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Roll No.

120331/031731

**3rd Sem. / Auto, Mech, Prod MT, GE, CNC,
Plastic, CAD/CAM**

Subject : Strength of Materials

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any
15 parts. (15x2=30)

- Q.1
- Define load.
 - What is the unit of load in S.I. system.
 - The ratio of lateral strain to longitudinal strain is called _____. (Fill in the blank)
 - Define modulus of elasticity.
 - State what is the ratio between hoop stress and longitudinal stress induced due to internal fluid pressure in thin cylindrical cylinders.
 - Enlist different modes of loading.
 - Define modulus of resilience.
 - Write the unit in S.I. system for measuring
 - Strain energy
 - Modulus of resilience
 - Write an equation to find out maximum stress induced (f) when a load P is applied

suddenly.

- j) Write the relation to find out the moment of inertia of a circular section of radius 'R'.
- k) Define section modulus.
- l) Enlist various types of beams used in engineering practice.
- m) What will be value of bending moment at a point where shearing force is zero.
- n) The maximum bending stress takes place at _____ fibre in a beam. (Fill blank)
- o) Define Neutral axis.
- p) How are columns classified? Give only names.
- q) Define slenderness ratio.
- r) Columns having slenderness ratio more than 120 are classified as _____ columns.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- i) Define modulus of elasticity and write the units in which it is measured in S.I system.
 - ii) Name the shells which have wall thickness less than $\frac{1}{20}$ of its diameter.
 - iii) Define factor of safety.
 - iv) Write expressions for 2nd moment of area

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about axis passing through C.G and parallel to the base for a) Rectangle b) Triangle.

- v) A hollow shaft is of 80 mm external diameter and 30 mm internal diameter. Find its section modulus.
- vi) What will be shape of the shearing force diagram if a cantilever beam is loaded with
 - a) U.d.I. through out its length.
 - b) Point load at the free end.
- vii) Define point of contra flexure.
- viii) A pull of 10 tonnes is suddenly applied to a rod of 10 cm^2 cross-section. Find the maximum stress induced in tonnes / cm^2 .
- ix) Write an expression to find maximum stress 'f' when falling load 'P' is applied with impact from a height h.
- x) What is the difference between torque and torsion.
- xi) Define
 - a) Spring index
 - b) Solid length of a spring
- xii) Explain the advantages of laminated spring over helical spring.
- xiii) Differentiate between column and strut.
- xiv) Determine the slenderness ratio for a steel column of solid circular section of 40mm

diameter and 1.32 m long.

- xv) A rectangular beam of 250 mm depth and 150 mm width is subjected to maximum bending moment of 750 KNm. Find the maximum stress in the beam.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Draw stress-strain curve for mild steel specimen subjected to tensile force and mention salient features.
- Q.4 A tensile load of 50 KN is applied gradually on a bar 250 mm, long 40 mm wide and 25 mm thick Calculate the resilience. Take $E = 200 \text{ KN/mm}^2$
- Q.5 Find the M.O.I. of T-section 60x60x20 mm about its centroidal axis.
- Q.6 A beam 6m long is supported on two points 4m apart overhang 1m on each side end and carries a U.d.l of 3 KN/m throughout its length. Draw S.F. and B.M. diagram and determine point of contraflexure of any.
- Q.7 Calculate the safe working load for a steel circular strut of 6m length having 80 mm diameter which is hinged at both ends. Take factor of safety 4 and $E = 2.1 \times 10^5 \text{ N/mm}^2$.

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3rd Sem. / Mech. Engg.

Subject : Machine Drawing

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1
- a) Tolerance
 - b) Zero line
 - c) Fit
 - d) Deviation
 - e) Allowance
 - f) Tolerance Grade
 - g) What is a shaft basis system?
 - h) Name different types of pipe joints.
 - i) Function of fast and loose pulley.
 - j) Define bearing.
 - k) Define shaft.

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- l) Write two example of transition fit.
- m) Maximum material limit.
- n) Give reasons why the bushes are made of soft material.
- o) Material of connected rod is _____.
- p) Write of advantage of union joint.
- q) Function of a jig.
- r) Name the components of universal coupling.

SECTION-B

Note: Short answer type questions. Attempt any two parts 15x2=30

- Q.2
- i) Sketch free hand any two view of foot step bearing. Front view is compulsory.
 - ii) Sketch free hand any two view of flanged pipe joint protected type. front view is compulsory.
 - iii) Make free hand sketch of universal coupling assuming suitable dimensions.

