FACULTY OF SCIENCE
M.Sc. I - Semester (CBCS/Non-CBCS) Examination, December 2014

Subject: Physics / Applied Electronics
Paper - V: Electronics – I

Time: 3 hours
Max. Marks: 80

Note: Answer all questions from Part – A and Part – B.
Each question carries 4 marks in Part – A and 12 marks in Part – B.

PART – A (8 x 4 = 32 Marks)
(Short Answer Type)

1 Explain V-I characteristics of BJT.
2 Draw the circuit diagram of Zener regulator and explain its working.
3 Draw the circuit diagram of i) fixed bias and ii) collector to base bias
4 Draw the circuit of Darlington pair. Mention its advantages.
5 Write the conditions to get sustained oscillations.
6 Draw the circuit diagram of bistable multivibrator.
7 Draw the circuit diagram of square detector and explain its working.
8 What is phase modulation? Explain.

PART – B (4 x 12 = 48 Marks)
(Essay Answer Type)

9 a) Explain the construction and V-I characteristics of SCR. Write its applications.
    OR
    b) Draw the block diagram of 78XX regulator and explain its principle of operation.

10 a) Write the hybrid $\pi$ - model of a transistor. Discuss high frequency response of a
    RC coupled amplifier using hybrid $\pi$ - model.
    OR
    b) Discuss the effect of negative feedback in amplifiers.

11 a) Draw the circuit diagram of RC phase shift oscillator. Explain its operation and
    obtain a relation for its frequency of oscillation.
    OR
    b) Draw the circuit diagram of Schmidt-trigger circuit and explain its working. Mention
    its applications.

12 a) Explain Amplitude modulation. Draw the circuit diagram to get AM. Explain its
    frequency spectrum.
    OR
    b) Draw the circuit diagram of a FM discriminator and explain its working.

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