Name of the Department: Department of Physics and Astrophysics

Name of the Course: B. Sc (Hons) and B. Sc. (Prog)-CBCS_SEC

Name of the Paper: Electrical Circuits and Network Skills

Semester: IV

Unique Paper Code: 32223903_OC

Question Paper Set Number: SET F

Duration: 3 Hours **Max Marks: 50**

Instructions for Candidates

All questions carry equal marks

Attempt any four questions in all.

Q.1. (a) Draw the block diagram of a regulated DC power supply and explain the function of each block in brief. 8

(b) Calculate the total inductance of three inductors of 10 mH, 40mH, and 50mH, with no mutual inductance, are connected together in:

(i) Series combination

(ii) Parallel combination 4.5

Q.2. (a) Explain the role of an ammeter, a voltmeter and a galvanometer in DC and AC circuits and Explain the advantages and disadvantages of a multimeter. 8

(b) Explain Ohmic and non - Ohmic devices. 4.5

Q.3(a) What is Rectification? Draw and explain the working of a half wave Rectifier and obtain the expression for its efficiency. What is Peak Inverse Voltage? 12.5

Q.4(a) Explain color coding in carbon resistors with example. What is the meaning of tolerance in resistors? Write two colors that are often used in color coded resistors to represents tolerance and what values do these represent? 6.5

(b) Explain Nodal analysis with any example. 6

Q5. (a) Describe the construction and working of a step-down transformer with diagram. 8

(b) Discuss any two DC power sources. 4.5

Q. 6 Short note on any two of the following:

(a) Preparation of extension board

(b) Norton theorem

(c) Conduits and Cable trays 12.5