SECTION-C

Note: Attempt any one questions.

1x40=40

Q.3 Figure no. 1 shows the detail of a connecting rod of an I.C engine. Assemble the parts and draw the following views. Also give the bill of material.

- a) Front view full in section
- b) Left side view.

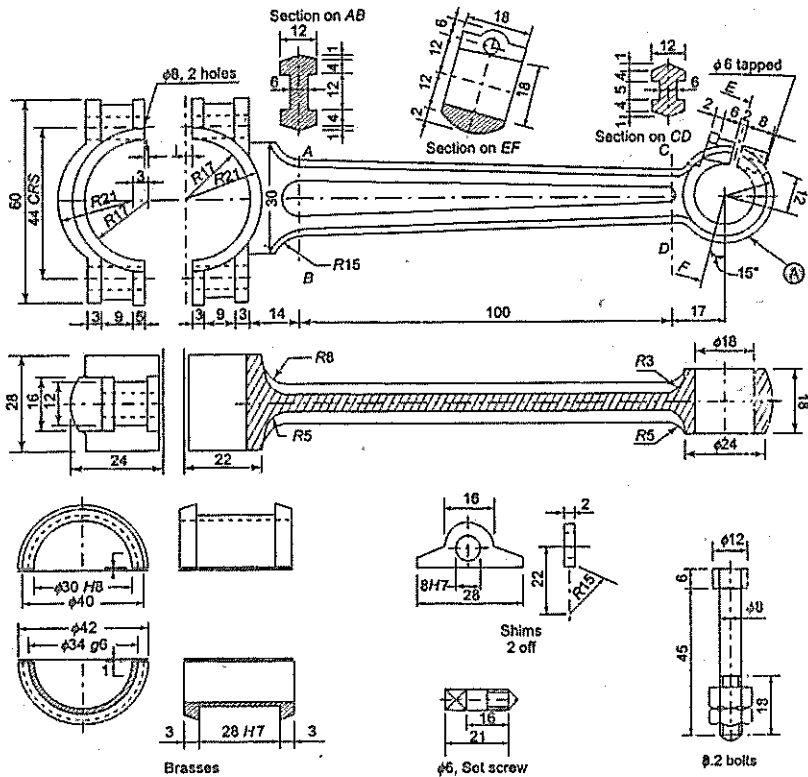


Figure No. 1 Details of Connecting Rod

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Q.4 Figure No. 2 shows the detail of parts of drilling jig. Assemble the parts and draw the following view. Also gives the bill of material.

- Front view full in section.
- Top view.

