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Roll No.....

4th Sem. Branch : Mech./Prod./T&D/Mechatronic
Subject : Machine Drawing & Design

Time : 3 Hrs. **M.M. : 100**

SECTION-A

Note : Multiple choice questions. (Attempt any ten questions) (10x2=20)

Q.1 Adaptive Design

Q.2 Necessity of machine design

Q.3 Stress & its SI unit

Q.4 Module of rigidity.

Q.5 Stress concentration

Q.6 Types of shafts

Q.7 Equipment twisting moment.

Q.8 Saddle Key

Q.9 Material of key

Q.10 Cotter

Q.11 Type of coupling

Q.12 Modules of gear

SECTION-B

Note : Short answer type questions. Attempt any two questions (2x10=20)

Q.13 What are the methods of reducing stress concentration.

Q.14 Define Principle or normal strain theory.

Q.15 Design a shaft when subjected to bending moment only.

SECTION-C

Note : Long answer type questions. Attempt any two questions (2x30=60)

Q.16 A solid circular shaft is subjected to a bending moment of 3025 Nm and torque of 10500 Nm. The shaft is made of 46C8 steel having ultimate tensile stress of 750 MPa and ultimate shear stress of 550 MPa. Assuming a factor of safety as 5.5. Determine the diameter of the shaft.

Q.17 A cam with minimum radius of 40mm, rotating clockwise at uniform speed is required to give a knife edge follower, the motion as described below-

i) To move outwards through 50 mm during 120^0 rotation of the cam.

ii) To dwell for the next 60^0.

iii) To return to its starting position during next 90^0

iv) To dwell for the rest period of a revolution.

Draw the profile or the cam. The displacement of the follower is to take place with uniform acceleration and deceleration.

Q.18 Draw the profile of involute teeth for a gear having 24 teeth and module 08 mm. Take pressure angle as 20^0 . Use base circle method.

b)