

B. Tech 3RD Semester Examination – 2019-20

Subject:AEC	Course: B.TECH
Branch – EEE	Full Marks: 70
Time: 3Hours	Pass Marks: 28

- Candidates are required to give their answers in their own words as far as practicable.
- Question paper is divided into THREE PARTS A ,B &C
- Part A is compulsory.

• Part B contains SIX questions out of which FOUR questions are to be answered.

• Part C Contains SIX question out of which THREE questions are to be answered.

PART A

b) Need

d) doesn't need at higher frequencies

Q.1) all questions are compulsory.

A] Multiple Choice Questions:

i) Oscillator ______ an AC input for giving an AC output.

a) Doesn't need

c) Doesn't need at lower frequencies

ii) An amplifier is based on

itive reedback
11

b) Both d) None

iii) The use of amplifier in a circuit is to _____ for input signal.

a) Provide a phase shift b) Provide strength

c) Provide frequency enhancement d) Make circuit compatible

iv) Transistor in power amplifier is _____

a) An active device b) A passive device

c) A op-amp d) A voltage generating device

v) Which of the following configuration is used for impedance matching?

a) Common base configuration b) Common emitter configuration

c) Common collector configuration d) all configurations are equally suited

vi) JFET is a _____ carrier device.

a) Unipolar b) Bipolar

c) Minority d) Majority

vii) An N-channel JFET is ____

a) Always ON

b) Always OFF

B.Tech- 3rd Semester .final Exam. -19-20 | AJU, Jharkhand

(10x1=10)

) Enhancement mode JFET

d) has a p-type substrate

viii)A dot near the transistor pin denotes

a)	.emitter
c)	.Collector

b).base d).None of the above

ix)Transistor works as an open switch when emitter junction is......biased and collector junction

is.....biased

a).Forward, reverse c).Reverse, forward

b).Reverse, reverse d).Forward, forward

x) The majority carriers in case of NPN silicon transistor are

a).Electrons c).Holes

b).Electron-hole pairs d).Impurity ions

1) Define

- a. Pinch off
- b. Reverse saturation current
- c. Surface inversion
- d. Zener breakdown
- e. MOS Capacitor

PART B

Answer any four Questions

- 1) Define the term Power Amplifier.
- 2) What do you mean by Ideal voltage amplifier?
- 3) Draw the Darlington pair circuit and explain.
- 4) What do you mean by the stability factor of a transistor circuit?
- 5) What is the Purpose of feedback in an electronic circuit?
- 6) Explain how oscillator generates an electronic signal?

PART C

Answer any Three Question

- 1) for a given transistor . $_{dc} = 0.98$, $I_{E} = 2mA$.calculate . $_{dc}$ and I_{B} .
- 2) .Define . and . also deduce the relation between ., ..
- 3) Transistor is connected in common emitter configuration as an amplifier .The parameters of the transistor specified are: $I_B = 25\mu A$, $I_{CBO} = 100nA$, $\beta = 100$, Find I_C, I_E, α .
- 4) Draw and explain the characteristics of JFET.
- 5) A JFET has drain current of 15 mA.If $I_{DSS}=25mA$ and $V_P=5V$, find V_{GS}
- 6) Explain the working principle of WIEN Bridge oscillator.
- 7) Explain Barkhausan criteria and also discuss the essential elements of an oscillator.
- 8) Define h parameters for a BJT.
- 9) What do you mean by noise and noise figure? Explain Thermal noise, shot noise and flicker noise.

(4x5=20)

 $(5 \times 2 = 10)$

(3x10=30)



3rd Semester Final Examination – 2019-20

Subject: Transformer & Generator Branch – Electrical & Electronics Engg Time :3 Hours Course:B.Tech EEE Full Marks :70 Pass Marks: 28

- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into Three Parts A, B& C
- Part-A is compulsory.
- Part- B contains SIX questions out of which FOUR questions are to be answered.
- Part- C contains SIX questions out of which THREE questions are to be answered.

