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JPSC

6th JPSC Combined State Civil Services Main Examination 2018-19

Completely revised Study Materials

General Science, Environment & Technology Developments

PAPER - VI

Prepared by
Develop India Group

Why should read "Develop India Group" Study Material?

डेवेलप इंडिया ग्रुप अध्ययन सामग्री को क्यों पढ़ना चाहिए?

1. Develop India Group (DIG) is India's largest complete study materials provider website. डेवेलप इंडिया ग्रुप (DIG) भारत की सबसे बड़ी अध्ययन सामग्री प्रदाता वेबसाइट है।

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3. Develop India Group (DIG) study materials have been prepared strictly according to revised syllabus. डेवेलप इंडिया ग्रुप (DIG) अध्ययन सामग्री पूर्णतया संशोधित पाठ्यक्रम के अनुसार तैयार की गई है।

4. Only aim behind preparing these study materials is to provide study material to those students, who are unable to attend coaching classes in mega cities. इन अध्ययन सामग्रियों को तैयार करने का उद्देश्य केवल उन छात्रों को अध्ययन सामग्री प्रदान करना है, जो महानगरों में कोचिंग क्लासेस में भाग लेने में असमर्थ हैं।

5. All kind of facts & data in this material have been collected from authentic sources. इस सामग्री में सभी प्रकार के तथ्यों और डेटा को प्रामाणिक स्रोतों से एकत्र किया गया है।

6. All kind of data is updated in quarterly in our study notes. हमारी अध्ययन सामग्रियों में सभी प्रकार के आंकड़ों को तिमाही में अपडेट किया जाता है।

7. Develop India Group (DIG) study materials have been prepared in simple language so that student can memorize easily and better understand. डेवेलप इंडिया ग्रुप (DIG) अध्ययन सामग्री सरल भाषा में तैयार की गई है ताकि छात्र आसानी से और बेहतर ढंग से समझ सके।

8. Complete syllabus of preliminary and main exam has been covered in this study material. प्रारंभिक और मुख्य परीक्षा का पूरा पाठ्यक्रम इस अध्ययन सामग्री में शामिल किया गया है।

9. All important and relevant points have been highlighted in bold, underline and italic ways. बोल्ड, रेखांकन और इटैलिक तरीके से सभी महत्वपूर्ण और प्रासंगिक बिंदुओं को हाइलाइट किया गया है।

10. We have prepared our study materials with trained, talented, experienced team for each subject. They are supported by subject experts. हमने प्रत्येक विषय के लिए प्रशिक्षित, प्रतिभाशाली, अनुभवी टीम के साथ और विषय विशेषज्ञों के मार्गदर्शन में अध्ययन सामग्री तैयार की है।

11. Once you will read these study materials, you will surely find 70 to 80 % questions in next coming examination. एक बार जब आप ये अध्ययन सामग्री पढ़ लेंगे, तो आपको निश्चित रूप से आने वाली परीक्षा में 70 से 80: प्रश्न मिलेंगें।

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GENERAL SCIENCE, ENVIRONMENT & TECHNOLOGY DEVEIOPMENT

Total Marks : 200 and Time : 3 hours

The question paper of General Science, Environment, Technology Developmentshall have six sections. Section — l, shall have 20 objective type of questions, each of 2 marks (20 x 2 = 40 marks). Questions for this section c will be drawn at the rate of four questions from each ofthe five Groups of the syllabus. Sections il, Ill, IV, V and VI of the question paper shall have two optional questions each, drawn respectively from Groups A, B, C, D and E of the syllabus; of which candidates will be required to answer only one question from each group, each question carrying 32 marks. Optional questions shall be answered in the traditional manner, requiring descriptive answers, not exceeding 500 to 600 words. Thus, altogether candidates will be required to answer one objective type compulsory question (40 marks) and five descriptive type optional questions (5 x 32 = 160 marks).

Group (A) - Physical Science

(I) System of Units : MKS, CGS and SI

Scientists have adopted the metric system to simplify their calculations and promote communication across national boundaries. However, there have been two ideas as to which metric units should be preferred in science. Scientists working in laboratories, dealing with small quantities and distances, preferred to measure distance in centimeters and mass in grams. Scientists and engineers working in larger contexts preferred larger units: meters for distance and kilograms for mass. Everyone agreed that units of other quantities such as force, pressure, work, power, and so on should be related in a simple way to the basic units, but which basic units should be used?

The result was two clusterings of metric units in science and engineering. One cluster, based on the centimeter, the gram, and the second, is called the ***CGS system***. The other, based on the meter, kilogram, and second, is called the ***MKS system***.

When we say, for example, that the dyne is the CGS unit of force, this determines its definition: it is the force which accelerates a mass of one gram at the rate of one centimeter per second per second. The MKS unit of force, the newton, is the force which accelerates a mass of one kilogram at the rate of one meter per second per second. The ratio between a CGS unit and the corresponding MKS unit is usually a power of 10. A newton accelerates a mass 1000 times greater than a dyne does, and it does so at a rate 100 times greater, so there are 100 000 = 105 dynes in a newton.

The ***CGS system*** was introduced formally by the British Association for the Advancement of Science in 1874. It found almost immediate favor with working scientists, and it was the system most commonly used in scientific work for many years. Meanwhile, the further development of the metric system was based on meter and kilogram standards created and distributed in 1889 by the International Bureau of Weights and Measures (BIPM).

During the 20th century, metric units based on the meter and kilogram—the MKS units—were used more and more in commercial transactions, engineering, and other practical areas. By 1950 there was some discomfort among users of metric units, because the need to translate between CGS and MKS units went against the metric ideal of a universal measuring system. In other words, a choice needed to be made.

In 1954, the Tenth General Conference on Weights and Measures (CGPM) adopted the meter, kilogram, second, ampere, degree Kelvin, and candela as the basic units for all international weights and measures,