

**नेपाल नागरिक उड्डयन प्राधिकरण**  
प्राविधिक सेवा, मेकानिकल इन्जिनियरिङ्ग समूह, सातौं तह, बरिष्ठ अधिकृत पदको  
नमूना प्रश्नपत्र

पत्र : द्वितीय  
समय : ३ घण्टा

विषय : सेवा सम्बन्धी

पूर्णाङ्क १००

**Section 'A'**

1. What are the main attachments needed for working on a milling machine? 5
2. Explain briefly the "Otto Cycle" along with PV diagram. 5
3. a) Explain the types of fits with suitable examples. Distinguish between transition and interference fits. 3+2=5
- b) What are the causes of errors in measurements? Give example of systematic error and random error. 3+2=5
4. Describe the working and characteristics of centrifugal and reciprocating pumps. 10
5. State the Kelvin-Planck and clausius statements of the second law of thermodynamics. 10
6. List and briefly explain on available methods of heat-treatment of steel. 10

**Section 'B'**

7. What are the factors to be considered for plant location? Define production, planning and control. 2+3=5
8. State the importance of safety rules and regulations for operation and maintenance of mechanical equipment. 5
9. describe the major components of diesel engine and compare them with petrol engines. Explain the purpose of lubrication system and give names of some lubricants used in IC engine. 5+5=10
10. Explain about mobility and degree of freedom in mechanism State briefly the steps to be followed during the design process of machine components. 5+5=10
11. Discuss on waste water treatment process. 10
12. What are the factors affecting the choice of materials for design with respect to material properties, material cost and availability, processing and environment? Explain. 10

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