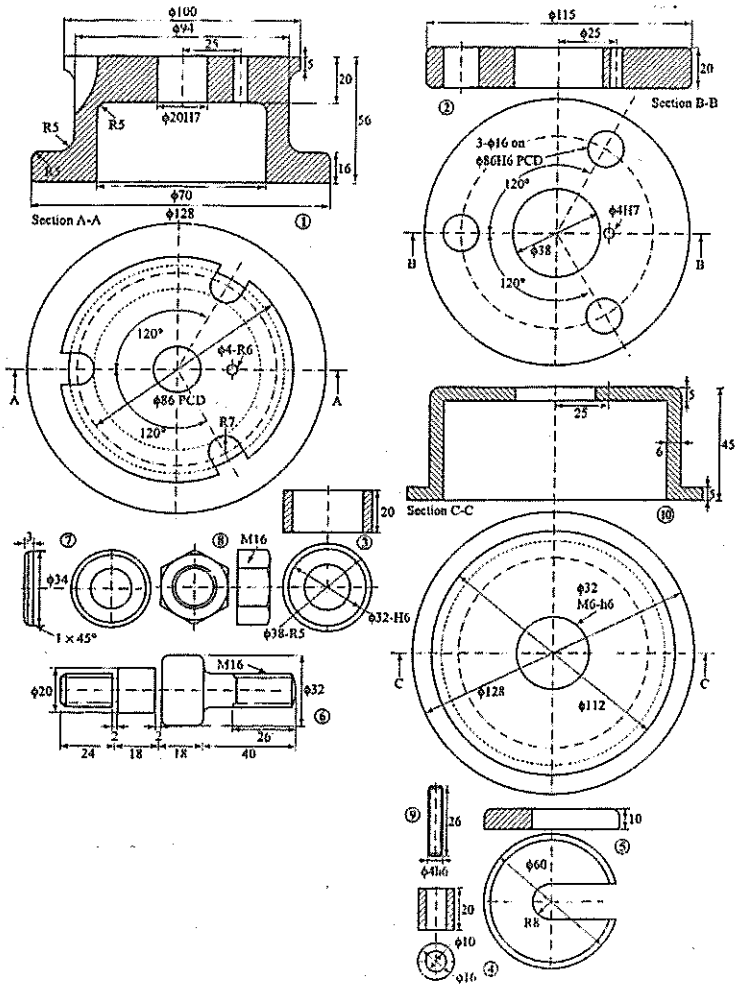


Figure No. 2 Details of Drilling Jig

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Roll No.

121741/031741

4th Sem. / Mech. Engg.

Subject : Hydraulic and Hydraulic Machines.

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Very Short Answer type questions. Attempt any
15 parts. (15x2=30)

Q.1 Explain/define the following :

- a) Specific gravity
- b) Ideal fluid
- c) Write the value of atmospheric pressure in terms of height of Hg column.
- d) Discharge with units.
- e) Laminar and turbulent flow
- f) Wetted perimeter
- g) Hydraulic gradient
- h) Write Darcy's formula.
- i) Co-efficient of velocity.

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- j) Write relation between C_v , C_d and C_c
- k) Specific speed of turbine
- l) Cavitation
- m) NPSH
- n) Define Vena Contracta
- o) Write function of hydraulic accumulator
- p) Pascal's law
- q) Classify the turbine on the basis of head
- r) Name the pump used for high discharge and continuous flow.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- i) Explain Newton's law of viscosity.
 - ii) A certain mass of a liquid has a volume of 5m^3 and weight of 39240 N. Find the specific weight and specific gravity.
 - iii) State and prove equation of continuity.

- iv) Write the assumptions that are taken for Bernoulli's equation.
- v) What are main types of head losses in pipes? Also name the methods to calculate these loss.
- vi) Differentiate between impact and reaction turbine.
- vii) Differentiate between centrifugal and reciprocating pump.
- viii) A circular orifice of diameter 100 mm is discharging water from a tank. If water level in the tank is 2.5 m above the center of orifice, find the discharge through orifice $C_d=0.97$.
- ix) Explain the function of surge tank.
- x) Water flows at $0.05\text{m}^3/\text{s}$ in a pipe of diameter 200 mm and 400m long. Find the loss of heat due to friction. Take $f=0.0075$.
- xi) Drive the relation between C^c , C^v and C^d
- xii) Explain briefly hydraulic press.
- xiii) What is priming? Why it is necessary.

- xiv) What is Reynold's number? Also give its significance.
- xv) Briefly explain the working of Bourdon tube pressure gauge.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Derive expression for discharge through a horizontal Venturi meter
- Q.4 Explain construction and working of centrifugal pump.
- Q.5 Explain construction and working of Pelton wheel turbine with neat sketch.
- Q.6 Explain working of hydraulic ram with neat sketch.
- Q.7 Write the short note on any two:
- i) Unit power
 - ii) Kaplan Turbine
 - iii) Pitot Tube.

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Roll No.

120342/30342

**4th Sem. / Auto, Mech, Prod, T&D,
CAD/CAM, GE, CNC Metallurgy**

Subject : Material and Metallurgy

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1
- a) What is an alloy?
 - b) Define hardness and state how its measured.
 - c) Define ultimate stress.
 - d) Define atomic packing factor and give its value for body centred cubic structure.
 - e) How are deformation classified.
 - f) Define fatigue.
 - g) Name any two metal each which have B.C.C structure and F.C.C structure.
 - h) Give the carbon percentage in the following iron ores
 - (i) magnetite
 - (ii) Hematite

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- i) Name the furnace in which pig iron is extracted from iron ores.
- j) Name the processes in which steel is produced from pig iron.
- k) _____ iron is virtually pure iron.. (Fill the blanks)
- l) State any two main properties of white C.I.
- m) Name some of the refractory materials.
- n) Name the heat treatment process which involves heating of steel in contact with carbon rich substances for a prolonged period.
- o) Which are the different methods of plastic coating.
- p) Name the materials used for heat insulation.
- q) Classify bearing materials.
- r) What is cementite?

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2 i) What are the social issues in material usage?

