

RAMAKRISHNA MISSION VIVEKANANDA CENTENARY COLLEGE, RAHARA, KOLKATA

MID SEMESTER EXAMINATION 2021

1st SEMESTER

General Elective I: Electronics

Full Marks: 25

Time: 1 hour

(Use two separate answer scripts for Group-A and Group-B)

Answer any five (5) questions taking at least two from each group:

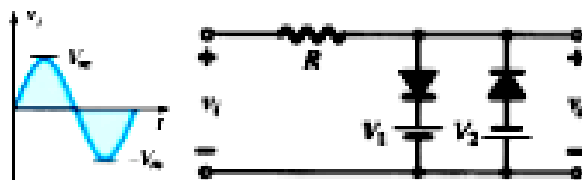
5×5=25

Group-A

1. (a) Define Current Source and Voltage Source.
(b) Write Maximum Power Transfer Theorem. (3+2)
2. State and explain Superposition Theorem. (5)
3. (a) Why transistor is so named?
(b) Draw the Output Characteristic curve of a Transistor in CE mode. (2+3)
4. Define α and β . Find out relation between α and β . (2+3)

Group-B

5. (i) Draw the energy band diagram of an unbiased p-n junction.
(ii) 'An n-type semiconductor is electrically charge neutral'- explain.
(iii) Write down the diode current equation of a p-n diode. (2+2+1)
6. (i) State differences between Zener breakdown and avalanche breakdown.
(ii) Define the static and dynamic resistance of a p-n junction diode.
(iii) Why has Ge been replaced by Si for modern technological applications? (2+2+1)
7. (i) Show that the rectification efficiency of a full wave rectifier with double than that of a half wave rectifier.
(ii) What do you mean by ripple factor? State the values of the same for HWR and FWR. (2+3)
8. (i) Determine the output voltage of the circuit given below when a sinusoid is applied at the input.



- (ii) Determine the output voltage for the network as given below:

