

Diploma Board Examination – February 2022

Course: Diploma in Electronics and Communication Engineering.

Subject : Electrical Circuits and Instrumentation.

QP Code: 438

Time: 3 Hours

Sub Code: 4040320

Max. Marks: 100

[N.B: (1) Answer all 10 Questions in PART A and each question carries 3 Marks.

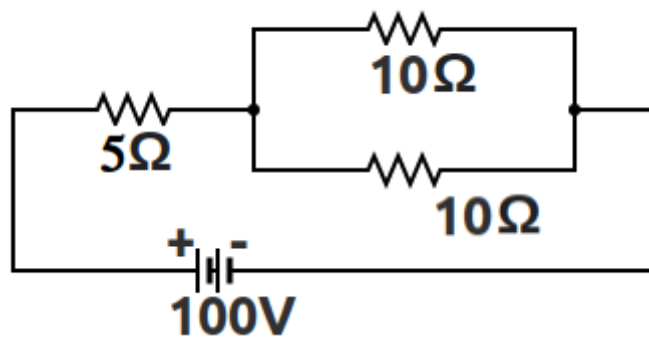
(2) Answer division (a) or division (b) of each question in PART B and each question carries 14 marks.]

PART – A

1. Define voltage and current. State their Units.
2. State super position theorem.
3. Define RMS value of an AC quantity.
4. What is the condition for series resonance? Derive expression for resonant frequency.
5. List the applications of Transformer.
6. What is the difference between single phase and three phase supply? List the differences.
7. Classify the Transducers.
8. List the applications of CRO.
9. Define accuracy and precision in measurements.
10. What is the basic principle of working of Thermistor? Name the different types.

PART – B

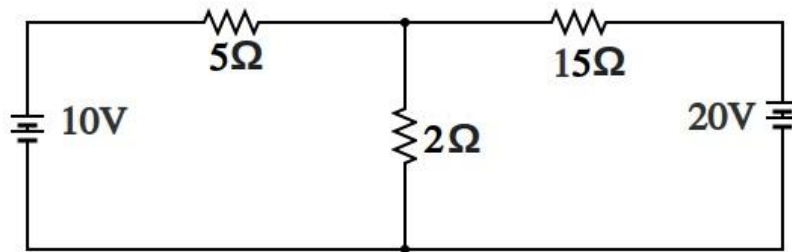
11. (a) (i) State and explain Kirchoff's laws.
(ii) For the circuit given below, find the total resistance, total current and total power consumed by the circuit.



(Or)

[Turn over.....]

- (b) For the circuit given below find the current through the 2Ω resistor by using Thevenin's theorem.



12. (a) (i) Derive the expression for 'Q' factor in parallel resonance circuit.
(ii) Determine the impedance and current of a RL series circuit with $R=20\text{ Ohm}$ and $L=0.1\text{Henry}$, when connected to a 230 V , 50 Hz supply.

(Or)

- (b) Two impedances $(6+j8)\text{ Ohm}$ and $(8-j6)\text{ Ohm}$ are connected in parallel across $230V$, 50Hz supply. Find the total current and power factor of the circuit.

13. (a) Explain the construction and working principle of DC Generator.

(Or)

- (b) Explain the construction and working of single phase capacitor start induction motor. List out its applications.

14. (a) With a neat sketch, explain the construction and working of LVDT. List out its applications.

(Or)

- (b) Draw the block diagram and explain the operation of CRO.

15. (a) Explain the construction and working of PMMC instrument.

(Or)

- (b) With a neat circuit, explain how unknown resistance is measured by using Wheatstone bridge. List out its applications.