PART A

Q1.)All questions are compulsory:-

A] Objective Answer Type

- i) The flux created by the current flowing through the primary winding induces emf in
 - a) primary winding only
 - b) secondary winding only
 - c) transformer core only
 - d) both primary and secondary windings
- ii) In a transformer electrical power is transferred from primary to secondary
 - a) Through air
 - b) By magnetic flux
 - c) Through insulation medium
 - d) None of these

iii) The low voltage winding of a 400/230 V single phase 50 HZ transformer is to be connected to a 25 HZ supply. In order to keep the magnetization current at the same level in both the cases the voltage at 25 Hz should be

a)	230 V	c)	115 V
b)	460 V	d)	65 V

iv) On no-load phasor diagram of transformer, the core loss component of the current remains in phase with

- a) No-load current b) primary supply voltage
- c) core flux d) primary induced voltage
- v) The flux in transformer core
 - a) Increases with load
- b) decreases with load
- c) remains constant irrespective of load d) none of the above



vi) In the transformer circuit model, the core loss is represented as a

a) series resistance

c) shunt resistance

vii) In a transformer zero voltage regulation at full load is

a) Not possible

b) Possible at leading power factor load

c) Possible at lagging power factor load

d) Possible at unity power factor load

viii) Which of the following does not change in an ordinary transformer

- a) Frequency
- b) Voltage
- ix) Transformer will operate at maximum efficiency when
 - a) Hysteresis = eddy current loss
 - b) Eddy current loss = copper loss

x) The main purpose of performing open-circuit test on a transformer is to measure its

- a) Cu loss
- b) Core loss

B] Short Answer Type

- i) What is armature reaction?
- ii) What is pitch factor and distribution factor.
- iii) What is the condition for maximum efficiency of transformer?
- iv) What are the different type of connection for three phase transformer.
- v) What are the different types of cooling of transformer?
- vi) Which parameter can be measured by short circuit test of transformer.

PART B

Q2.) Answer any four:

- i) Discuss Dy1 & Yd11.
- ii) Derive an expression for the current & KVA shared by two transformer connected in parallel supplying a common load when no load voltage is equal.
- iii) A 20 kVA, 2000/200 V, single-phase transformer has the following parameters: HV Winding: R1 = 3 ohm, X1= 5.3 ohm, LV Winding : R2= 0.05 ohm, X2= 0.05 ohm. Find the voltage regulation at 0.8 pf lagging
- iv) What is autotransformer & draw different connection of it.
- v) Explain open delta connection of transformer with necessary diagram and equation.

(4x5=20)

c) Copper loss = iron loss

- d) Hysteresis loss= copper loss

d) Any of the above

c) Total loss

c) Current

b) series inductance

d) shunt inductance

d) Insulation resistance

(5x2=10)

vi) Name the various methods for determining the voltage regulation for 3 phase alternator and describe any one method.

PART C

Answer any Three:

(3x10=30)

Q3.)What is On load tap changing transformer, Explain with diagram.

Q4.)Write the choice between single unit three phase transformer & a bank of three single phase transformer.

Q5.)Discuss and draw equivalent circuit and phasor diagram of single phase transformer at no load and on load.

Q6.)Derive emf equation of alternator with winding factor, Describe each term.

Q7.)Explain armature reaction of alternator at various power factor and its effect.

Q8.)Explain open circuit test and short circuit test of transformer with circuit diagram.



