Q.1 (a) Explain self locking and self energizing brake with neat sketch. (03)
(b) Explain the terms co-efficient of fluctuation of speed and co-efficient of fluctuation of energy. (03)
(c) Explain D’ Alembert’s principle for both linear and rotational motion. (04)

Q.2 (a) What is brake? Differentiate between brake and clutch. (05)
(b) Mass of flywheel is 5000 kg with radius of gyration 2m and mean speed of engine 240 rpm. If the fluctuation of energy is 100 kN-m. Find the maximum and minimum speed of flywheel. (05)

OR

Q.2 (a) Derive relation for co-efficient of fluctuation of speed in terms of maximum fluctuation of energy and kinetic energy at mean speed. (05)
(b) In a brake shoe applied to a drum as shown in figure 1, the radius of the drum is 80 mm and co-efficient of friction at brake lining is 0.35 for the counter clockwise rotation of the drum, determine the breaking torque due to a force of 350 N applied at the end of the lever. (05)

Q.3 (a) A porter governor has arms of 380 mm long. The upper arms are pivoted at the axis of the sleeve and lower arms are attached to the sleeve at a distance of 40 mm from the axis. Each fly ball has mass of 5 kg and weight on the sleeve is 45 kg. Find the range of speed of the governor if the extreme radius of rotation of the balls are 250 mm and 300 mm. (05)
(b) The turbine rotor of the ship has a mass of 3000 kg. It has radius of gyration 0.4 m and speed of 2500 rpm, clockwise when looking from stern. Determine the gyroscopic couple and its effect on ship when the ship is pitching in simple harmonic motion with period of pitching 35 seconds, total angular distance between extreme positions of pitching 120° and the bow is falling with maximum velocity. (05)

OR

Q.3 (a) Explain the following terms in the context of governor:
1) Sensitiveness, 2) Hunting, 3) Isochronous (05)
(b) An aeroplane flying at 240 km/h. turns towards left and completes a quarter circle of 60 m radius. The mass of rotary engine and the propeller of the plane is 450 kg with a radius of gyration of 320 mm. the engine speed is 2000 rpm in clockwise when viewed from the rear. Determine the gyroscopic couple on the aircraft and state its effect.

Figure 1
SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

B.E. Semester- (V) - MID SEMESTER EXAMINATION (Winter’14 Session)

SUBJECT: Power Plant Engineering (151904)

Date: 16-10-2014  Time: 02:00 TO 03:15 pm  Total Marks: 30

Instructions: 1. Attempt all questions.
              2. Make suitable assumptions wherever necessary.
              3. Figures to the right indicate full marks.

Q.1 (a) Draw a layout of Steam Power Plant. 5
       (b) Derive an expression for chimney height in order to obtain a
           draught of ‘h’ mm of water column if the boiler used ‘m’ kg of
           air/kg of fuel. Assume, surrounding air temperature as ‘T_a’ and
           flue gas temperature as ‘T_g’ in degree absolute. 5

Q.2 (a) Draw and explain Schmidt-Hartmann boiler. 5
       (b) Explain Electrostatic Precipitator with neat sketch. 5

OR

Q.2 (a) Write different methods of controlling temperature of super
       heated steam. 5
       (b) What is pulverized fuel firing? Write down the advantages and
           disadvantages of it. 5

Q.3 (a) Explain forced circulation thermo-stat cooling system with neat
       sketch. 5
       (b) Draw and explain pressurized water reactor. 5

OR

Q.3 (a) Explain CANDU reactor with neat sketch. 5
       (b) A power plant has following factors:
           Load factor =70%, capacity factor = 60%, and use factor = 65%.
           The power plant has maximum demand of 50MW. Estimate:
           (i) annual energy production,
           (ii) reserve capacity above peak load,
           (iii) hours per year the plant is not in use.

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SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

B.E. Semester- V - MID SEMESTER EXAMINATION (WINTER’14 Session)

SUBJECT: Manufacturing Processes - II (151901)

DATE: 10/10/2014  TIME: 2.00 pm to 3.15 pm  MAX. MARK: 30

Instructions:
1. All the questions are compulsory.
2. Figures to the right indicate full marks.
3. Assume suitable data if required.

