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Roll No.

181756/171756

5th Sem. / Mechanical Engineering

Subject : Machine Design

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Multiple choice Questions. All questions are compulsory (10x1=10)

(Course Outcome/CO)

- Q.1 Stress produced in the member due to falling load is (CO-1)
- a) Impact load b) Fatigue stress
c) Fatigue limit d) Endurance limit
- Q.2 Shock resistance of steel is increased by adding. (CO-2)
- a) Nickel b) Chromium
c) Nickel and Chromium
d) Sulphur, lead and phosphorus
- Q.3 The planes on which the maximum shear stress act are called (CO-4)
- a) Maximum shear plane
b) Principal plane
c) Normal plane
d) Major principal plane
- Q.4 One of the following which one is better method of making a shaft (CO-5)
- a) Cold rolling b) Hot rolling
c) Cold drawing d) Machine turning.

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- Q.5 Shafts are made of (CO-5)
- a) Cast iron b) Wrought iron
c) Mild steel d) High speed steel
- Q.6 Shear failure is more conducive at (CO-6)
- a) Slow rate of loading
b) high rate of loading
c) high shear stress
d) low shear stress
- Q.7 The sleeve or muff coupling is designed as. (CO-6)
- a) Thin cylinder b) Thick cylinder
c) Solid shaft d) Hollow shaft.
- Q.8 The rivet head used for boiler plate riveting is usually (CO-6)
- a) Snap head b) Pan head
c) conical head d) Counter sunk head.
- Q.9 Riveted joints mostly fail by (CO-6)
- a) Crushing of rivets b) Bending of plates
c) Tearing of plates
d) Shearing of rivets
- Q.10 The distance between the two adjacent crests is called (CO-6)
- a) Lead b) Root
c) Pitch d) Crest

SECTION-B

Note: Objective type questions. All questions are compulsory. 10x1=10

- Q.11 Hook's law holds good up to _____ limit. (CO-1)
- Q.12 The ratio of ultimate stress to design stress is known as _____ (CO-1)

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- Q.13 The property of a material to be drawn into wires is called _____ (CO-2)
- Q.14 The maximum shear stress theory is used for _____ materials. (CO-4)
- Q.15 What is shaft? (CO-5)
- Q.16 Shafts are made of mild steel and _____. (CO-5)
- Q.17 The type of stresses developed in the keys are _____. (CO-6)
- Q.18 What is a flange coupling? (CO-6)
- Q.19 A rivet is described by _____. (CO-6)
- Q.20 A lap joint is always in _____ shear (single/double). (CO-6)

SECTION-C

- Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. 12x5=60
- Q.21 Explain in detail the general considerations in machine design. (CO-1)
- Q.22 Define twisting load and modulus of rigidity. (CO-2)
- Q.23 Define ductility and malleability. (CO-3)
- Q.24 State the theory of failure applied for brittle materials. (CO-4)
- Q.25 What is maximum stress theory? (CO-4)
- Q.26 Classify and explain different types of shafts. (CO-5)
- Q.27 What is the difference between a shaft and an axle? (CO-5)
- Q.28 What are the desirable properties of shaft material? (CO-5)

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- Q.29 What are the advantages and disadvantages of a key joint? (CO-6)
- Q.30 Discuss the function of coupling. (CO-6)
- Q.31 Explain the purpose and types of coupling. (CO-6)
- Q.32 Give the various advantages to riveted joint over welded joint. (CO-6)
- Q.33 What are advantages of welded joints over riveted joint. (CO-6)
- Q.34 Explain how a welded joint differs from a riveted joint. (CO-6)
- Q.35 Write screw thread nomenclature with diagram. (CO-6)

SECTION-D

- Note:** Long answer type questions. Attempt any two out of three questions. 2x10=20
- Q.36 Briefly, explain the following terms. (CO-1)
- a) Stiffness b) Endurance limit
c) Ductility d) Malleability
e) Static load
- Q.37 A solid shaft is transmitting 1 MW at 240 r.p.m. Determine the diameter of the shaft if the maximum torque transmitted exceeds the mean torque by 20%. Take the maximum allowed shear stress 60 N/mm². (CO-5)
- Q.38 Explain the procedure for designing a butt joint. (CO-6)
- Note:** Course Outcome (CO) mentioned in the question paper is for official purpose only.

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