.... B Mechanical 1ˢᵗ year 1st sem .... EXAMINATION, 20 .....17....

(1ˢᵗ/2ⁿᵈ-Semester/Regular/~~Repeat/Supplementary/Spl. Supplementary/Old/Annual/Bi-Annual~~)

SUBJECT .... Basic Electrical Engineering ....
(Name in full)
PAPER ....

Time : ~~Two hours~~/Three hours/~~Four hours/Six hours~~

Full Marks ~~30~~/ 100
(~~15~~/50 marks for each part)

Use a separate Answer-Script for each part

No. of questions	Part I / ~~Part II~~	Marks
	<u>Answer any three questions</u> (16 × 3)+ 2 marks for well organized answer	
1. a)	State and explain Thevenin's Theorem with suitable example.	8
b)	Find the power delivered by the energy sources individually in the following circuit	8
2. a)	Deduce the expression for maximum power transfer in a DC Network. Find efficiency for this condition	8
b)	Find the current flowing in branch AB in the network shown below, when this branch has a resistance of i) 5Ω and ii) 0.1Ω	8
3. a)	Deduce the expression for conversion from Star to Delta connected resistance network.	8
b)	In a single phase AC Circuit derive the expression for power, power factor and reactive power. Show representative circuit and phasor diagram	8
4. a)	Explain the phenomenon of resonance in a series RLC circuit and deduce the expression for Band Width	8
b)	An AC voltage v(t) = 220X√2(sin314t+30°) is applied across a series circuit of R=10Ω and C=1mF. Find resultant current through the circuit and also find the power delivered by the source.	8
5. a)	For a pure sinusoidal waveform derive the expression for Crest Factor and Form Factor.	8
b)	Find the values of a) current b) V_1 and V_2 and c) Reactive power in the following circuit. Draw a phasor diagram for the circuit indicating voltage drops across the components	8

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Ref. No. ME/EE/T/114/2017(S).

B. Mechanical 1st year, 1st semester Supplementary....EXAMINATION, 2017
(1st/2nd Semester/~~Repeat~~/Supplementary/~~Annual/Bi-Annual~~)

SUBJECT....Basic Electrical Engineering..

(Name in full)

PAPER...

Full Marks 100

Time : ~~Two hours~~/Three hours/~~Four hours/Six hours~~

(~~50 marks for each part~~)

Use a separate Answer-Script for each part

No. of questions		~~Part-I~~/Part-II	Marks
		Answer any three questions, two marks for organized answer (16 X 3=48 +2=50)	
1.	a)	What is the relation between permeability of a material and reluctance of the magnetic circuit?	5
	b)	Explain the Hysteresis Curve (B-H) of a magnetic material from Domain-Theory of Magnetism point of view.	6
	c)	An iron ring of mean length 30 cm has an air gap of 2 mm and winding of 200 turns. If the permeability of the iron core is 300 when a current of 1A flows though the coil, find the flux density.	5
2.	a)	Compare the Electric Circuit with Magnetic Circuit.	5
	b)	A steel magnetic circuit has a uniform cross-sectional area of 20 cm^2 and a length of 200cm. A coil of 1000 turns is wound uniformly over the magnetic circuit. When the current in the coil is 4A, the total flux is 1mWb , when the current is 6A, the total flux is 1.2 mWb. For each value of current, calculate the (a) magnetic field strength and (b) relative permeability of the steel.	7
	c)	Derive the expression of mutual inductance (M) for a bilateral magnetic circuit as a function of coefficient of coupling (k) and self-inductances (L_1 & L_2) of the coils.	4

Form A: Paper-setting Blank

Ref. No. ME/EE/T/1.14/2017.(S)

B. Mechanical 1st year, 1st semester Supplementary....EXAMINATION, 2017
(1st/2nd Semester /Repeat/Supplementary/Annual/Bi-Annual)

SUBJECT....Basic Electrical Engineering
(Name in full)
PAPER..

Full Marks 100
Time : Two-hours/Three hours/Four hours/Six hours   (50 marks for each part)

No. of questions		Marks
3. a)	Explain the working principles of Moving Coil & Moving Iron type instruments? Also mention, how those two types of meters can be differentiated by visual inspection. How can you classify measuring instruments?	8
b)	In the shown Schering Bridge find out the expressions of capacitance C_1 & its resistance R_1 as the functions of other bridge parameters with the help of phasor diagram . Hence, also find the loss angle δ.	8
a)	What are the fundamental parameters generally considered while characterizing a measuring instrument?	6
b)	Write a Note on: Classes of Protection in a Thermal Power Station.	5
c)	How a Circuit Breaker works along with Relay in a Protection Scheme?	5

B. Mechanical 1ˢᵗ year, 1ˢᵗ semester Supplementary

....EXAMINATION, 2017

(1ˢᵗ/2ⁿᵈ Semester /~~Repeat~~/Supplementary/~~Annual/Bi-Annual~~)

SUBJECT....Basic Electrical Engineering....................................

(Name in full)

PAPER...

Time : ~~Two hours~~/Three hours/~~Four hours/Six hours~~

Full Marks 100
(50 marks for each part)

No. of questions			Marks
5.	a)	What are the fundamental components of power system?	3
	b)	Discuss how the electrical power is evacuated from a generating station to the distributor, with the help of a schematic diagram.	13