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- ii) What is the difference between metal and non-metals.
- iii) Write the names of any four alloys.
- iv) Explain the effect of grain size on the properties of materials.
- v) Give the arrangement of atoms in body centred cubic structure unit cell.
- vi) What is atomic packing factor and give its value for simple cubic centre.
- vii) State the difference between fatigue and creep.
- viii) Write the properties and uses of white cast iron.
- ix) Write at least four applications of high carbon steel.
- x) State the composition of most familiar high speed steel.
- xi) Name any four commonly used commercial brasses.
- xii) Define the method of annealing. state its purpose.
- xiii) What should be the desired properties of bearing materials.

- xiv) Enlist various heat insulating materials.
- xv) Name various furnace used in heat treatment.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 How are plastics classified? Differentiate between thermoplastics and thermosetting plastics giving examples.
- Q.4 Explain the object (purpose) of heat treatment.
- Q.5 Give the comparison between elastic deformation and plastic deformation.
- Q.6 Explain the difference between
 - a) Elastic limit and proportional limit.
 - b) Yield point and ultimate stress.
- Q.7 Differentiate between grey cast iron and white cast iron.

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Roll No.

121743

4th Sem. / Mech

Subject : I.C.E.

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1
- a) Define two stroke cycle engine.
 - b) Define power stroke in case of four stroke petrol engine.
 - c) Define bottom dead centre and outer dead centre.
 - d) Define vaporization.
 - e) The air fuel ratio for chemically correct air fuel is _____.
 - f) Write the function of sedimentor.
 - g) Define crank throw.
 - h) The air is compressed _____ to _____ bar in air injection system.
 - i) Enlist the components of fuel injection

system.

- j) What is delay injector.
- k) What are the main requirements of the injector nozzle?
- l) Spark is required to ignite the combustible charge close to end of the _____ stroke in case of petrol engine.
- m) What is the purpose of ignition coil.
- n) Write the causes of rapidly burning of the breaker points.
- o) The temperature of the engine may be kept _____ to _____ °C for efficient working.
- p) Write the causes of poor coolant circulation in cooling system.
- q) Why testing of I.C engine is necessary?
- r) Write composition of CNG.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- i) Distinguish between internal and external combustion engine.
 - ii) Write short note on Gudgeon pin and valve.

- iii) Explain super charging.
- iv) Explain throttle body injection system briefly.
- v) Explain distributor type solid injection system
- vi) Write short note on atomizer.
- vii) Briefly explain pulse generator.
- viii) Write the causes and their remedial action for a) engine not start in wet weather b) low current in primary circuit.
- ix) Distinguish the magneto and battery ignition system.
- x) With neat sketch explain pressure feed lubrication system.
- xi) Explain evaporative cooling system with diagram.
- xii) Explain the properties of lubricant.
- xiii) Define relative and volumetric efficiency.
- xiv) Write short note on rope brake system.
- xv) Explain briefly the alternative fuel used for I.C engine.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Drive the expression for thermal efficiency by limited pressure cycle.
- Q.4 What is carburation? Explain the factors which affect it.
- Q.5 Explain in detail plunger type fuel injection system.
- Q.6 Explain with diagram battery ignition system.
- Q.7 A petrol engine uses .3kg of fuel per BHP hours of calorific value 10500 kcal per kg. The mechanical efficiency is 85% and compression ratio is 6.5. Calculate Brake, Indicated thermal, ideal air standard and relative efficiency.

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Roll No.

121744

4th Sem. / Mech. Engg

Subject : Workshop Technology - II

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any
15 parts. (15x2=30)

- Q.1
- a) Define a cutting tool.
 - b) Write the name of any four cutting tool materials.
 - c) What is capstan lathe used for?
 - d) What is the function of headstock in a lathe?
 - e) Define plain turning.
 - f) Define helix angle of drilling.
 - g) What is principle of drilling?
 - h) Name two types of boring tools?

- i) What are boring bars?
- j) What is universal shaper?
- k) Name principal parts of a planer.
- l) Define broach.
- m) Define pull end of broach.
- n) Define clamping device of a jig.
- o) What is fixture?
- p) Define cutting fluid.
- q) Define flash point of a lubricant.
- r) Name any two solid lubricant.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2 i) What are the side relief angle and end relief angle of a single point cutting tool? Show by diagram.

