

Paper - I

JUDICIAL SERVICE GRADE-III, EXAMINATION, 2011
ENGLISH

Marks- 100 marks

Time - 3 hours

Q. No. 1:- The atmosphere is a mixture of several gases. There are about ten chemical elements which remain permanently in gaseous form in the atmosphere under all natural conditions. Of these permanent gases, oxygen makes up about 21 percent and nitrogen about 78 percent. Several other gases, such as argon, carbon dioxide, hydrogen, neon, krypton and xenon, comprise the remaining 1 percent of the volume of dry air. The amount of water vapor, and its variations in amount and distribution, are of extraordinary importance in weather changes. Atmospheric gases hold in suspension great quantities of dust, pollen, smoke, and other impurities which are always present in considerable, but variable amounts.

7 marks

(5) The atmosphere has no definite upper limits but gradually thins until it becomes imperceptible. Until recently it was assumed that the air above the first few miles gradually grew thinner and colder at a constant rate. It was also assumed that upper air had little influence on weather changes. Recent studies of the upper atmosphere, currently being conducted by earth satellites and missile probings, have shown these assumptions to be incorrect. The atmosphere has three well-defined strata.

(10) The layer of the air next to the earth, which extends upward for about 10 miles, is known as the troposphere. On the whole, it makes up about 75 percent of all the weight of the atmosphere. It is the warmest part of the atmosphere because most of the solar radiation is absorbed by the earth's surface, which warms the air immediately surrounding it. As steady decrease of temperature with increasing elevation is a most striking characteristic. The upper layer are colder because of their greater distance from the earth's surface and rapid radiation of heat into space. The temperatures within the troposphere decrease about 35 degrees per 1000-foot increase in altitude. Within the troposphere, winds and air currents distribute heat and moisture. Strong winds, called jet streams, are located at the upper levels of the atmosphere. These jet streams are both complex and widespread in occurrence. They normally show a wave shaped pattern and move from west to east at velocities of 150 mph, but velocities as high as 400 mph have been noted. The influences of changing locations and strengths of jet streams upon weather conditions and patterns are no doubt considerable. Current intensive research may eventually reveal their true significance.

(15) Above the troposphere to a height of about 50 miles is a zone called the stratosphere. The stratosphere is separated from the troposphere by a zone of uniform temperatures called the tropopause. Within the lower portions of the stratosphere is a layer of ozone gases which filters out most of the ultraviolet rays from the sun. The ozone layer varies with air pressure. If this zone were not there, the full blast of the sun's ultraviolet light would burn or skins, blind our eyes, and eventually result in our destruction. Within the stratosphere, the temperature and atmospheric composition are relatively uniform.

(20) The layer upward of about 50 miles is the most fascinating but the least known of these three strata. It is called the ionosphere because it consists of electrically charged particles called ions, thrown from the sun. The northern lights (aurora borealis) originate within this highly charged portion of the atmosphere. Its effect upon weather conditions, if any, is as yet unknown.

1. Which of the following titles best summarizes the content of the passage?

- (A) New Methods for Calculating the Composition of the Atmosphere.
- (B) New Evidence Concerning the Stratification of the Atmosphere.
- (C) The Atmosphere: Its Nature and Importance to Our Weather
- (D) The Underlying Causes of Atmospheric Turbulence

