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Time : 1½ Hours**ELECTRONICS****(Pre-vocational)****Subject Code**

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Total No. of Questions : 4**(Printed Pages : 4)****Maximum Marks : 40**

INSTRUCTIONS : (i) All the questions are compulsory.

(ii) Figures to the right indicate full marks.

(iii) Draw a neat labelled diagram wherever necessary.

(iv) Answer each question on a fresh page.

1. (A) Answer the following in *one* word : 2

(i) Name the device that smooths out the AC variations in the output of the rectified voltage in power supply.

(ii) Which device in a PA system converts electric wave into sound wave ?

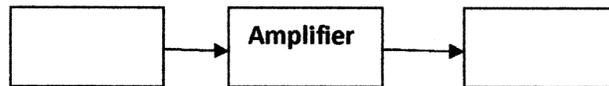
(B) Answer the following in brief : 6

(i) What is a rectifier ? Explain the working of a centre tap full wave rectifier.

(ii) Name different types of full wave rectifier. What is the advantage of using 4 diode rectifier instead of 2 diode rectifier ? Draw the input and out waveform of a half wave rectifier.

(C) Answer the following in short : 2

- (i) Complete the block diagram given below with the names of the three main components of a PA system.



2. (A) Answer the following in *one* sentence : 2

- (i) What is mutually induced EMF ?
- (ii) Name the type of losses occurs in the transformer due to alternating magnetic fields.

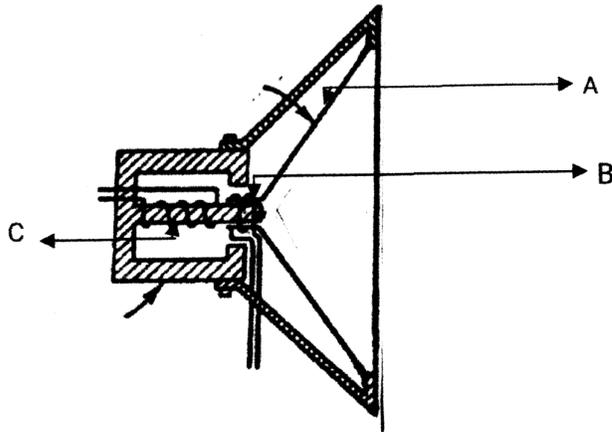
(B) Answer the following in brief : 6

- (i) Why transformers requires very little care and maintenance ?
Give *one* point of difference between core type and shell type transformer.
- (ii) Mr. Jumani repairs old loudspeakers. He wanted to repair the loudspeaker shown in the diagram below. After careful examination he found that part A and part B marked in the diagram below needs replacement.

Answer the following with respect to the above statement :

- (a) Identify and name the loudspeaker.
- (b) Name the parts A and B of the speaker.

(c) What is the function of part C in the diagram ?



(C) Answer the following in short : 2

(i) Explain in brief the working of a capacitor speaker.

3. (A) Answer the following in *one* or *two* words or sentences : 2

(i) Define Frequency (F)

(ii) Give *one* disadvantage of Ribbon microphone.

(B) Answer the following in short : 4

(i) A sound wave of frequency 300 Hz, moves at the velocity of 330m/s. Calculate its time period and wavelength.

(ii) What is a tuning circuit ? Name *two* type of tuning circuits.

(C) Answer any *one* of the following in detail : 4

(i) Draw a circuit symbol of crystal microphone. Explain with a neat labelled diagram the working of a crystal microphone.

(ii) Draw a circuit symbol of Carbon microphone. Explain with a neat labelled diagram the construction of a dynamic microphone.

4. (A) Answer the following in *one* sentence : 2
- (i) State Kirchhoff current law.
 - (ii) Name the *two* elements of semiconductor.
- (B) Answer the following in brief : 4
- (i) Two resistors of 8Ω each are connected in parallel. Draw a suitable circuit diagram to show the connection. Calculate the effective resistance of the circuit.
 - (ii) Draw the symbols to differentiate NPN and PNP transistors.
What is the atomic number of germanium and silicon ?
- (C) Answer any *one* of the following in detail : 4
- (i) Give *one* example of a trivalent and pentavalent elements used for doping semiconductor material. Explain how N-type semiconductor material is obtained.
 - (ii) What is the important characteristic of a diode ? With the help of a neat diagram explain the working of a transistor.