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SVIS-N-303-A-18

B.Sc. IVth Semester Degree Examination

PHYSICS

(Electronics, Astrophysics, Plasma and Diagnostic Physics)

paper-6.2

(New)

Time : 3 Hours Maximum Marks : 80

Instructions to candidates:

i. *Answer **all** the questions from **Section-A***

ii. *Answer **any** five from **Section-B***

iii. *Answer any **four** from **Section-C***

Section-A

I. Answer the following questions in one or two sentences **(15×1 = 15)**

1) State Thevenine theorem

2) Why, Zener diode is heavily doped

3) What is tunnel diode

4) What is the significance of arrow in the transistor symbol

5) Mention any two advantages of SCR as a switch

6) What is an Integrated Circuits

7) What is D.C load line

8) Mention any two advantages of Oscillator

9) What is undamped Oscillation

10) What is satellite communication

11) Give the circuit symbol of X-OR gate

12) What is Black hole? Who discovered it

13) What is transport phenomena

14) What is the normal range of blood pressure

15) What can C.T scans shows

Section-B

II. Answer any **Five** Questions **(5× 5= 25)**

16) State and explain Norton's theorem

17) Draw and explain IV-Characteristic of PN-junction diode

18) What is light emitting diode(LED)? Explain the theory of LED

19) Discuss the Frequency modulation(FM) and mention their advantages

20) What is decimal and binary system? Explain the conversion of binary to decimal with example

21) Explain chandrashekar mass limit.

22) Explain briefly Inelastic collision in plasma

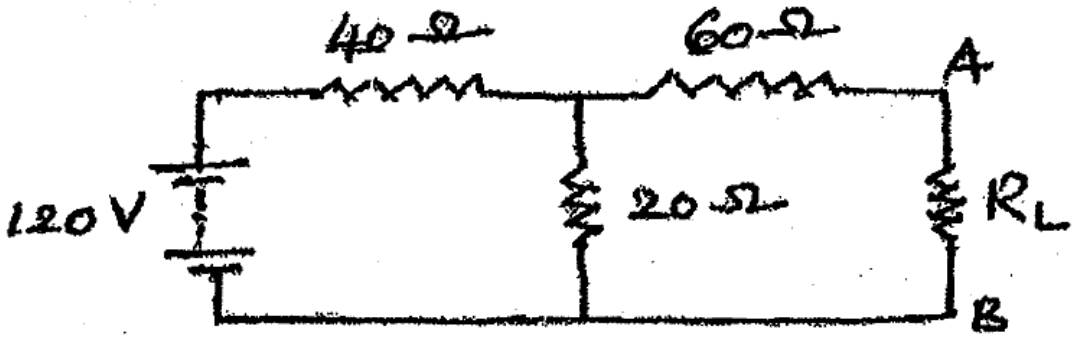
Section-C

III. Answer any **Four** Questions **(4× 10= 40)**

23) a) State Maximum power transfer theorem. **(1+5+4)**

b) Derive the condition for transfer of maximum power from a source to a load

c) Calculate the value of load resistance R_L to which maximum power may be transferred from the circuit show in fig(1). Also find the maximum power



24) a) What is transistor? Draw and explain the characteristic of NPN-transistor in CB and CE mode.

b) For the circuit of a Zener diode the input voltage Ei=120v, series resistance $Rs = 5K\Omega$, zener voltage $Vz = 50V$ and load resistance $R_L = 10k\Omega$. Find the current flowing thought zener diode **(7+3)**

25) a) What is an operational amplifier? Explain how an operational amplifier can be used as an Inverting amplifier

b) Explain the construction and working of a Wein bridge Oscillator

c) The frequency of a Wein bridge oscillator is 4 KHz. the value of the capacitor in the bridge network is 300pf. Find the value of the resistor. **(4+4+2)**

26) a) What is demodulation? What are essentials is demodulation?

b) A carrier wave of 500 watts is subjected to 100% amplitude modulation. Determine

i) Power in sidebands and

ii) Power of modulated wave

c) How is a NAND-gate formed? Explain **(3+3+4)**

27) a) Explain the physical properties of stars

b) What is recombination? Explain

28) a) Describe the palpatory method to measure diastolic and systolic blood pressure

b) Write a note on Radiation measurement. **(5+5)**
