Региональный этап Всероссийской олимпиады профессионального мастерства обучающихся по специальности среднего профессионального образования **09.02.03 «Программирование в компьютерных системах», 20 марта 2020г.**

Задание I Теоретическое

«ПЕРЕВОД ПРОФЕССИОНАЛЬНОГО ТЕКСТА»

Время, отводимое на выполнение задания – 45 минут+15 минут на пересылку файла
Максимальное количество баллов – 10 баллов.
Задача 1. Выполните перевод предложенного текста
Задача 2. Ответьте на поставленные вопросы
Задача 3. Оформить перевод текста и ответы на вопросы в текстовом редакторе Word. Результат сохранить в файле Olymp1_xxxx.doc, xxxx – фамилия участника

Требования к оформлению документа:

- Шрифт – TimesNewRoman, размершрифта – 14 кегль;
- Выравнивание текста по ширине;
- Соблюдение абзацев текста, отступ – 1,5 см.;
- Межстрочный интервал – 1 пт.;

Поля документа: верхнее – 1,5см.; нижнее – 2,0 см.; левое – 2,5 см.; правое – 1,5 см.

Readthefollowingtext. Translate it into Russian, answer questions.

Researchers develop new chip-making technique

Scientists have developed a proof-of-concept approach for extending current chip-making techniques so that manufacturers can produce semiconductors with smaller feature sizes without spending millions of dollars to radically retool their fabrication plants to accommodate different techniques.

Aaron J. Hand, managing editor of *Semiconductor International* magazine, said the technique's success would thus depend on how costly it turns out to be and whether IBM and JSR can make it work as more than just a proof-of-concept approach.

Immersion lithography typically uses water, which has a 1.43 refracting index. The refracting index measures how much a light wave slows when passing through a liquid or lens. Light passing through a high-index material has a shorter wavelength, which lithography can tightly focus, thereby yielding finer feature sizes. Thus, the argon-fluoride laser, which has a 193-nm wavelength, can generate small feature patterns by passing through a lens and a liquid before reaching the photoresist. Using different liquids and lens materials could increase the overall refractive index, which would enable smaller feature sizes using today's lithography techniques, explained Mark Slezak, technical manager of JSR Micro's lithography group.

IBM and JSR Micro, which supplies custom materials for the semiconductor- and electronic-device-fabrication industries, developed the new technique. It uses advanced lenses and new materials to create chips with feature sizes of 29.9 nanometers and, eventually, even smaller. Current microprocessors generally have 90-nm feature sizes. Smaller feature sizes would let manufacturers pack more transistors onto chips, thereby increasing their power without making them larger.

For the new approach, JSR supplied an organic liquid, which they declined to identify, that has a 1.64 refractive index. In addition, IBM used higher-density quartz lenses with a refractive index of 1.67, up from current lenses' 1.56. "This shows that several more generations of immersion lithography are possible," said Bob Allen, manager of lithography materials for IBM's Almaden Research Center.

The new approach would extend the current techniques of using argon-fluoride lasers, as well as deep ultraviolet and high-index X immersion lithographies, to produce circuitry patterns on the photoresist that sits on the silicon.

Региональный этап Всероссийской олимпиады профессионального мастерства обучающихся по специальности среднего профессионального образования **09.02.03 «Программирование в компьютерных системах», 20 марта 2020г.**

1. What can the argon-fluoride laser generate before reaching the photoresist?
2. How could materials increase the overall refractive index?
3. What did JSR and IBM use for the new approach?