3rd Semester Final Examination - 2019-20

Subject : Electrical Machines 1 Time : 3 Hours	Course: B.Tech EEE Full Marks: 70 Pass Marks: 28
 Candidates are required to give their answers in their own of Question Paper is divided into Three Parts -A,B& C Part-A is compulsory. Part-B contains SIX questions out of which FOUR questions Part- C contains SIX questions out of which THREE questions Draw relevant figures/block diagrams/quote examples with the second second	words as far as practicable. ions are to be answered. tions are to be answered. here ever necessary.
Q.1) All questions are compulsory	<u>A</u>
A] Multiple Choice Questions	
guestions:	(10x1=10)
i. What will happen if DC shunt motor is connected	ed across AC supply?
a) Will run at normal speed b) Will not run c) Will Run at lower speed	d) Burn due to heat produced in the field winding
ii. What will happen if the back and a Do	
a) The motor will stop	vanishes suddenly?
b) The motor will continue to run	c) The armature may burn
iii. What will happen with the income	d) The motor will run noisy
a) Back emf increase but line current	DC motor?
falls.	c) Both back emf as well as line current
b) Back emf falls and line current increase.	d) Both back emf as well as line current fall.
iv. Which part will surely tell that given motor is DC	Land any threat
a) Winding	motor and not an AC type?
b) Shaft	d) Stator
V. In D.C	
a) Field winding	ain the maximum temperature rise?
b) Commutator	c) Slip rings
	d) Armature winding
vi. Armature in a dc machine is made of laminated sta	plineter d. C
a) Low permeability	d) More mask
b) High permeability	bermeability
c) More mechanical strength	permeability
vii. In de machines, armatura mindi	
a) Electromechanical energy conversion	e rotor because of the necessity for
b) Generation of voltage	c) Commutation
	a) Development of torque
viii. In a dc machine, the armature MMF is alway	vs directed along the

- a) Polar axis .
- b) Brush axis
- ix. In a dc generator, in armature conductor along MNA
 - a) Maximum current is produced
 - b) Maximum emf is produced
- x. The insulating material used for the commutator segment is generally
 - Graphite Carbon
- C. Mica

B] Very Short question

b.

- a) Define coil pitch and coil span.
- b) Why is commutator employed in DC Machine?
- c) What are the benefits of short pitched coils?
- d) How does a DC motor differ from a DC generator in construction? e) What do you understand by speed regulation of DC motor?

PART B

Q2. Answer any four:

- a) Explain the operation of parallel operation of D.C shunt generators
- b) What are the different methods of improving commutation in a D.C machine? Explain any one. c) Describe with suitable diagram various types of DC machines.
- d) What are the uses and functions of interpoles/compoles?
- e) Write a short note on DC generator characteristics.
- f) Derive an equation for induced EMF in a generator.

PART C

Answer any three:

- Q.3) Explain in brief the action of commutation in a generator.
- Q.4) Explain the speed, torque and current characteristics of a DC shunt motor.
- Q.5) Explain in detail speed control by field control method of DC series motor.
- Q.6) Explain the process of armature reaction and bring about their important conclusions.
- Q.7) Why are starters necessary for DC machine? Explain three point starter.
- Q.8) What are the different methods of speed control of shunt motors? Explain any one method in brief.

c) Interpolar axis d) none of these

- c) Minimum emf is product
- d) Minimum current is produced

d. Insulating varnis

(5x2=10)

(4x5=20)

(3x10=30)



.

ARKA JAIN University, Jharkhand

3rd Semester Final Examination – 2019-20

Subject: Electric Circuit Analysis

Course: B.TECH EEE
Full Marks: 70
Pass Marks: 28

- Candidates are required to give their answers in their own words as far as practicable. •
- Question Paper is divided into Three Parts -A, B & C .
 - Part-A & B are compulsory.

Multiple Choice Operation PAR	<u>TA</u>
enonce Questions	(10x1=10)
i) The capacitor doesn't allow sudden changes	in
a) Voltage	h) Current
c) Resistance	c) Current
ii) An Inductor works as a circuit	t for DC and 1
a) Open	b) Short
c) Polar	d) Nor and
111) The other name for Gain is	u) Non-polar
a) Scaling factor	b) Output
c) Amplifying factor	d) Scaling 1
iv) The input applied to an Inverting amplifier is	u) Scaling level
a) Equal to output	b) Fauglet I
c) Not equal to output	d) Equal to Inverted output
v) Permeability is analogous to	u) none
a) Conductivity	b) Desiret to
c) Retentively	d) both
vi) In two-port networks the parameter has is call	d) both a and b
a) Short circuit input impedance	b) Share
c) Open circuit reverse voltage	d) One i i i i i i i i i i i i i i i i i i i
vii) The energy required to charge a 10 uF capaci	d) Open circuit output admittance
a) 0.01 J	
c) None	D) 0.05 J
viii) The relation between α , β , Υ is?	u) both a and b
a) $\alpha = \Upsilon + j\beta$	
c) $\beta = \gamma + j\alpha$	b) $I = \alpha + j\beta$
ix) The value of α in the pass band of constant k le	$d) \alpha = \beta + j \gamma^{*}$
a) π	w pass filter is?
c) π/2	b) $\pi/4$
x) The formula used to find the capacitance C is	a) 0
a) Q/v	
c) Q-v	
	a)both a and b

