

[Total No. of Questions - 9]
(2063)

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B.Tech 2nd Semester Examination
Basic Electrical & Electronics Engineering
BE-101

Time : 3 Hours

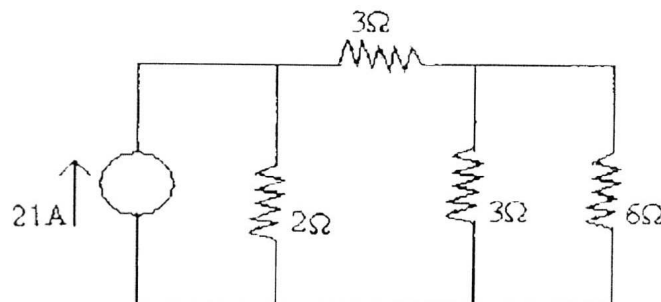
Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, selecting one question each from section A, B, C & D. Section-E is compulsory.

SECTION - A

1. (a) Describe Kirchhoff's laws. For the circuit shown in the figure below. Determine the current through 6Ω resistor and power supplied by the current source. (8)



- (b) Explain the principle and operation of PMMC instruments. How ammeter and voltmeter can be constructed using PMMC instruments? (12)

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2. (a) Define r.m.s, average, form factor and peak factor of a sinusoidal alternating voltage. Compute the form factor of half wave rectifier. (10)
- (b) Explain the various systems used in house wiring. Draw the diagram for stair case. (10)

SECTION - B

3. (a) Discuss the phasor relationship between emf and current when a.c. flows through series R-L-C circuit. (8)
- (b) For a series R-L-C circuit the inductor is variable. Source voltage is $200\sqrt{2} \sin 100\pi t$, maximum current obtainable by varying the inductance is 0.314A, voltage across the capacitor then is 300V. Find the circuit element values. (12)
4. (a) The power input to 2000V, 50 Hz, 3-phase motor, running on full load at an efficiency of 0.9 pu, is measured by two wattmeter which indicate 300KW & 100KW respectively. Calculate (a) input (b) power factor (c) line current (d) the horse power output. (8)
- (b) Explain the principle, working and construction of transformer. (12)

SECTION - C

5. (a) Explain intrinsic and extrinsic semiconductor with neat diagrams. (10)

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- (b) Explain the operation of centre tapped full wave rectifier with neat diagram. (10)
6. (a) What is BJT? List applications of BJT. (10)
- (b) What is P-N junction and how is it formed? Explain V-I characteristics of a P-N junction diode. (10)

SECTION - D

7. (a) What is an integrated circuit? Why it is so commonly used? Discuss. (12)
- (b) Explain the construction and working of JFET. (8)
8. (a) Explain the construction and working of cathode ray oscilloscope. (12)
- (b) Explain the fundamental OP Amp and its applications. (8)

SECTION - E

9. (a) State Ohm's law and its limitations.
- (b) What is the effect of temperature on the resistance of conductor?
- (c) Instantaneous current is given by the relationship $i = 20 \sin 314t$. find r.m.s and average value of a.c.
- (d) Name sources of error in moving iron instruments.
- (e) Why can not a three phase induction machine run at synchronous speed?

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- (f) List various types of transistors with their symbols.
- (g) What is FET? List its applications.
- (h) What is Zener diode and draw its symbol.
- (i) What is back e.m.f in d.c. motor?
- (j) What is avalanche break down in diodes?

(2×10=20)