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|  | | | | **FACULTY OF CHEMICAL AND METALLURGICAL ENGINEERING**  **DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING**  **HOMEWORK ANSWER SHEET** | | | | | | | | | | | | | | | | | | |  | | | |
| Course Code & Name | | | | Automotive Materials | | | | | | | | | | | | | | | | | | | Student’s Signature | | | |
| Student Name & Surname | | | |  | | | | | | | | | | | Number | | |  | | | | |
| Term | | | | 2021-2022  Fall Spring Summer | | | | | | | | | | | Duration | | |  | | | | | Total Score: | | | |
| Instructor | | | | Prof. Dr. Mustafa Çiğdem | | | | | | | | | | | Group# | | |  | | | | |
| Last Date & Time | | | | 23/12/2021, 24/12/2021 | | | | | | | | 1st Midterm  2nd Midterm  Final Exam  Make-up Exam | | | | | | | | | | | | | | |
| *Homework Evaluation* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Quest. | 1 | 2 | 3 | | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | 11 | 12 | | 13 | 14 | | 15 | 16 | 17 | 18 | | 19 | 20 |
| Points | 60 | 40 |  | |  |  |  |  |  |  |  | |  |  | |  |  | |  |  |  |  | |  |  |
| PON | 12.3 |  |  | |  |  |  |  |  |  |  | |  |  | |  |  | |  |  |  |  | |  |  |
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**1.** Intensive studies have been carried out since the early 2000s for the production of compact graphite cast iron for engine blocks used in heavy vehicles with diesel engines. Write the aims of these studies and the advantages of compact graphite cast iron over gray cast iron, nodular cast iron and aluminum casting alloys. (60 p)

1)……………………………………………………………………………………………………………………………………………………………………………………………………………………….2)……………………………………………………………………………………………………………………………………………………………………………………………………………………….3)……………………………………………………………………………………………………………………………………………………………………………………………………………………….4)……………………………………………………………………………………………………………………………………………………………………………………………………………………….5)……………………………………………………………………………………………………………………………………………………………………………………………………………………….6)……………………………………………………………………………………………………………………………………………………………………………………………………………………….7)………………………………………………………………………………………………………………………………………………………………………………………………………………………

**2.** Write down the reasons for adding silicon to aluminum casting alloys used in the production of engine parts such as cylinder blocks and pistons. (40 p)

1)……………………………………………………………………………………………………………………………………………………………………………………………………………………….2)……………………………………………………………………………………………………………………………………………………………………………………………………………………….3)……………………………………………………………………………………………………………………………………………………………………………………………………………………….4)…………………………………………………………………………………………………………..

**Aşağıda ödev soruları daha iyi anlayabilmeniz için Türkçe olarak sunulmuştur. Cevaplar İngilizce formata göre cevap için ayrılan bölümü aşmayacak şekilde İngilizce olarak verilecektir. Ödev çözümü 1 sayfa olacaktır. Cevaplar el yazısı ile yazılacaktır. Cevaplarda büyük benzerlik oluşması durumunda kopya muamelesi yapılabileceğinden soruları bireysel olarak cevaplandırınız. Yazınızın okunaklı olmasına lütfen dikkat ediniz Ödev 23 ve 24 Aralık 2021 tarihlerinde ders saati içinde imza atılarak sınıfta teslim edilecektir.**

**1.** Dizel motorlu ağır vasıtalarda 2000 li yıllardan başlayarak günümüze kadar motor bloğunun kompakt grafitli dökme demirden imalatına yönelik yoğun çalışmalar yürütülmüştür. Bu çalışmaların amaçlarını ve kompakt grafitli dökme demirin gri dökme demir, küresel grafitli dökme demir ve alüminyum döküm alaşımlarına göre üstünlüklerini maddeler halinde yazınız.(60 p)

1)…………………………………………………………………………………………………

2)…………………………………………………………………………………………………

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**2.** Silindir blok ve piston gibi motor parçaları üretiminde kullanılan alüminyum döküm alaşımlarına silisyum ilavesinin nedenlerini maddeler halinde yazınız.(40 p)

1)…………………………………………………………………………………………………

2)…………………………………………………………………………………………………

3)…………………………………………………………………………………………………

4)…………………………………………………………………………………………………

**B A Ş A R I L A R**