teeth on Gear B; (ii) the pitch circle diameter of the two gears. (CO5)

Q.31 Describe the major stresses in leaf spring. (CO5)

Q.32 Define the various connecting rod dimensions. (Co1)

Q.33 Classify the springs. (CO4)

Q.34 Write the importance and scope of preferred numbers in machine design. (CO6)

Q.35 Describe the modes of failure of rear axle. (CO2)

SECTION-D

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

Q.36 Explain the selection criteria for various engineering materials for design of automotive components.

Q.37 Design a cast iron Piston for single acting four stroke engine for the following specifications:-
Cylinder bore = 100 mm. stroke=110 mm, maximum gas pressure = 10 N/mm^2, brake mean effective pressure = 0.75 N/mm^2,fuel consumption = 0.2 to 8 kg/kW/hr; speed = 3000 RPM (CO2, 3,4, 5)

Q.38 Explain the complete procedure of design of multiplate clutch. (CO2, 3,4, 5, 6)

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6th Sem / Branch : Automobile Engineering
Sub.: Design of Automotive components

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 The ratio of stress to strain within elastic limit is (CO1)
a) Modulus of rigidity b) Modulus of elasticity
c) Bulk modulus d) Poisson's Ratio

Q.2 Use of multiple notches in a V shaped flat plate will (CO1)
a) Reduce the stress concentration
b) Increase the stress concentration
c) No effect
d) Cannot be determined

Q.3 Maximum normal stress theory is used for (CO2)
a) Plastic material b) Ductile material
c) Brittle material d) Non ferrous material

Q.4 Which of the following is non-ferrous material? (CO4)
a) Cast Iron b) High speed steel
c) Brass d) Stainless steel

Q.5 Working stress should be less than _____ (CO3)
a) Yield stress b) Maximum stress
c) Ultimate stress d) All of these

Q.6 How many classes of levers are there? (CO4)

a) 2 b) 4

c) 3 d) 5

Q.7 Which type of failure may take place in a knuckle joint? (CO5)

a) Tensile b) Crushing

c) Shear d) All of these

Q.8 Which of the following is subjected to bending load? (CO5)

a) Clutch plate b) Flywheel

c) Gear d) Axle

Q.9 Universal joint is used to connect two shafts (CO5)

a) Whose axes coincide

b) Whose axes intersect

c) Which lie in small plane

d) Which are parallel but in different plane

Q.10 If the spring is compressed completely and the adjacent coils touch each other, the length of spring is called as ? (CO5)

a) Solid length b) Free length

c) Compressed length d) None of the above

SECTION-B

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

Q.11 Write the unit of modulus of elasticity. (CO1)

Q.12 Name any one mode of failure. (CO2)

Q.13 Universal coupling is also named as _____ (CO3)

Q.14 Bell crank lever arms are subjected to bending moment. (True/False) (CO1)

Q.15 Name any one material used for piston ring. (CO4)

Q.16 Define spring index. (CO5)

Q.17 Gudgeon pin connects the piston and the _____. (CO1)

Q.18 Connecting rod is usually made of _____(Name the material) (CO4)

Q.19 The coefficient of friction in internally expanding brakes is constant. (True/False) (CO5)

Q.20 Write the pressure angle in spur gear. (CO5)

SECTION-C

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

Q.21 Write any five important factors considered for design. (CO5)

Q.22 Classify design of machine elements. (CO1)

Q.23 Explain stress-strain curve for ductile materials. (Co5)

Q.24 Explain fatigue stress and endurance limit. (CO1)

Q.25 Define factor of safety. How it is decided? (CO5)

Q.26 Write the advantages of couplings. (CO2)

Q.27 Give various reasons for failure of knuckle joint. (CO2)

Q.28 Define the terminology associated with engine cylinder. (CO5)

Q.29 Explain the theorise of failures used for design of single clutch plate. (CO2, 5)

Q.30 A gear drive consists of two gears, A and B and has a velocity ratio of 1.50 Gear A has 28 teeth. If the gears have a module of 2 mm, determine: (i) number of