



Subject Code: R16CC2201

II B.Tech II Semester Regular Examinations, April - 2018
BUSINESS MANAGEMENT CONCEPTS FOR ENGINEERS
(EEE & ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

1. (a) Write Exceptions of Law of Demand
- (b) Define Production Function
- (c) Define Accounting
- (d) Define Management
- (e) Definition of ABC analysis
- (f) Write any three functions of financial Management

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Define Managerial Economics
- (b) Explain briefly Nature and Scope of Managerial Economics
3. (a) Discuss the economies of Scale that accrue to a firm.
- (b) Explain the features of Perfect Competition
4. (a) Define Financial Accounting
- (b) What are Generally Accepted Accounting Principles (GAAP) ?
5. Explain Douglas McGregor Theory X and Y
6. (a) Define Production Management
- (b) Explain different methods of production used in production
7. (a) Explain various functions of Financial Management
- (b) Explain the differences between PERT and CPM

Subject Code: R16ME2202

II B.Tech II Semester Regular Examinations, April - 2018

THEORY OF MACHINES-I

(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1

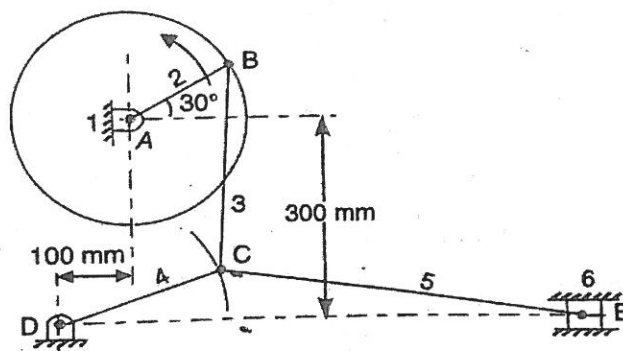
- Define transmission angle of a mechanism.
- State Kennedy theorem?
- State the difference between flat faced follower and mushroom follower
- What do you mean by spin, precession and gyroscopic couples ?
- What is the function of a governor? How does it differ from that of a flywheel?
- Define the terms Pressure angle and backlash of spur gears

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

- What is kutzbach equation for degree of freedom of planar mechanism. In what way is Grubler's criterion different from it? (6)
 - Define Grashoff's law. State how is it helpful in classifying the four link mechanisms into different types. (6)
3. Locate all the instantaneous centers of the mechanism as shown in fig. The lengths of various links are AB= 150mm; BC = 300mm; CD=225 mm; and CE=500mm. when the crank AB rotates in the anticlockwise direction at a uniform speed of 240 r.p.m. find 1. velocity of the slider E, and 2. Angular velocity of the links BC and CE. (12)



4. A cam is required to give motion to a follower fitted with a roller 50 mm in diameter. The lift of the follower is 30 mm and is performed.
- with uniform acceleration for 12mm, the cam turns through 45° .
 - With uniform velocity for 12mm, the cam turns through next 30° ,
 - With uniform deceleration for the remainder of the lift, the cam turns through next 45° .

The follower falls through immediately with simple harmonic motion while the cam turns through 120° . then a period of dwell is followed for 120° of the cam angle. Construct a lift and fall diagram on a cam angle base. Also draw the outline of the cam. The least radius of the cam is 35 mm. The line of motion of the follower passes through the centre of the cam axis. (12)

- 5 a) What is the effect of the gyroscopic couple on the stability of a four wheeler while negotiating a curve? (5)
- b) The turbine rotor of a sea vessel having a mass of 950 kg rotates at 1200rpm clockwise while looking from the stem. The vessel pitches with an angular velocity of 1.2 rad/sec. What will be the gyroscopic couple transmitted to the hull when the bow rises? The radius of gyration of the rotor is 300 mm. (7)
- 6 a) Describe the function of a proell governor with the help of a neat sketch. (6)
- b) The mass of each ball of a proell governor is 3 kg and the weight on the sleeve is 20 kg. Each arm is 220 mm long and the pivots of the upper and the lower arms are 20 mm from the axis. For the mid position of the sleeve, the extension links of the lower arms are vertical, the height of the governor is 180 mm and the speed is 150 rpm. Determine the lengths of the extension links and the tension in the upper arms. (6)
- 7 a) State fundamental law of gearing with neat diagram. (6)
- b) Explain in detail about the phenomenon of interference in the involute gears and how it can be avoided with neat diagrams? (6)



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Subject Code: R16ME2203

II B.Tech II Semester Regular Examinations, April – 2018.

APPLIED THERMODYNAMICS

(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) What is Time loss factor?
- (b) Why Cooling system is required for IC engines.
- (c) List out the various types of anti knock additives.
- (d) Define Brake power and Brake specific fuel consumption.
- (e) Mention different applications of compressed air.
- (f) Define Polytropic efficiency of a axial flow compressor.

