STATE BOARD OF TECHNICAL EDUCATION AND TRAINING
TELANGANA
DIPLOMA EXAMINATION (C-18)
C18-JAN-2022
SEMESTER V , SEMESTER END EXAM

18M-502C
DESIGN OF MACHINE ELEMENTS

PCODE 6595

Duration: 2 Hours | [Total Marks: 40]

PART-A

Instructions: 1. Answer the following questions. 8 X 1 = 8
2. Each question carries **ONE** mark.

1. Where are hollow shafts used?
2. List out the belt materials commonly used in belt drive?
3. Write the equation for Sommerfeld number.
4. Define Durability.
5. What is the range of *l/d* ratio is customary to adopt?
6. What is the purpose of lubrication in bearings?
7. Write the types of Followers.
8. Define stroke of the follower.

PART-B

Instructions: 1. Answer the following questions. 4 X 3 = 12
2. Each question carries **THREE** marks.

9(a). List the factors for selection of materials in product design?

---- OR ----

9(b). Classify the sliding contact bearings.

10(a). Write the standard proportions of Rectangular Key and Square Key?

----- OR ----

10(b). Define the terms related to cam: a)Out stroke b)Return Stroke c)Dwell d)Off-set

11(a). A journal bearing whose diameter is 200 mm is subjected to a load of 50 kN, and the shaft makes 100 rpm. Find the heat generated if coefficient of friction is 0.02.

----- OR ----

11(b). What are the standard proportions adopted for simple journal bearing?

12(a). What are the parameters required for the construction of Cam profile ?

----- OR ----

12(b). Classify the followers based on the shape of the surface in contact with the cam.

PART-C

Instructions: 1. Answer the following questions. 4 X 5 = 20
2. Each question carries **FIVE** marks.

13(a). In a steam engine the maximum pressure is 1 N/mm² absolute and the back pressure is 0.015 N/mm² absolute. The cylinder diamter is 300 mm. Determine the diameter of the screwed end of the piston rod when the allowable stress is 45 N/mm² in tension.

---- OR ----

13(b). Explain the constuction and working of Bushed bearing with neat sketch.

14(a). What shear stress is induced in a square key of 12 mm side and 75 mm long, placed in a 50 mm diameter shaft, if 15 KW power is transmitted at 200 RPM.

---- OR ----

14(b). Discuss about the following terms

i.Pressure angle ii.Cam angle iii.lift or stroke iv.Pitch circle v.Prime circle.

15(a). A 150 mm diameter shaft supporting a load of 10 kn has a speed of 1500