

BASICS OF MECHANICAL AND CIVIL ENGINEERING

Time : 2,30 Hours]

[Maximum Marks : 50

[Minimum Marks : 17

NOTES:

- Attempt all questions.
- Students are advised to specially check the Numerical Data of question paper in both versions. If there is any difference in Hindi Translation of any question, the students should answer the question according to the English version.
- Use of Pager and Mobile Phone by the students is not allowed.

Q1) Attempt any two parts :

[2 × 5 = 10]

- Compare rolling bearing with non-rolling bearing with few examples.
- What is Robert's law? Explain in short.
- List out various types of combustion fuel. Explain the good qualities of any two fuels.

Q2) Attempt any two parts :

[2 × 5 = 10]

- List out various types of Gear. Explain Helical Gear in detail.
- What is Viscosity? Explain how will you estimate the viscosity of highly loaded journal bearing.
- Explain the synthesis of Gear Ram.

Q3) Attempt any two parts :

[2 × 5 = 10]

- What is Foundation? Mention the requirements of good foundations.
- Briefly describe the various types of termites which causes maximum damage to buildings.
- How cracks are developed in the buildings. Discuss its remedial measures.

Q4) Attempt any two of the following :

[2 × 5 = 10]

- Discuss Water - Cement ratio. What is the effect of Water-Cement ratio on the strength of cement concrete.
- Explain Lintel & Arches. How Arches are classified? Discuss Brick lintels.
- What is R.C.C.? What are the advantages of R.C.C.

Q5) Write short notes on any five of the following :

[5 × 2 = 10]

- Various sources of energy
- Gears
- Non-Newtonian fluids
- Pile foundation
- Rubble masonry
- Various test on cement

नोट : सभी प्रश्नों के उत्तर दीजिए ।

प्र.1) किन्हीं दो भागों के उत्तर लिखें :

[2 × 5 = 10]

- कुछ उदाहरण देकर रोलिंग चियरिंग और नान-रोलिंग चियरिंग की तुलना कीजिये ।
- रोबर्ट नियम को संक्षिप्त में समझाइये ।
- कम्बरचन फ्यूज की विविध प्रकार लिखिये । किन्हीं दो तरह के फ्यूज की अच्छी विशेषताये लिखें ।

प्र.2) किन्हीं दो भागों का उत्तर लिखें :

[2 × 5 = 10]

- तरह-तरह के Gear को लिखिये । हेलिकल Gear की detail में बताइये ।
- Viscosity क्या है । highly loaded journal bearing की Viscosity कैसे निकालोगे ।
- Gear Ram की synthesis को Explain करें ।

प्र.3) किन्हीं दो भागों के उत्तर लिखें :

[2 × 5 = 10]

- Foundation क्या होती है । अच्छी foundations के क्या-क्या requirements हैं?
- तरह-तरह के termites को समझाइये जो मकानों में अधिकतम (damage) करते हैं ।
- Buildings में cracks कैसे develop होते हैं । इसे खत्म करने के उपाय लिखिये ।

प्र.4) किन्हीं दो का उत्तर दीजिये :

[2 × 5 = 10]

- Water - Cement ratio क्या है? cement concrete की ताकत पर इसका क्या प्रभाव पड़ता है?
- Lintel और Arche को Explain कीजिये । Arches कैसे वर्गीकृत होती हैं? Brick lintels को explain करें ।
- R.C.C. क्या है? इसके advantages बताइये ।

प्र.5) किन्हीं पाँच पर short notes लिखें :

[5 × 2 = 10]

- ऊर्जा के अलग-अलग sources (स्रोत)
- Gears
- Non-Newtonian fluids
- Pile foundation
- Rubble masonry
- Cement पर Various test