

One Year Diploma, Mobil Communication Examination 2014
Model Answer

Subject:- Telecom Basic and Fundamental

Paper Code:- 410101

Sets (I) / (II)

Group 'A'

Q.1. (i) - (c)

(ii) - (c)

(iii) - (b)

(iv) - (c)

(v) - (d)

(vi) - (d)

(vii) - (d)

(viii) - (a)

(ix) - (b)

(x) - (d)

a - 3

b - 3

c - 2

d - 3

e - 4

f - 4

g - 4

h - 1

i - 2

j - 4

One Year Diploma, Mobil Communication Examination 2014
Model Answer

Subject:- Telecom Basic and Fundamental

Paper Code:- 410101

Sets (I) / (II)

Group-'A'

Ans. 2.

(i) Mobile communication is based on radio wave and has utilized technologies like cell phones, radars, Wi-Fi internet etc. It is transmitted using transceivers that receive and transmit the signals. This is achieved by means of radio antenna. These antenna need to be placed at a level much higher than the ground. To achieve this height for the antenna, it is mounted on a structure that is as high called an antenna towers or telecom tower.

(ii) A surge arrester or surge diverter is a protective device which conducts the high voltage surges on the power system and communication system to the ground. It consists of a spark gap in series with a non-linear resistor. One end of the diverter is connected to the terminal of the equipment to be protected and the other end is effectively grounded.

There are following types of surge arrester:

- (a) Rod gap type (b) Horn gap type (c) Multi-gap type and (d) Valve type.

One Year Diploma, Mobil Communication Examination 2014
Model Answer

Subject:- Telecom Basic and Fundamental

Paper Code:- 410101

Sets (I) / (II)

ANS. (2)

(ii) The Components for microwave systems are
(a) Digital Modem (b) Radio frequency (RF) unit
(c) Antennas and (d) Wave guides.

Generally the range of Microwave spectrum is approximately 1GHz to 40GHz.

The digital modem modulates the information signal in intermediate frequency range (IF). That intermediate frequency is fed to the Radio frequency (RF) unit which is mounted as close physically to the antennas as possible. Then wave guides who are hollow channels of low-loss material used to direct the signal from the RF unit to the antennas.

ANS. (3)

(i) DG set is basically a diesel operated engine having an alternator is mounted on its shaft. It converts mechanical energy into electrical energy based on the principle of the production of dynamically induced emf. Whenever conductors cuts the magnetic flux, dynamically induced emf is produced in the conductors according to the Faraday's Law of electromagnetic Induction. This induced emf causes a current to flow if the conductor circuit is closed. Hence two essential parts of an electrical generator are (a) Magnetic field and (b) No. of conductors which can ~~be~~ move as to cut the flux.

Subject:- Telecom Basic and Fundamental

Paper Code:- 410101

Sets (I) / (II)

ANS (3)

(ii) By using some special methods for a conducting wire coming from the ground 2.5 to 3 metres deep from an electrodes or plate is called earthing. Good earthing which gives very low resistance to the flow of heavy current of a circuit. There are mainly two types of earthing (a) Neutral earthing, and (b) Body earthing.

Most of the apparatus made by metal and they are good conductor of electricity. If any kind of leakage current flowing through the body of the apparatus, it creates many hazards to human life. Hence to save human life from danger or shock or death by any apparatus which becomes leaky.

(iii) The full form of SMPS is 'Switched-mode Power Supply'. It is an electronic power supply that incorporates a switching regulator to convert electrical power efficiently. Like other power supplies, an SMPS transfers power from a source, like main power, to a load, such as a personal computer, while converting voltage and current characteristics. Unlike a linear power supply, the pass transistor of a switching mode supply continually switches between low dissipation, full-on and full-off states, and spends very little time in the high dissipation transitions. Ideally a SMPS dissipates no power.

Subject:- Telecom Basic and Fundamental

Paper Code:- 410101

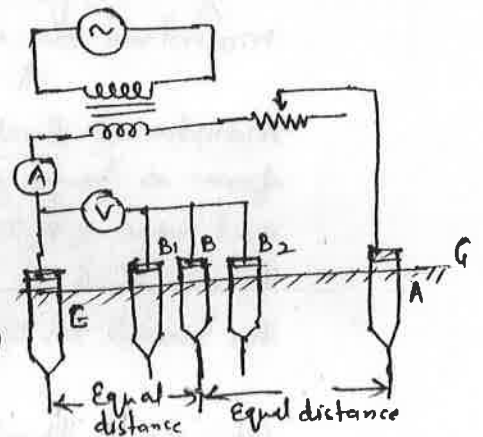
Sets (I) / (II)

Group - 'B'

ANS: (4)

(i) The determination of earth resistance between the earthing plate and the surrounding ground in distribution systems is of utmost important. This measurement is made by the potential fall method or by a earth tester which is a special type of meggar.

The resistance area of an earth electrode is the area of soil around the electrode within which a voltage gradient measured with commercial instruments exists. As per fig. E is the earth electrode under test, and A is an auxiliary earth electrode positioned so that two resistance areas do not overlap. B is a second auxiliary electrode placed half way between E and A. An A.C. current of steady value is passed through the earth path from E to A and the voltage drop between E and B is measured.



Then earth resistance, $R_e = \frac{\text{Voltage drop between E and B}}{\text{Current through earth path}}$

$$R_e = \frac{V}{I}$$

Subject:- Telecom Basic and Fundamental

Paper Code:- 410101

Sets (I) / (II)

ANS. (4) (iii)

(a) The Cell :- The coverage area of one transmitter/receiver base station is commonly known as a cell. In reality cells are not uniform and the diameter of a cell can vary from 0.5 km to 70 km. Sites can be at the intersection of three cells or at the centre of a cell. In urban environments, the cells tend to be very small, and the radio frequencies are reused more often. The antennas associated with small cells are generally mounted on low support structure. Larger cells are generally used in rural areas where coverage rather than capacity is the critical requirement.

(b) Antenna :- Antennae are the portion of the transceivers that interact with the space around them and communicate signals. Hence essential to the base stations are the antennae. Typically for a GSM system nine such antennae are required per station. They are arranged in three groups of three, on the sides of an equilateral triangle, each group giving 120° coverage. In order to cater for both GSM and analogue users a fourth antenna is required on each array. Generally antennae are 2000mm to 1200mm in length x 300mm in width x 170mm in depth. In urban areas these antennae can generally be mounted on buildings but in rural areas, a supporting master tower is needed.