- ii) What are the main sources of heat during metal cutting?
- iii) How the motion transmitted from lathe spindle to lead screw or vice versa? Show the gear arrangement.
- iv) Write the safety precautions associated with the lathe.
- v) Write advantages and disadvantages of a twist drill.
- vi) Differentiate between drilling and boring.
- vii) Explain vertical boring machine with the help of neat sketch.
- viii) Explain principle of boring.
- ix) Explain the principle of a slotter.
- x) Differentiate between lathe machine and shaping machine.
- xi) Explain vertical broaching machine (push type) with the help of a neat sketch.
- xii) What is the difference between a jig and a fixture?

- xiii) Write a short note on locating devices.
- xiv) Explain various methods of lubrication of machine tools.
- xv) Write the function of cutting fluids.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Define lathe. What are its different types? Explain any two in detail.
- Q.4 Explain any five lathe operations with diagram.
- Q.5 Name different drill holding devices and explain any two.
- Q.6 What are clamping devices? Explain the principle of clamping in detail.
- Q.7 Explain various methods of applying cutting fluid to cutting tools.

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121745/31745

**4th Sem. / Mech. Engg / Prod. / G.E / CAD / CAM /
CNC / Metallurgy / Print Making / Tech. / AMT /
Mech. Engg (Fabrication Tech.)**

Subject : Machine Design and Drawing

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Very Short Answer type questions. Attempt any
10 parts. (10x2=20)

- Q.1
- a) What is necessity of a design?
 - b) Define volumetric strain.
 - c) What are dead loads?
 - d) What are principal stresses?
 - e) Define working stress.
 - f) Give the statement of normal strain theory.
 - g) What is the angle between the planes of maximum shear to principal planes?
 - h) Define equivalent twisting moment.

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- i) What are the materials used for high strength shafts?
- j) What is slope of a thread?
- k) Define truncation.
- l) Define screw thread.

SECTION-B

Note: Attempt any ONE question 1x30=30

Q.2 Maximum shear stress of 160 MN/m^2 is induced in a hollow shaft having 120 mm and 80 mm external and internal diameter respectively. What maximum shear stress will be developed in a solid shaft of the same weight, material and length subjected to the same torque?

Q.3 A cam, with a minimum radius of 40mm, rotating clockwise at a uniform speed is required to give a knife edge follower, the motions as described below:

- (i) To move outward through 50mm during 100° rotation of the cam.
- (ii) To dwell for the next 80°.
- (iii) To return to its starting position during next 90°.
- (iv) To dwell for the rest period of a revolution i.e. 90°.

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

SECTION-C

Note: Attempt any two question. (2x25=50)

- Q.4 (i) What are the main mechanical properties of materials? Explain in detail. (15)
- (ii) What is machine design? Explain the types, necessity and procedure of machine design. (10)

- Q.5 (i) What is the minimum length of key which is 30mm wide? When used with a gear which is 100mm in diameter and designed to operate at a torsional working stress of 100 MN/m². (15)
- (ii) What is saddle key ? Explain its different types. (10)
- Q.6 Draw the profile of involute teeth for a gear having 22 teeth and diametral pitch 0.1 tooth/mm. Assume pressure angle 20°. Use tracing paper method. Explain its method of construction also. (25)

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120151

5th Sem. / Common

Subject : Environmental Education

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1 a) Name any major constituent of air pollutants.
- b) For existence of aquatic life in water what should be the minimum dissolved oxygen content in terms of PPM.
- c) Write ambient noise level range in terms of decibels.
- d) Write the chemical formula of the most severe air pollutant.
- e) Name the air pollutant which causes asphyxiation leading to death.
- f) Name any two major causes for the green house effect.

- g) Name the technique or method used to dispose off radioactive solid and nuclear waste.
- h) Name the lowest layer of atmosphere.
- i) Expand the term "EIA".
- j) Name the most widely used coagulant used for the treatment of turbid water?
- k) Expand the term "TLV".
- l) Explain about deforestation.
- m) What do you mean by "CFC".
- n) Mention any four causes of pollution due mining.
- o) What do you mean by ozone layer?
- p) Expand the term "C.O.D".
- q) What are the lagoons?
- r) Define aerobic decomposition.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

Q.2 i) Discuss the bad effects of mining.

