Q.28 What are the different criteria for material selection for a particular application?

Q.29 What are standard sizes of the shafts available?

Q.30 What are various factors which affect the factor of safety?

Q.31 Explain endurance limit.

Q.32 Classify gears.

Q.33 What are the characteristics of a good designer?

Q.34 Explain different types of designs.

Q.35 What are different classification of loads?

Section-D

Note: Long answer questions. Attempt any two questions out of three Questions. (2x10=20)

Q.36 A shaft running of 200 r.p.m transmit 8 kw. Assuming allowable shear stress in shaft as 30 Mpa, find the diameter of the shaft.

Q.37 Design a draw a screw jack, which is used to lift a load of 100 KN, through a height of 500mm. The elastic strength of material of screw in tension and compression is 210N/mm^2 and in shear is 120 N/m^2 . The elastic strength of material of nut is 110N/m^2 is tension 100 N/mm^2 in compression and 90N/mm^2 in shear. The bearing pressure between nut and screw does not exceed 18N/mm^2.

Q.38 Explain and draw the profile of cam (base circle 30mm dia) with roller follower (10 mm dia) for ascent and descent of 90 degree with SHM and dwell for rest 180 degree.

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Roll No. .....

4th Sem.

Branch: Mech, Prod T & D, Mecatonics, (5th Sem.) CAD/CAM/CNC Metallurgy, Adv. Manuf. Tech., Mech Engg. (Fabrication Tech) Mech. Engg. (CAD/CAM Dsgn. & Robotics)

Sub : Machine Design & Drawing

Time : 3 Hrs. M.M. : 100

SECTION-A

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

Q.1 The phenomenon of decreased resistance of the materials to fluctuating stresses is the main characteristic of _____ failure

a) Fracture b) Fatigue

c) Yielding d) None of the mentioned

Q.2 Efficiency of the screw_____ with increase of coefficient of friction

a) Decreases b) Increases

c) Has no effect d) Cannot be determined

Q.3 Which cam is also known as radial cam?

a) Disc Cam b) Cylindrical cam

c) Face cam d) Snail drop cam

Q.4 Shear failure is more conductive at

a) Slow rate of loading b) High rate of loading

c) High shear stress d) Low shear stress

Q.5 The planes on which the maximum normal stress act are called

a) Maximum shear plane

b) Principal plane

c) Normal plane

d) Major principal plane

Q.6 Crank shaft is made by

a) Forging b) Carting

c) Pressing d) Drawing

Q.7 Two shafts will have equal strength if

a) Twisting moment of both the shafts is same

b) Diameter of both the shafts is same

c) Angle of twist of bath the shafts is same

d) Material of both the shafts is same

Q.8 The maximum shear stress developed in a beam of rectangular section to _____ the average shear stress

a) Equal to b) 4/3 times

c) 1.5 times d) None of these

Q.9 Which of the following is not true about gears?

a) Positive drive b) Constant velocity ratio

c) Transmit large power d) Bulky construction

Q.10 Which of the following does not form the important part of the screw jack?

a) Frame b) Nut

c) Cup d) Coupling

Section-B

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

Q.11 Define circular pitch of gears.

Q.12 What is the need for design?

Q.13 Give the function of follower.

Q.14 Name the stresses developed in keys.

Q.15 The term opposite to elasticity is called_____ .

Q.16 The maximum shear stress theory is used for _____ type of materials.

Q.17 Define undersigned work.

Q.18 Expand BIS.

Q.19 Define toughness.

Q.20 Define load, types of load and their effects.

Section-C

Note: Short answer type Questions. Attempt any twelve questions out of fifteen Questions. (12x5=60)

Q.21 Explain the effect of keyways on strength of shaft.

Q.22 What is design failure under maximum strain energy theory?

Q.23 Draw four involute teeth of a gear 30 teeth of 10 mm module and 25 degree pressure angle.

Q.24 Differentiate between shaft and axle.

Q25 Explain the crushing failure of key, with related calculations.

Q.26 Differentiate between radial and cylindrical cam.

Q.27 Draw the conventional representation of gears.