



DE-2922

First Year B. Sc. (Sem. I) Examination

March / April – 2016

Electronics : Paper - I

(Basic Electrical Circuits)

Time : 2 Hours]

[Total Marks : 50

Instructions :

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="FIRST YEAR B. Sc. (SEM. 1)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="ELECTRONICS - 1"/>	<input type="text"/>
Subject Code No. : <input type="text" value="2"/> <input type="text" value="9"/> <input type="text" value="2"/> <input type="text" value="2"/>	<input type="text" value="Student's Signature"/>
Section No. (1, 2,.....) : <input type="text" value="1,2,3"/>	

- (2) There are total 28 questions in this question paper.
- (3) Figure on the right indicates full marks
- (4) All symbols and abbreviations have their usual meaning.
- (5) Non-programmable calculators are allowed.
- (6) Assume data if necessary.

Q. 1 to 12 Multiple choice questions : (1 mark)

Q. 13 to 22 Multiple Choise Questions : (2 marks)

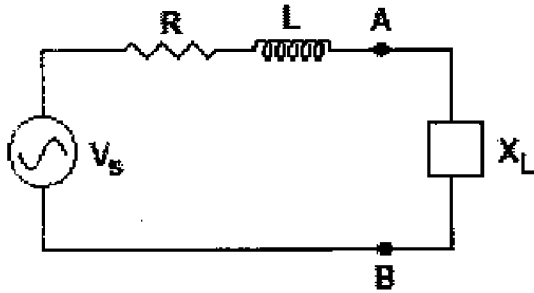
Q. 23 to 28 Multiple Choice Questions : (3 marks)

***O.M.R. Sheet ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ
O.M.R. Sheet-ની પાછળ છાપેલ છે.
Important instructions to fillup O.M.R. Sheet
is given back side of provided O.M.R. Sheet.***

- 1 According to Thevenin's theorem, any network with two open terminals can be replaced by a voltage source V_{th} in _____ with a single resistance R_{th} .
- (A) series
 - (B) parallel
 - (C) short
 - (D) open
- 2 The first goal to accomplish in analyzing a complex series-parallel circuit is to
- (A) equate all parallel components
 - (B) equate all series components
 - (C) solve for all the voltage drops
 - (D) solve for the total current and resistance
- 3 _____ is a device whose resistance depends upon the quantity of light falling on its surface.
- (A) LDR
 - (B) VDR
 - (C) thermistor
 - (D) LCD
- 4 Which one of the following is not the passive component?
- (A) resistor
 - (B) inductor
 - (C) capacitor
 - (D) varactor diode

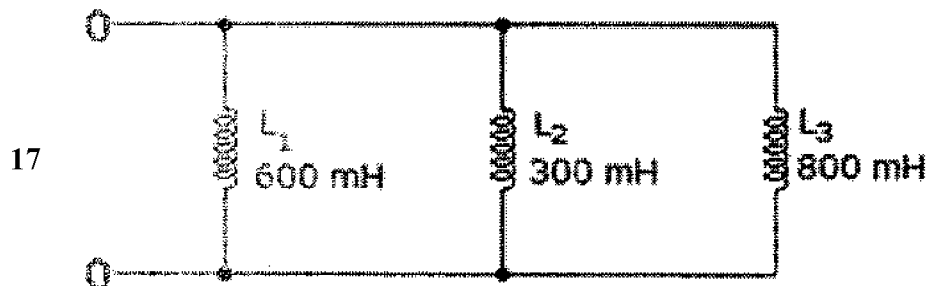
- 5 The distance that a signal's energy can travel in the time it takes for one cycle to occur is called the signal's:
- (A) amplitude
 - (B) frequency
 - (C) wavelength
 - (D) period
- 6 In DPDT switch there are total _____ terminals.
- (A) 2
 - (B) 3
 - (C) 6
 - (D) 9
- 7 Which type of test equipment is used to measure current?
- (A) ohmmeter
 - (B) ammeter
 - (C) voltmeter
 - (D) wattmeter
- 8 As current travels within a conductor:
- (A) the magnetic field aids the current
 - (B) a magnetic field is developed around it
 - (C) the wire tries to point north
 - (D) an electrostatic field opposes the current

9 Lead Z_L for maximum power transfer is



- (A) R
 - (B) $R + j\omega L$
 - (C) $R - j\omega L$
 - (D) None
- 10 _____ has one winding common with the primary and secondary.
- (A) Power transformer
 - (B) Auto transformer
 - (C) Audio transformer
 - (D) Line transformer
- 11 _____ is often used to analyze multiple-source circuits.
- (A) Thevenin's theorem
 - (B) Superposition
 - (C) Kirchoff's law
 - (D) Ohm's law
- 12 Kirchoff's voltage law is concerned with
- (A) IR drops
 - (B) junction voltage
 - (C) battery EMFs
 - (D) both IR drops and junction voltage

