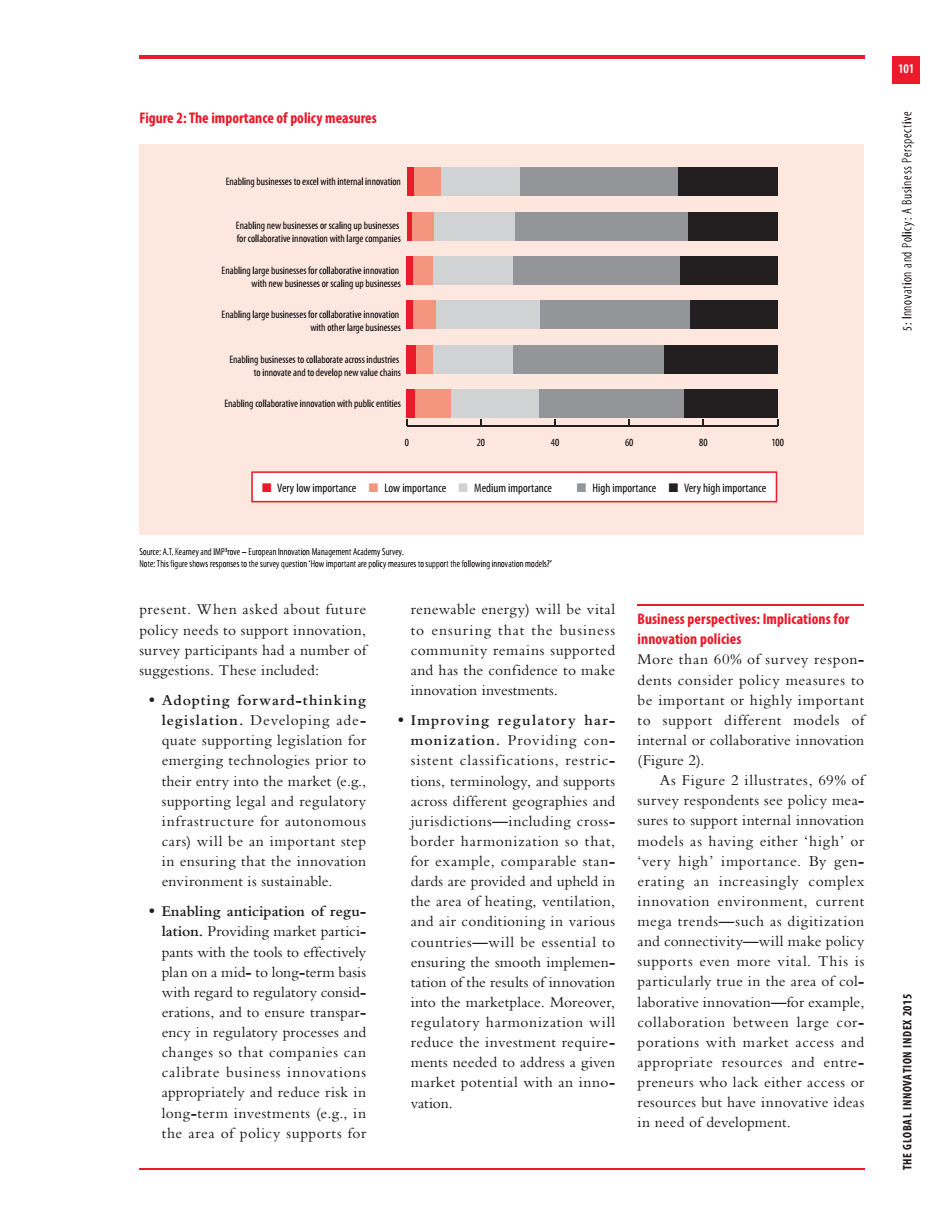
**QUESTION 5**

Describe the architecture of the *smart grid* and discuss how this is important in the energy industry in Zimbabwe going forwards. **[25 marks]**

***Additional Information for QUESTIONS 3***

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