

Code: 9A03601

III B. Tech II Semester (R09) Supplementary Examinations, November/December 2012

INDUSTRIAL MANAGEMENT

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 What is the concept of universality of management? Explain the universal principles of management that affect the success of all organisations and managers.
- 2 Define organisation. Explain the importance of organisation in an industry.
- 3 Describe some of the computerised techniques used in designing a plant layout.
- 4 State and explain the principles of motion-economy.
- 5 Most of the businessmen view inventory as necessary evil. Do you agree with this? Explain.
- 6 (a) Define the terms EST, EFT, LST, and LFT.
(b) Draw the network diagram for a project which consists of following activities.

Activity	1-2	1-3	2-3	2-5	3-4	3-6	4-5	4-6	5-6	6-7
Duration(weeks)	15	15	3	5	8	12	1	14	3	14

Calculate EST, EFT, LST, and LFT.

- 7 Explain in detail the Taguchi technique of quality improvement.
- 8 Discuss basic functions of personnel management. How does human resource management differ from personnel management?

Code: 9A03602

B. Tech III Year II Semester (R09) Supplementary Examinations, November/December 2012

CAD/CAM

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) For CAD/CAM environment, explain the various stages in typical product cycle.
(b) What are the various input devices for CAD system?
- 2 (a) Explain about the raster scan display system.
(b) Discuss about geometric commands.
- 3 Explain various geometric modeling methods and their relative advantages and disadvantages.
- 4 Discuss various methods of part programming.
- 5 (a) What are the various methods of part classification and coding system used in group technology?
(b) Explain about production flow analysis.
- 6 What is the need for Flexible Manufacturing System (FMS)? Explain various components of FMS.
- 7 Explain about capacity planning and shop floor control.
- 8 (a) Explain various non contact inspection methods.
(b) Discuss about the integration of computer aided quality control system with CAD/CAM.

Code: 9A03603

R09

B. Tech III Year II Semester (R09) Supplementary Examinations, November/December 2012

METROLOGY

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 Name the systems of limits and fits recommended by different standardizing institutions. Explain the important features of any one system in detail.
- 2 What do you mean by line and end standards of length? Write down the characteristics of each of them.
- 3 Outline the scheme of measurement of straightness error of bed guide ways using autocollimator.
- 4 (a) How is surface texture related to tolerances on a surface dimension?
(b) How does surface finish differ from surface integrity?
- 5 (a) With a neat diagram, show clearly the essential principles or movements of the machine designed to measure the effective diameter of an external thread using two wire system.
(b) Indicate briefly the effect of the lead angle on a three wire measurement for an effective diameter of a screw thread.
- 6 (a) Name the different alignments tests to be performed on a drilling machine.
(b) Describe the method for determining the total deflection.
- 7 (a) Explain the valid reasons for inspecting the dimensional aspects of a spur gear.
(b) Name and define the various elements of a spur gear which are checked for the correct functioning of a gear.
- 8 (a) Explain different types of surface modification process with neat sketches.
(b) Explain the advantages of surface modification process.

