



MBV-003-1154007 Seat No. _____

M. Sc. (Electronics) (Sem. IV) (CBCS) Examination

April / May - 2018

Microwave Electronics : Paper - 16

(New Course)

Faculty Code : 003

Subject Code : 1154007

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions carry equal marks.
(2) Figures on right hand side indicate marks.

1 Answer the following : (Any Seven) 14

- (1) Define the term microwave.
- (2) Give the difference between TEDs and microwave transistors.
- (3) Gives the names of geometries of microwave transistors.
- (4) Which three cavities are used in multi cavity klystron?
- (5) Define the term velocity modulation.
- (6) Give the types of wave meters.
- (7) Which three characteristics of ordinary vacuum tubes become increasingly important as frequency rises?
- (8) What do you mean by lumped element?
- (9) Give the full form of BARITT and HBT.
- (10) Give the definition of cavity resonator. Draw the shapes of coaxial and radial cavities.

2 Answer the following : (Any Two)

- (1) Explain the basic principles of microwave tubes and describe the limitations of conventional tubes. **7**

- (2) Give the characteristics features and applications of microwaves. 7
- (3) Explain the basic theory of operation of travelling wave tubes with electron beam and slow wave structure. 7
- 3** Answer the following :
- (1) How two cavity klystron amplifier works? 5
- (2) Discuss two valley model theory. 5
- (3) Write short notes on Reflex klystron. 4
- OR**
- 3** Answer the following :
- (1) Describe crossed electric and magnetic field in magnetron. 5
- (2) Draw and explain the physical structure of MESFET. 5
- (3) Write note on Backward wave oscillator. 4
- 4** Answer the following : (Any **Two**)
- (1) Describe the reflection of microwave from a metal surface with illustration. 7
- (2) Describe the principles of operation of TRAPATT mode of diode. 7
- (3) Define the terms HMIC & MMIC. List the basic properties required for an ideal MIC materials. 7
- 5** Answer the following : (Any **Two**)
- (1) Discuss the dominant mode TE_{10} in rectangular wave guide with illustration and also explain current distribution in it. 7
- (2) Explain PIN diode and discuss PIN diode works as shunt mounted switch and series mounted switch. 7
- (3) Write note on Gunn oscillator circuits. 7
- (4) Discuss the dielectric properties of material determine at microwave frequencies by dielectric measurement. 7