



# TECHNICAL UNIVERSITY OF MOMBASA

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FACULTY OF ENGINEERING

ELECTRICAL AND ELECTRONICS ENGINEERING DEPARTMENT

## UNIVERSITY EXAMINATION FOR:

DIPLOMA TELECOMMUNICATIONS

ETI 2305 : MICROWAVE DEVICES AND COMPONENTS

END OF SEMESTER EXAMINATION

**SERIES: DEC 2016**

**TIME: 2 HRS**

**DATE:**

### Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of FIVE questions. Attempt ANY THREE questions

**Do not write on the question paper.**

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### Question ONE

(a) Explain how the following devices and circuits are realized in microwave systems:

- (i) Capacitance
- (ii) Dummy load
- (iii) Low power load
- (iv) High power load
- (v) Attenuator

**(8 marks)**

(b) With the aid of a diagram explain how solid state diode are used in microwave rectification.

**(12 marks)**

### Question TWO

(a) With the aid of a diagram explain the operation of a power amplifier Klystrons Oscillator in microwave systems.

**(10 marks)**

(b) Describe with the aid of a diagram how a reflectometer is used to measure SWR.

**(10 marks)**

### **Question THREE**

- (a) With the aid of a diagram describe how a Bifilar-helix backward wave oscillator is used to microwave amplification. **(10 marks)**
- (b) Describe with the aid of a diagram the operation of a directional coupler. **(10 marks)**

### **Question FOUR**

- (a) With the aid of a diagram describe how GUNN diodes core used to simulate negative resistance. **(10 marks)**
- (b) Describe the operation of a magnetron. **(10 marks)**

### **Question FIVE**

With appropriate block diagram describe a generalized microwave transmitter and receiver. **(20 marks)**