Code: 9A03604

B. Tech III Year II Semester (R09) Supplementary Examinations, November/December 2012

REFRIGERATION & AIR CONDITIONING

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Derive an expression for C.O.P of air refrigeration system working on Bell-Coleman cycle.
(b) Explain the following:
(i) Cold plate cooling system.
(ii) Spray-cooling.
- 2 (a) What is meant by sub-cooling of liquid refrigerant? Discuss with the help of P-h diagram the effect of sub cooling on C.O.P. and work of compression when:
(i) A separate cooler is used. (ii) A vapour to liquid heat exchanger is used.
(b) Define the following terms:
(i) Refrigeration effect.
(ii) C.O.P.
- 3 (a) How are refrigerants designated? Can water be used as refrigerant.
(b) Discuss why refrigerants are so selected that the evaporator pressure and condenser pressures are greater than atmospheric pressure.
- 4 (a) Mention the desirable properties required for refrigerants to be used in vapour absorption refrigeration system.
(b) A vapour absorption system works with generator temp 360°K , absorber temp of 310°K and evaporator temp of 260°K . Obtain the C.O.P of the system. If the evaporator temp falls to 255 K , what should be the generator temperature in order to operate the system with the same C.O.P. What is energy requirement for the given capacity of the refrigeration system?
- 5 (a) What is the principle of a steam jet refrigeration system?
(b) Write short note on the systems of refrigeration.
- 6 (a) Define RSHF and Bypass factor.
(b) Differentiate between split A/C system and window A/C system.
- 7 (a) Discuss the effect of chilled water flow control on cooling coil performance with respect to room RH for a room with varying sensible heat gain and relatively constant latent heat gain.
(b) Compare the use of two position valve with the use of a modulating valve.
- 8 Draw a neat diagram of air-conditioning system required in winter season. Explain the working of different components in the circuit. Is it possible to use the steam for such air-conditioning system.

Code: 9A03605

B. Tech III Year II Semester (R09) Supplementary Examinations, November/December 2012

DESIGN OF MACHINE ELEMENTS - II

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) What is a bearing? Explain with neat sketch.
(b) On what factors the selection of bearing for a particular application depends. Explain the factors.
- 2 (a) Explain function and materials of an I.C engine piston.
(b) Discuss the design of piston for an internal combustion engine.
- 3 (a) What is the function of connecting rod of an I.C. engines? Explain.
(b) Enumerate the materials for the connecting rods. Explain.
- 4 A ring made of 2.5 cm diameter steel bar carries a pull of 10 KN. Calculate the maximum tensile and compressive stresses in the material of the ring. The mean radius of the ring is 15 cm.
- 5 Design a belt drive to transmit 110 kW for a system consisting of two pulleys of diameters 0.9 m and 1.2 m, centre distance of 3.6 m, a belt speed 20 m/s, coefficient of friction 0.3, a slip of 1.2% at each pulley and 5% friction loss at each shaft, 20% over load.
- 6 A compressor running at 250 r.p.m, is driven by a 25 kW, 870 r.p.m motor through a pair of $14\frac{1}{2}^0$ full depth gears. Estimate the module, the face width, the no. of teeth on each gear using Lewis equation.
- 7 (a) Classify springs according to their shapes. Draw neat sketches indicating in each case whether stresses are induced by bending or by torsion.
(b) Design a spring for a balance to measure 0 to 1000 N over a scale of length 80 mm. The spring is to be enclosed in a casing of 25 mm diameter. The approximate number of turns is 30. The modulus of rigidity is 85 kN/mm^2 . Also calculate the maximum shear stress induced.
- 8 (a) Show that the efficiency of self locking screws is less than 50 percent.
(b) How does the helix angle influence on the efficiency of square threaded screw?

Code: 9A03606

B. Tech III Year II Semester (R09) Supplementary Examinations, November/December 2012

AUTOMOBILE ENGINEERING

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 (a) Discuss the effect of supercharging on power output, mechanical efficiency and specific fuel consumption.
(b) Explain the function of various components of four wheel drive.
- 2 (a) What is the A/F mixture requirements at different loads and speeds for an IC engine?
(b) What is meant by a lean mixture, a rich mixture and a correct mixture? How do they differ in the air-fuel ratio?
- 3 (a) Describe the operation of the thermostat. What is the main advantage of using a thermostat in the cooling system?
(b) What are the effects of over cooling?
- 4 (a) Discuss the emissions from diesel engines. On what factors these emissions will depend up on.
(b) Discuss the effects of emissions on human health.
- 5 Why is it necessary to aim the head lights correctly? Explain the complete procedure for the same.
- 6 Compare hydraulic, mechanical, electrical and vacuum methods of operating clutches.
- 7 Explain how steering knuckles and spindles are used to mount the front wheels and also enable them to be turned by the steering system.
- 8 Discuss the various types of braking systems.