Answer all:

1. What is mean by active elements?

2. What is ideal source?

3. Types of bridges?

4. Draw the diagram of series RLC circuit?

5. Difference between mesh and node analysis?

PART B

ANSWER ANY FOUR

Q.2) Define and explain about Transient analysis of RL circuit?

- Q.3) Drive the Reciprocity theorem and one example?
- Q.4) Explain about the Important steps for testing?
- Q.5) Describe about star- delta transformation?

Q.6) Explain about the initial value theorem?

Q.7) Drive the Norton's theorem and one example?

ANSWER ANY THREE

PART C

Q.8) Drive the Maximum power transfer theorem and one example?

(3x10=30)

- Q.9) Explain about the Laplace transformation?
- Q.10) Explain about analysis of series RLC circuit?
- Q.11) Explain about the open circuit impedance?

(5x2=10)

(4x5=20)



3rd Semester Final Examination - 2019-20

Subject: Electrical and Electronic Me	asurements	
Time : 3 Hours		Course: B.TECH EEE Full Marks: 70 Pass Marks: 28
 Candidates are required to give their answers in Question Paper is divided into Three Parts –A, Part-A & B are compulsory. 	their own words as far as practic B & C	able.
Multiple Choice Questions	PART A	
i) The range of resistance masses 1.		(10x1=10)
a) 10Ω to 10 mO	vin bridge is	
c) 0.01Ω to $10 M\Omega$	b) 1Ω to 10 μΩ d) 0.1Ω to 10 Nω	
ii) The relation ratio of resistance arms and		
a) unequal	atio of resistance arms of se	cond bridge
c) twice	b) equal	5
	d) half	
iii) Which is not a source of error in the		
a) contact resistance drops at the 1	urement of low resistance?	
c) Amplifying factor	b) it is negligible	
1 9 - 8 1000	d) Scaling level	•
iv) Which is the most popular method for		
a) ammeter-voltmeter method	uring low resistance?	
c) Kelvin double bridge method	b) potentiometer method	od
as a suble of tage method	d) none	
v) At very low frequencies in a AC brid		
a) power line	source is	
c) Galvanometer	b) e.m.f	
	d) both a and b	
vi) The power output for a typical oscillate		
a)17 W		
c) 27 W	b) 71 W	
	d) 7 W	
vii) Tuned amplifiers can be set to		
a) low frequencies		
c) any frequencies	b) high frequencies	
	d) None	
viii) What is the significance of conscient		
a) they are used to block do	axwell bridge?	
c) they are chean	b) they are used to block	ac
r	d) None	

BTECH EEE -3rd Semester final Examination - 2019-20 | AJU, Jharkhand

- ix) Electronic voltmeters are
 - a) Compactc) Small

c) Siliali

- x) Clock pulses are controlleda) Automatically
 - c) using valves

Answer all:

1. What is mean by capacitance?

- 2. What is mean by error?
- 3. Types of bridges?
- 4. Draw the diagram LPF wattmeter?
- 5. What is mean by force factor?

PART B

PART C

ANSWER ANY FOUR

- Q.2) Construction and operation of three phase dynameters?
- Q.3) Drive the Kelvin's double bridge?
- Q.4) Describe the features of ammeters and voltmeters?
- Q.5) describe about errors and minimization of LPF & UPF wattmeter?
- Q.6) Explain about DVM and applications?
- Q.7) Explain about errors of CT & PT?

.

Q.8) Explain about Silsbee's method?

ANSWER ANY THREE

- **Q.9**) Drive the hay's bridge and desauty bridge?
- Q.10) Explain about LED and applications?
- Q.11) Explain about visual displays and applications

(4x5=20)

(3x10=30)

b) large d) None

b) using microcontrollersd) manual