Q.1 (a) Define the following terms:

(b) Describe injection moulding and blow moulding process with neat sketch.  (5)

(c) Explain the term permeability number?
Calculate the permeability number of sand? If it takes 1 minute 25 seconds to pass 2000 cm³ of air at a pressure of 5 gm/cm² through the standard specimen.
Given Data:
Height of sand specimen = 5.08 cm.
Cross section area = 20.268 cm².  (2)

Q.2 (a) List out the various types of casting defects. Explain any five types of defects along with their remedies and neat sketch.  (5)

(b) Explain with neat sketch the Cupola furnace, along with their different temperature zones and reactions.  (5)

OR

Q.2 (a) Define Pattern allowance? Explain the various types of pattern allowances with neat sketch.  (5)

(b) Explain the gravity die casting or permanent mould casting process along with their advantage, disadvantages and applications.  (5)

Q.3 (a) Write down types of rolling mills and explain Roll Pass Sequences.  (5)

(b) List out various super finishing processes and elaborate any two processes.  (5)

OR

Q.3 (a) Write different sheet metal forming operations explain briefly any of five.  (5)

(b) Differentiate hot working process with cold working process.  (5)

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Q.1  (a)  (i) What is standardization?  
(ii) Explain role of preferred numbers in standardization  
(b) (i) Explain the Wahl’s factor.  
(ii) What are the advantages of nested springs?  
(c) (i) What do you mean by a 6 x 9 rope?  
(ii) What is creep and slip in belt.

Q.2  (a) What is endurance limit? Explain design criteria with solder berg’s line.  
(b) Calculate the dimensions of a helical spring for a safety valve from the following data :
Valve diameter = 65 mm,  
Maximum pressure when the valve blows off freely = 0.73 N/mm²,  
Valve lift when pressure rises from 0.7 to 0.73 N/mm² = 3.5 mm,  
Maximum allowable stress = 550 N/mm², Spring index = 6,  
Modulus of rigidity = 8.3 x 10⁵ N/mm².

OR

Q.2  (a) What is stress concentration? Mention only techniques to reduce it.  
(b) A semi-elliptic leaf spring consists of two extra full length leaves and eight graduated length leaves, including the master leaf. The center to center distance between the two eyes of the spring is 1 m. The maximum force acting on the spring is 10 kN and the width of the leaf is 50 mm. The spring is initially preloaded in such a way that when the load is maximum, the stresses induced in all the leaves are equal to 350 N/mm². The modulus of elasticity of the leaf material is 2.07x10⁵ N/mm². Determine :
(i) The thickness of leaves.  
(ii) The deflection of the spring at maximum load.
Q.3 (a) Design a journal bearing for a centrifugal pump for given specifications:
Diameter of journal = 100 mm
Speed of journal = 900 rpm
Load on journal = 20000 N
Permissible bearing pressure = 1.5 N/mm²
L/d ratio = 1.6, Ambient temperature = 15.5°C
c/d = 0.0013
Z.N / p = 28 (where p is MPa), Operating temperature = 55°C.
Viscosity of lubricant = 0.017 kg/m-sec.
K = 0.002, Heat dissipation coefficient = 1232 W/m²/C
Determine the artificial cooling only.

(b) Explain in brief the design procedure for v-belt drives.

(5) OR

Q.3 (a) A 75 mm diameter full journal bearing runs at 400 rpm. It is 75 mm long and is subjected to a radial load of 2500 N. The bearing is lubricated with SAE 30 oil with the viscosity 16.5×10⁻³ kg/m·s flows into the bearing at a temperature of 75°C. The radial clearance is 0.03 mm. Determine
1. Summerfield number
2. Power loss in friction

(b) An overhung pulley transmits 35 kW at 240 r.p.m. The belt drive is vertical and the angle of wrap may be taken as 180°. The distance of the pulley centre line from the nearest bearing is 350 mm. μ = 0.25.
σ = 2.5 MPa for belt, density of belt material = 1000 kg/m³
Determine:
1. Diameter of the pulley;
2. Width of the belt assuming thickness of 10 mm;
SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

B.E. Semester- V - MID SEMESTER EXAMINATION (Winter’14 Session)

SUBJECT: Management II (150001)

Instructions:  1. Attempt all questions.
               2. Make suitable assumptions wherever necessary.
               3. Figures to the right indicate full marks.

