

Roll No.

Total Pages : 2

BT-6/M-21

46204

DESIGN OF MACHINE ELEMENTS

Paper-MEC-304A

Time : Three Hours]

[Maximum Marks : 75

- Note :** (i) There are eight questions in this paper. Each question carries 15 marks.
- (ii) Attempt *five* questions in all by selecting at least *one* question from each section.

SECTION-A

1. (a) Describe in brief BIS system of designation of steels. (7)
- (b) Define factor of safety and stress concentration factor. Also explain modes of failure. (8)
2. Write short notes on :
- (a) Low cycle and High cycle fatigue.
- (b) Notch sensitivity.
- (c) Soderberg and Goodman lines. (3×5=15)

SECTION-B

3. (a) What are eccentrically loaded bolted joints? Explain riveted joints for boiler shell according to IBR. (5)
- (b) Describe in brief welds under eccentric loading. (5)
- (c) Write a note on surge in springs. (5)

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4. (a) Write a technical note on strengths of welds under axial load. (8)
(b) Discuss in brief spring design trial and error method. Also explain design of leaf springs. (7)

SECTION-C

5. (a) Describe in brief ASME code for shaft design. (5)
(b) Explain design of square and flat keys. (5)
(c) Write short notes on cone and centrifugal clutches. (5)
6. (a) Explain thermal considerations in clutches. (5)
(b) Discuss energy equations in brakes. (5)
(c) Explain in detail block brake with short and long shoe. (5)

SECTION-D

7. (a) Explain static and dynamic load carrying capacity. (8)
(b) Describe in brief load life relationship. Also explain equivalent bearing load. (7)
8. Write short notes on :
(a) Design of cycle loads and speeds.
(b) Selection of bearings from manufacturer's catalogue.
(c) Raimondi and Boyd method with regards to sliding contact bearing.