



**MBX-003-1204006**

Seat No. \_\_\_\_\_

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

**April / May - 2018**

**Physics : ET - 10**

***(Pulse & Microwave Electronics) (New Course)***

**Faculty Code : 003**

**Subject Code : 1204006**

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

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.  
(2) Numbers on right margin indicates marks.

**1** Attempt any **seven** : **14**

- (a) Define : Duty cycle for a rectangular waveform. Calculate duty cycle of a rectangular wavefrom of time period 0.6 milli second and pulse width 25 micro second
- (b) Distinguish between clipping and clamping of a periodic waveform.
- (c) What are the types of multivibrators ?
- (d) What is the criterion for getting good integration of a periodic waveform ?
- (e) Define antenna. What are the different types of antenna ?
- (f) What do you mean by isotropic antenna and directional antenna ?
- (g) Write a full form of RADAR. Who invented RADAR system? When ?
- (h) List the Linear beam microwave tubes? Which tube is known as cross-field tube ?
- (i) Explain how a capacitor can be almost fully charged in one RC time constant time ?
- (j) List the applications of microwaves.

**2** Attempt any **two** :

- (a) Derive criteria for getting good differentiation and **7**  
integration of a periodic waveform. Sketch input and output waveforms of RC differentiating circuit when input is a sinusoidal waveform.

- (b) Derive expression to relate "rise time" and "fractional tilt" of input pulse waveform to upper cut-off frequency and lower cut-off frequency of an amplifier, respectively. 7
- (c) Write a detailed note on diode clippers and their applications. 7
- 3** (a) Draw the circuit of monostable multivibrator using transistors, explain its operation with waveform diagram. 7
- (b) What is Schmitt trigger ? Sketch the circuit of Schmitt trigger using transistors and explain its working. Explain when does the circuit exhibit "hysteresis" ? 7
- OR**
- 3** (a) With neat diagrams, briefly discuss wire antenna, reflector antenna and lens antenna. 7
- (b) Discuss with necessary diagram : stepping and zoning of lens antenna. 7
- 4** Attempt any **two** :
- (a) Discuss with block diagram, working principle of pulsed Radar set. 7
- (b) Derive Radar Range Equation. 7
- (c) Discuss construction and working of two cavity klystron amplifier. 7
- 5** Attempt any **two** : 14
- (a) Discuss with circuit and waveform diagrams : RC Ramp waveform generator.
- (b) Discuss in brief : Diode clippers.
- (c) Write a note on Reflex klystron.
- (d) Write a note on Gunn Diode.