- 13 A capacitor stores 0.15C at 5 V. Its capacitance is
 (A) 0.75 F
 (B) 0.75 μ F
 (C) 0.03 F
 (D) 0.03 μ F
- 14 In a purely inductive circuit,
 (A) current leads voltage by 90°
 (B) voltage lags current by 90°
 (C) voltage leads current by 90°
 (D) voltage and current are in phase (0°)
- 15 What is the number of turns required in the secondary winding for a transformer when 120 volts is applied to a 2400-turn primary to produce 7.5 Vac at the secondary?
 (A) 75 turns
 (B) 150 turns
 (C) 900 turns
 (D) 1920 turns
- 16 What is the total inductance of a 5 H and a 100 mH coil connected in parallel?
 (A) 4.76 mH
 (B) 33.3 mH
 (C) 98.0 mH
 (D) 150.0 mH

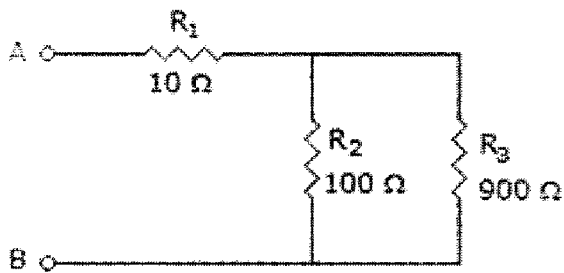


What is the total inductance in the given circuit?

- (A) 160 mH
 (B) 300 mH
 (C) 900 mH
 (D) 1700 mH

- 18 The voltage across a coil when $di/dt = 20 \text{ mA/s}$ and $L = 8 \text{ H}$ is
- (A) 16 mV
 - (B) 160 mV
 - (C) 1.6 mV
 - (D) 2.5 mV

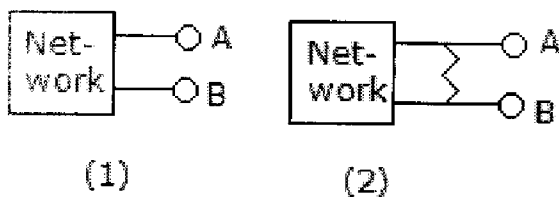
- 19 If R_3 opens in the given circuit, the total resistance (R_T) between points A and B equals _____.



- (A) 900Ω
 - (B) 100Ω
 - (C) 110Ω
 - (D) infinite resistance
- 20 Reactance in an inductive circuit will:
- (A) increase with frequency
 - (B) decrease with frequency
 - (C) be independent from frequency
 - (D) depend on the value of X_c
- 21 Kirchhoff's current law state that
- (A) net current flow at the junction is positive
 - (B) algebraic sum of currents meeting at the junction is zero
 - (C) no current can leave the junction
 - (D) total sum of currents meeting at the junction is zero
- 22 For $p = V^2/R$, a decrease in resistance should produce:
- (A) a decrease in power
 - (B) an increase in ohms
 - (C) an increase in power
 - (D) a decrease in current

- 23 A 33 k Ω resistor with a 20% tolerance checks out as ok with which of the following ohmmeter readings?
- (A) 26400 ohms
 - (B) 24183 ohms
 - (C) 6600 ohms
 - (D) 39970 ohms
- 24 How many amps are used by a 100 watt, 120 volt light bulb?
- (A) 1.2 amps
 - (B) 12000 amps
 - (C) 830 mA
 - (D) 12 amps
- 25 How many ohms of resistance allow a current of 720 μ A to flow when 3.6 kV is applied?
- (A) 200 n Ω
 - (B) 5 k Ω
 - (C) 200 k Ω
 - (D) 5 M Ω

- 26 Two similar coils have self inductance of 1 mH each. Coefficient of coupling is 0.5. The mutual inductance M is
- (A) 0.25 mH
 (B) 0.5 mH
 (C) 0.707 mH
 (D) 1 mH
- 27 With 21 V applied, if $R_1 = 5$ ohms, $R_2 = 35$ ohms, and $R_3 = 14$ ohms, what is the current of R_2 if R_1 is series connected with parallel circuit R_2 and R_3 ?
- (A) 200 mA
 (B) 800 mA
 (C) 600 mA
 (D) 400 mA
- 28 The Thevenin's equivalent of network in figure(1) is a 10 V source in series with $2\ \Omega$ resistance. If a $3\ \Omega$ resistance is connected across AB as shown in figure(2) the Thevenin's equivalent is



- (A) 10 V in series with $1.2\ \Omega$ resistance
 (B) 6 V in series with $1.2\ \Omega$ resistance
 (C) 10 V in series with $5\ \Omega$ resistance
 (D) 6 V in series with $5\ \Omega$ resistance