- ii) Mention any four harmful effects of nuclear pollution.
- iii) Describe the uses of wind energy.
- iv) What do you mean by "Artificial Eco System".
- v) Classify the pollutants. How do they cause the water pollution?
- vi) How do the recycling of waste material help in reducing or controlling the pollution?
- vii) Describe the environmental protection Act 1986.
- viii) Discuss about the urban waste.
- ix) Discuss the process of rain water harvesting.
- x) Mention any four points of ozone layer depletion.
- xi) Discuss the role of bio-energy in pollution control.
- xii) Explain about the modern waste management system.
- xiii) How the economy of the country gets affected by the global warming.
- xiv) What do you mean by maintenance of ground water?

- xv) Discuss the environmental legislation for water (Prevention and Control of Pollution) Act 1974.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 What do you mean by "State Pollution Control Board". Discuss the role and function of state pollution control board.
- Q.4 Write short notes on any two of the following:-
- i) Sustainable development
 - ii) Green house effect
 - iii) Bio diversity
- Q.5 What are the different current issues of environmental pollution? What are the main reasons? How they can be controlled.
- Q.6 What are the concepts of green buildings? How these are helpful in pollution control.
- Q.7 Write short notes on any two of the following:-
- a) Acid rain
 - b) Carbon credits
 - c) Environmental ethics

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5th Sem. / Mech. / Prod. / T&D / CAD / CAM / F&F

Subject : Workshop Technology - III

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any
15 parts. (15x2=30)

- Q.1
- a) Define milling.
 - b) Define conventional milling.
 - c) What is the use of T-slot milling cutter?
 - d) Define face milling.
 - e) Which natural abrasives are mainly used in grinding wheel?
 - f) What is dressing of grinding wheel?
 - g) Name some artificial abrasives used in grinding wheel.
 - h) Define grade in connection with grinding wheel.

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- i) Define bond in connection with grinding wheel?
- j) What is gear hobbing?
- k) What is principle of ultrasonic machining?
- l) What are main elements of electro-chemical machining plant?
- m) Give two applications of electric discharge machining.
- n) Define MRR in electric discharge machining.
- o) Define electroplating.
- p) What are types of hones?
- q) Define lap.
- r) Define waviness.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

Q.2 i) What is the principle of working of a milling machine? Explain.

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- ii) Give classification of milling machines based on different basis.
- iii) What is the difference between up milling and down milling?
- iv) What are the advantages of using cutting fluids in milling?
- v) Explain briefly form milling.
- vi) What are the main purposes for which grinding is used?
- vii) What are different types of grinding wheel.
- viii) Explain mounting of grinding wheel.
- ix) Explain the factors considered for the selection of grinding wheel.
- x) What are the main advantages and disadvantages of gear shaping process?
- xi) What are the main advantages and disadvantages of laser beam machining?
- xii) Explain the process of powder metal method of metal spraying with neat sketch.

- xiii) What are the main advantages of lapping process?
- xiv) Write the purposes and methods of polishing.
- xv) Write short note on buffing process.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Explain the main components and working of knee and column type milling machine in detail.
- Q.4 Explain in detail surface, cylindrical and centreless grinding.
- Q.5 Explain the principle and process of electro chemical grinding.
- Q.6 Explain in detail the process of machine honing and types of honing machines in detail.
- Q.7 What is super-finishing? Explain the process, purpose, characteristics and applications of super-finishing.

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Roll No.

121754/031751

5th Sem. / Mech / Mechatronics

Subject : Theory of machines

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1
- a) What is diametrical pitch in gears?
 - b) Define kinetics.
 - c) What is coefficient of energy?
 - d) What is Isochronism?
 - e) What is dedendum?
 - f) Define Sensitiveness.
 - g) Velocity ratio of belts.
 - h) Define kinematics.
 - i) What is a rigid body.
 - j) What is initial tension?

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- k) What is collar?
- l) What is law of belting?
- m) Give two properties of link.
- n) What is the value of Degree of freedom.
- o) Differentiate between turning and screw pair.
- p) What are Inversions?
- q) Define statics.
- r) What is a link?

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- i) Classify belts.
 - ii) Explain Ackerman's steering.
 - iii) Explain portell governor.
 - iv) What is second system of pulleys? What is their velocity ratio.
 - v) Draw a cycloid teeth of gear.