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) Explain the differences between actual and ideal fuel air cycles of C.I. engines. [6 M]
(b) What is exhaust blow down? With the help of P-V diagram discuss the effect of exhaust valve opening time on blow down. [6 M]
3. (a) What are the major differences between S.I. Engine and C.I. Engine? Explain them with suitable examples. [6 M]
(b) Draw the schematic diagram of simple carburetor and explain its working principle. [6 M]
4. (a) Discuss the effect of various engine variables on SI engine knock. [6 M]
(b) Explain the influence of turbulence and speed on delay period in C.I. Engine combustion. [6 M]
5. (a) What is the use of heat balance sheet of an engine? Discuss the various items to be determined to complete the heat balance sheet. [6 M]
(b) A four-stroke, four-cylinder gasoline engine has a bore of 60 mm and a stroke of 100 mm. on test it develops a torque of 66.5 Nm when running at 3000 rpm. If the clearance volume in each cylinder is 60 cc the relative efficiency with respect to brake thermal efficiency is 0.5 and the calorific value of the fuel is 42 MJ/kg, determine the fuel consumption in kg/h and the brake mean effective pressure. [6 M]
6. (a) Compare and differentiate among the fan, blower and compressor. [6 M]
(b) Explain the working principle of Roots blower with suitable diagrams. [6 M]
7. (a) A centrifugal compressor with 70% isentropic efficiency delivers 20 kg of air per minute at a pressure of 3 bar. If the compressor receives air at 20° C and at a pressure of 1 bar, find the actual temperature of the air at exit. Also find the power required to run the compressor, if its mechanical efficiency is 95%. Take γ and C_p for air as 1.4 and 1 kJ/kg K respectively. [6 M]
(b) Draw the schematic diagram of axial flow air compressor and explain its working along with velocity triangles. [6 M]

Subject Code: R16ME2204

II B.Tech II Semester Regular Examinations, April-2018.
HYDRAULIC MACHINERY AND PNEUMATIC SYSTEMS
(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of **Part-A** and **Part-B**.

Answering the question in **Part-A** is Compulsory & Four Questions should be answered from Part-B
All questions carry equal marks of 12.

PART-A

- 1.(a) Describe the efficiency of a jet striking a plate.
- (b) Define hydraulic efficiency of a turbine.
- (c) Why priming is required in a centrifugal pump.
- (d) State the applications of direction control valves.
- (e) Distinguish between hydraulic and pneumatic systems.
- (f) List common method for designing pneumatic logic circuit?

PART-B

[2+2+2+2+2+2]
4 X 12 = 48

2. (a) Derive an expression for Force exerted by a jet of water striking a moving curved plate centrally. 6M
- (b) A horizontal jet of water of 5 cm diameter and velocity 40 m/s is deflected through an angle of 135° by a stationary curved vane. Assuming shockless and frictionless flow, determine the magnitude and direction of the resultant force on the vane. 6Marks
3. (a) Analyze the inlet and outlet velocity triangles of a Pelton turbine and indicate the direction of various velocity components. Also obtain an expression for the work done per second by water on the runner of the Pelton wheel. 6Marks
- (b) In a Francis turbine, the blade angle is 15° and the flow enters in a radial direction. The flow velocity is constant and is equal to 8.25 m/s. The outlet diameter is 0.6 times the inlet diameter and the runner rotates at 400 rpm. The width of the wheel is 0.1 times the inlet diameter and 7% of the flow area is blocked by blade thickness. Assume radial flow at outlet. Calculate: (i) Diameters at outlet and inlet (ii) Blade angle at outlet (iii) The head and power developed. 6Marks
4. (a) Explain the working of a centrifugal pump with a neat sketch. 6Marks
- (b) In a reciprocating pump delivering water the bore is 14 cm and the stroke is 21 cm. The suction lift is 4 m and delivery head is 12 m. The suction and delivery pipe are both 10 cm diameter, length of pipes are 9 m suction and 24 m delivery. Friction factor is 0.015. Determine the theoretical power required. Slip is 8 % and the pump speed is 36 rpm. 6Marks
5. With neat sketches, explain any four types of direction control valves. 12Marks
6. (a) Discuss different components of pneumatic power transmission system. 6 Marks
- (b) With the help of neat diagram explain quick exhaust, twin pressure and shuttle valves. 6 Marks
7. Discuss the steps involved in cascade method. Design a system in which cylinder A is used to clamp the work piece, cylinder B is used for punching and cylinder C removes the work piece from the station. 12Marks



Subject Code: R16ME2205

II B.Tech II Semester Regular Examinations, April-2018.

MANUFACTURING TECHNOLOGY

(ME)

Time: 3 hours

Max Marks: 60

Question Paper Consists of Part-A and Part-B.

Answering the question in Part-A is Compulsory & Four Questions should be answered from Part-B

All questions carry equal marks of 12.

PART-A

1. (a) Write few applications of Casting process
- (b) Define the terms Casting yield and Chill
- (c) What is flux? Why it is essential to use in some welding situations?
- (d) What are the materials used for making Resistance Welding Electrodes?
- (e) List the applications of Forging.
- (f) What is the difference between bloom and billet?

[2+2+2+2+2+2]

PART-B

4 X 12 = 48

2. (a) What is Pattern Allowance? Explain various pattern allowances [6]
- (b) Explain the effect of Ingredients of Moulding sand on the Properties of Mould. [6]
3. (a) Explain Investment Casting method with a suitable sketch [6]
- (b) What are the design considerations of a gating system for Casting? [6]
4. (a) Describe the Principle of Oxy-fuel gas cutting [6]
- (b) Explain different Welding defects with their Causes and Remedies [6]
5. (a) What is submerged Arc Welding? Explain with a neat diagram [6]
- (b) Define Resistance welding. Write about Resistance Butt welding [6]
6. (a) Explain various types of Rolling Mills with suitable diagrams [6]
- (b) Differentiate between hot working and Cold working. [6]
7. (a) Explain with sketches the Direct and indirect extrusion Processes [6]
- (b) Write about Wire drawing Method in detail. [6]
