DLL-003-020405 Seat No. _____

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

May / June – 2015

Physics

(Pulse and Microwave Electronics)

Faculty Code : 003
Subject Code : 020405

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

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

1 Answer any **seven** questions: **14**

(a) Write the full form of RADAR. Who invented RADAR and who gave name RADAR.

(b) Define antenna. What do you mean by omni directional antenna ?

(c) How magnetron is different from other linear beam tubes ?

(d) List the various solid state microwave devices.

(e) List five applications where microwaves are used.

(f) Define rise time and fall time with reference to pulse wave form.

(g) Sketch and label internal circuit of IC - 555.

(h) Draw neat sketches of various types of wave forms.

(i) Define Duty cycle of pulse wave form. Calculate duty cycle of a rectangular pulse wave form if $f = 1000$ Hz and mark-width 500 micro second.

(j) What are the different types of multivibrators. Define multivibrator.

2 Attempt any **two** :

(a) What are the different types of antenna? Discuss any three types of antenna in detail. **7**

(b) Discuss with neat and labelled diagrams, working action of two cavity klystron amplifier. **7**

(c) Discuss in detail fabrication steps of microwave transistor. **7**

3 Answer the following:

(a) Discuss with neat diagrams, construction and working of magnetron. **7**

(b) Derive RADAR range equation in terms of factors influencing maximum range of RADAR. **7**

OR

3 Answer the following:

(a) Draw the circuit of schemitt trigger using transistors. Explain working and i/p, o/p characteristics in detail. When this circuit shows 'hysteresis' ? **7**

(b) Sketch the circuit of monostable multivibrator using time IC - 555. Explain its operation with neat wave forms. **7**

4 Answer any **two** of the following:

(a) Draw the circuit of bistable multivibrator with set-reset triggering using transistor and explain its operation. **7**

(b) Discuss construction and working of diode clipping and clamping circuits. **7**

(c) Derive necessary criteria for obtaining quality integration and differentiation of a periodic waveform. Design an integrating circuit for good square wave integration ($f = 0.1$ MHz). **7**

5 Attempt any **two**: **14**

(a) Tunnel diode

(b) RC - ramp generator

(c) Antenna with parabolic reflector

(d) A - Scope.
