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(Department of Education)

INTERMEDIATE CERTIFICATE EXAMINATION, 1959.

SCIENCE (Syllabus E).

TUESDAY, 9th JUNE.—Evening, 3 to 5.30.

[Not more than *six* questions to be attempted. Illustrate your answers wherever possible.]

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1. Define density.

Describe fully how any *two* of the following may be measured :—
(a) the density of a stone, (b) the density of a liquid, (c) the density of the air.

[66 marks.]

2. Describe fully how it may be shown by experiment that the density of water is at its maximum at 4°C.

[66 marks.]

3. Give an account of an aneroid barometer and explain how it works.

Describe and explain how the reading shown by a barometer at sea-level would change if the barometer were brought (i) to the top of a high mountain, (ii) down a mine.

Mention two advantages the aneroid barometer has over the mercury barometer.

[66 marks.]

4. State the relative sizes of the earth, the sun and the moon and also the approximate distances (i) between the earth and the sun, (ii) between the earth and the moon.

Give an account of the motions of the earth and of the moon.

Explain, with the aid of diagrams, how the following occur :—
(i) the tides, (ii) eclipses of the sun and moon.

[66 marks.]

5. Describe the conditions under which each of the following occurs :—(a) dew, (b) hoar-frost, (c) hail, (d) rain, (e) thunder and lightning, (f) snow.

[66 marks.]

6. Describe how an alcohol thermometer may be constructed.

Discuss the advantages and the limitations of an alcohol thermometer.

What reading on a centigrade scale corresponds to a temperature of (a) 50°F., (b) 23°F. ?

What reading on a Fahrenheit scale corresponds to a temperature of (i) 25°C., (ii) —15°C. ?

[66 marks.]

7. With reference to light, what is meant by (*a*) reflection, (*b*) refraction ?

Describe three examples from every-day life to illustrate the refraction of light and in each case explain how the refraction occurs.

[67 marks.]

8. With reference to sound, how may it be shown (i) that a medium is necessary for its transmission, (ii) that it travels at about 1,100 feet per second in air, (iii) that it can be reflected ?

Discuss the factors which influence the velocity of sound in air.

[67 marks.]

9. What is meant by (i) magnet, (ii) magnetic pole, (iii) magnetic meridian, (iv) electromagnet ?

Describe how the nature of the resultant field surrounding a bar-magnet may be investigated.

Grief a brief account of the mariner's compass.

[67 marks.]

10. Give a short description of each of the following :—(*a*) voltaic cell, (*b*) electrode, (*c*) electrolyte, (*d*) fuse, (*e*) conductor, (*f*) insulator.

Describe an experiment to find out what happens when an electric current (i) is passed through acidulated water, (ii) is passed through a solution of copper sulphate using copper electrodes.

[67 marks.]