- vi) If a rotating mass $m=180\text{kg}$ at $r=100\text{mm}$, is to be balanced by two masses b_1, b_2 at radius of 200mm each separated by a distance of 0.5m on both side of the mass. Calculate b_1, b_2 .
- vii) What is fluctuation of speed of governor?
- viii) How will you select a rope based on load to be lifted?
- ix) What are inversions of a mechanism? Explain with example.
- x) What is hunting of governor? Is it desirable?
- xi) What is first system of pulleys? What is their velocity ratio.
- xii) Difference between open and crossed belt drive.
- xiii) Classify chain drives.
- xiv) Derive an expression for raising a load in screw jack.
- xv) Explain slider crank mechanism.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Classify vibrations and explain each type briefly.
- Q.4 Drive an expression for centrifugal tension in belt drives.
- Q.5 A toothed gear A is to drive another B. The centre distance between axes of rotation is exactly 400 mm. Speed of A is to be 500rpm and B=350rpm approximately. If each gear is of module 5, what would be the number of teeth on each gear. In that case what would be actual speed of gear B? Assuming gear teeth available are in multiples of 5 only.
- Q.6 Two pulleys of diameter 300mm and 600mm mounted on two parallel shafts 1.5m, apart are connected by cross belt 150m wide. If the safe tension is 13.8 N/mm width, determine the maximum power transmitted assuming speed of the belt as 500m/min and coefficient of friction as 0.25.
- Q.7 A cast iron flywheel is in the form of a disc 150 mm thick 1m dia taking the mass of a cubic meter of cast iron as 1200 kg, what is the kinetic energy of this wheel rotating at 210 rpm.

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6th Sem. / Auto. / Mech. Engg. / Auto / Prod. / T&D

Subject : Industrial Engg.

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1
- a) Define productivity?
 - b) Capital productivity is the ratio of total output to capital input. (true/false)
 - c) Government policy is _____ factor of productivity.
 - d) Work study is widely known as _____.
 - e) Define Method study.
 - f) Draw the symbol for inspection cum operation and permanent storage.
 - g) Draw the symbol of disassemble and hold.
 - h) Define Ergonomics.

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- i) Define work measurement.
- j) What is incentive?
- k) What is micro data?
- l) What is production planning?
- m) MOSS stands for _____.
- n) What is an event?
- o) Define loading.
- p) What is estimating?
- q) Define total cost.
- r) What is knurling?

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- i) How the productivity measured? Explain.
 - ii) Explain the causes of low productivity?
 - iii) How work study help in improving productivity?

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- iv) Explain the objectives and scope of work study?
- v) What is meant by diagram? Explain cycle graph?
- vi) Explain the procedure of method study?
- vii) What is a simo chart? Discuss?
- viii) Write few applications of Ergonomics?
- ix) Define standard data and its type in detail?
- x) Write short note on stop watch time study procedure?
- xi) The standard time allowed to complete the job is 7 hours. The hourly wage rate is Rs 32. The actual time taken to complete the job is 5 hours. Calculate the wages of worker?
- xii) What is Gantt chart? Explain order control chart?
- xiii) Differentiate PERT and CPM.
- xiv) Write the objectives and importance of costing?
- xv) Define overheads? Explain distribution and production overhead?

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SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Explain the principles of motion economy in detail?
- Q.4 Define work sampling? Explain its procedure, advantages and disadvantages?
- Q.5 Explain any one wage payment system in detail?
- Q.6 Write short note on:
- i) Routing.
 - ii) Follow up.
- Q.7 A product can be made either by hand or machine. In the former case, the time taken is 15 hours/100 products and overhead expenses are 110% of labour cost. The material cost/product is Rs 5 and rate of labour is 100 in each case. Compare the factory costs in each case.

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6th Sem. / Mechanical Engg.

Subject : Inspection and Quality Control

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1
- a) What are basic methods of taking measurements?
 - b) Define interchangeability.
 - c) What are end standards in measurement?
 - d) Name any three types of angular measurements.
 - e) Define error.
 - f) Define gauge.
 - g) What is use of talysurf?
 - h) What are geometric tests?
 - i) What is quality control?

- j) Name the different types of sampling plan.
- k) What are the three parameters of a single sampling plan?
- l) Define sample.
- m) What is full form of ISO?
- n) What is quality audit?
- o) What is quality assurance?
- p) What is transducer?
- q) What are the applications of strain gauges?
- r) What is the use of potentiometers?

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- i) What are the different standard for measurement? Explain.
 - ii) What are comparators? What are its different types?
 - iii) Enlist the various alignment tests conducted on a milling machine and on a lathe machine.