Q.1 (a) Define Marketing and discuss the role of 4Ps in formulating marketing strategies. 05
       (b) Discuss the importance of Human Resource Management 05

Q.2 (a) Explain the factors affecting the plant location planning 05
       (b) What is Selection? Explain the selection process. 05

OR

Q.2 (a) Distinguish between Process Layout and Product Layout. 05
       (b) XYZ Co. Ltd, producing a pen, which selling price is Rs 18 per unit has a fixed cost of Rs 75,000 and variable cost is Rs. 8 per unit. Calculate Break Even Point (BEP). 05

Q.3 (a) Discuss any two demand forecasting methods. 05
       (b) What are the sources of recruitment? Mention their advantages and disadvantages. 05

OR

Q.3 (a) Explain various marketing concepts in detail. 05
       (b) Write a short note on types of tests. 05
Enrol. NO. _____________

SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY
B.E. Semester- (V) –MID SEM EXAMINATION (WINTER’14 Session)
SUBJECT: Fluid Power Engineering (151903)

DATE: 17/10/2014 TIME: 2:00 PM To 3:15 PM MAX. MARK: 30

Instructions: 1. All the questions are compulsory.
2. Figures to the right indicate full marks.
3. Assume suitable data if required.

Q.1 (a) Derive Borda Carnot Equation
      (b) A water tank 6 Km away from a college hostel. Water supplies 200 5 liters per day per student. The strength of students in hostel is 1500. The total water required is pumped into the tank in night time for 8 hrs. Calculate diameter of pipe when head loss is limited to 30m. (Assume f=0.0018)

Q.2 (a) Define Reynolds Transport Theorem (RTT)?
      (b) Derive the expression of forces impact on the inclined flat plate making an angle of θ to horizontal from plate?
      (c) A jet of water impinges on a series of radial vanes mounted on the wheel which rotates at 200 rpm. The inlet and outlet radii of the wheel are 0.5 m and 0.2 m respectively. The velocity of jet is 25 m/s and it makes an angle of 50° with the tangent to the wheel at the inlet tip. Water leaves the wheel at a velocity of 2 m/s at angle of 55° to the tangent to the wheel at the outlet tip. Find
         i. Vanes angle at outlet and inlet,
         ii. Work done per second per unit mass.

OR

Q.2 (a) Write briefly about the hydro power plant containing its essential components with neat sketch?
      (b) A pipe of 30cm in diameter and 500m long is carrying oil(sp. 5 Gravity=0.9 & viscosity =0.08 poise).the oil flow rate is 120L/sec. Calculate head loss in pipe and power required to maintain the flow.

Q.3 (a) Briefly describe the classification of Turbines?
      (b) Draw the main or constant head characteristics curves and define each curve very shortly (maximum 3 lines)?
      (c) Write very short only in two lines about Cavitation and Draft tube?
Q.3 (a) Explain single stage reciprocating compressor without clearance with neat sketch.
(b) Explain Hydraulic Intensifier.
SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

B.E. Semester- (V) - MID SEMESTER EXAMINATION (Winter’14 Session)

SUBJECT: DISASTER ASSESSMENT USING GEOSPATIAL TECHNIQUES (150606)

Date: 15-10-2014  TIME: 02:00P.M. to 03:15 P.M  Total Marks: 30

Instructions: 1. Attempt all questions.
              2. Make suitable assumptions wherever necessary.
              3. Figures to the right indicate full marks.

Q.1   (a) Explain the basic concepts of remote sensing & principles of remote sensing.  5

       (b) Explain different components of GIS.  5

Q.2   (a) Explain different disaster & then effects in brief.  5

       (b) Explain the functions of DBMS.  5

OR

Q.2   (a) What do you understand by map? Differentiate topographic and thematic maps.  5

       (b) Explain metadata, attribute data and spatial data.  5

Q.3   (a) Explain air borne sensors and space borne sensors.  5

       (b) Give a brief idea about GSLV and PSLV.  5

OR

Q.3   (a) Explain basic working principles of GPS measurements & functional segments.  5

       (b) Explain the major data sources of GIS.  5

*******ALL THE BEST*******