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- iv) What is interference? What are conditions for interference of light waves?
- v) Give the principle of pneumatic measuring instruments.
- vi) What are the different types of errors which can affect the result of measurement?
- vii) What is the procedure for drawing R charts?
- viii) What is S.Q.C? What are its benefits?
- ix) What are the main applications of control charts?
- x) Write a short note on binomial distribution?
- xi) What are the main characteristics of normal distribution?
- xii) Write a short note on quality control tools?
- xiii) What is LVDT? Explain in detail.
- xiv) Give the differences between bonded and unbounded gauges.
- xv) Write a short note on working of variable reluctance transducers.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 What are the different types of inspection? Explain the classification of inspection in detail.
- Q.4 What is micrometer? Give its type. Explain construction and working of any one of its types.
- Q.5 Write note on following:
- i) Combination set
 - ii) Sine bar
- Q.6 What are control charts? Give the classification, considerations, objectives and their applications.
- Q.7 What is TQM? How it is implemented? Explain TQM model and give the principles, benefit and list various techniques of TQM.

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6th Sem. / Mech. Engg.

Subject : Automobile Engineering

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Very Short Answer type questions. Attempt any
15 parts. (15x2=30)

- Q.1
- a) Define body of an automobile.
 - b) Name the components of fuel system of diesel engine.
 - c) Cam shaft.
 - d) Atomizer.
 - e) Tractive resistance.
 - f) Drive line.
 - g) Functions of rear axle.
 - h) Carcass.

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- i) Principle of power steering.
- j) Camber.
- k) Steering ratio.
- l) Wheel cylinder.
- m) Crank type brake adjuster.
- n) Brake shoe equalizing.
- o) Sprung weight.
- p) Brake dip.
- q) Regulator.
- r) Primary cell of battery.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- i) Explain briefly MPFI system with diagram.
 - ii) Write short note on DOHC engine.
 - iii) Explain construction and working of constant mesh gear box system.

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- iv) Explain in detail Torque converter.
- v) Explain with diagram tubed tyres.
- vi) What is Toe in and Toe out?
- vii) Write short note on worm and nut steering gear.
- viii) Explain components of air brake system.
- ix) Explain antilock brake system.
- x) Explain briefly semi elliptic leaf spring.
- xi) Write short note on air spring.
- xii) What are the functions of suspension system?
- xiii) Write the steps to maintain the battery.
- xiv) Explain magneto ignition system.
- xv) Write short note on Dynamo.

SECTION-C

Note: Long answer type questions. Attempt any three

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questions.

3x10=30

- Q.3 Explain construction, working and advantage of semi-centrifugal clutch with diagram.
- Q.4 What is steering system? Explain its components?
- Q.5 What is the principle of brake? Explain in detail vacuum brake?
- Q.6 Explain construction, working and functions of shock absorber.
- Q.7 Explain construction and working of lead acid battery.

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120264/030364

6th Sem. / Chem Engg. (Spl. paint tech)

Subject : EDM

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note:Very Short Answer type questions. Attempt any
15 parts. (15x2=30)

- Q.1
- a) What is project feasibility.
 - b) Patent rules?
 - c) Define motivation?
 - d) What is market survey?
 - e) Define planning?
 - f) What is an entrepreneurship?
 - g) Copyright?
 - h) Define job satisfaction?
 - i) Project.

- j) Industrial relations.
- k) Define income tax?
- l) What is PPR?
- m) Give two types of capital?
- n) Define incentive?
- o) What is personnel management?
- p) Excise duty?
- q) EOQ?
- r) Define IDBI.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

- Q.2
- i) "Management is what manages does" Discuss?
 - ii) What are the needs of inventory control?
 - iii) Write briefly the functions of marketing?
 - iv) Write the points to be considered during product selection?

- v) Write short note on state financial corporations?
- vi) Describe the need & competencies of an entrepreneur?
- vii) Describe Maslow's theory of Motivation?
- viii) Define leadership? What are the factors for effective leadership?
- ix) Explain functional organisation?
- x) How would you identify business opportunity?
- xi) Explain functions & importance of management?
- xii) What are the objectives of human resource management?
- xiii) What are the various modes of participation of workers in management?
- xiv) Write briefly the functions of marketing?
- xv) What are the main characteristics of small scale industry?

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Write & Explain the basic principles of financial management?
- Q.4 Enumerate the steps for starting a small scale industries?
- Q.5 Explain the meaning & various methods of recruitment in an organisation?
- Q.6 Explain the need, objectives & types of CRM?
- Q.7 Write a short note on
- (a) Manpower planning
 - (b) ABC analysis.