POYTECHNIC (LATERAL) I SEMESTER EXAMINATION 2010-11

Course Code: DCE301   **Paper ID: 0551107**

Building Material

Time: 3 Hours   **Max. Marks: 75**

Note: Attempt six questions in all. Q. No. 1 is compulsory.

1. Answer any five of the following (limit your answer in 50 words).
   (3x5=15)

   a) Write the characteristics of lime stone.
   b) Write the fielding testing of bricks.
   c) Define the quarrying, blasting and weathering for the rocks.
   d) Define the quick lime and fat lime.
   e) Write the properties of good timber.
   f) Write the procedure to conduct the compressive strength test for cement.
   g) Write the testing procedure for the water absorption of bricks as per IS code.
   h) Write short note on polythene sheets.

2.
   a) Write the physical classification of rocks.   (6)
   b) Write short note on stone crushing and crusher.   (6)

3.
   a) Write the uses of building lime.   (6)
   b) Write in detail about the preparation of the bricks.   (6)

4. Dfdf
   a) Draw the flow diagram for the dry manufacturing process of cement.   (6)
   b) Why gypsum and calcium chloride is added in cement?   (6)

5.
   a) Write in detail about types of seasoning.   (6)
   b) Write the identification of teak.   (6)

6. Write short note on: (4x3=12)
   a) Plastic coated finishes
   b) Block boards
   c) Laminated boards

7. Write short note on: (6x2=12)
   a) Function of paints
   b) Requirement of heat insulating materials

8.
   a) Write the commercial trade name of any four water proofing materials.   (4)
   b) Write note on the use of plastic in civil engineering.   (4)
   c) Write note on types of glasses.   (4)

POYTECHNIC (LATERAL) I SEMESTER EXAMINATION 2010-11

Course Code: DCS301　　　　　　　　　　**Paper ID: 0551107**

Computer Basics (Concepts of Information Technology)

Time: 3 Hours　　　　　　　　　　　　　　**Max. Marks: 75**

Note: Attempt six questions in all. Q. No. 1 is compulsory.

1. Answer any five of the following (limit your answer in 50 words).

　　　　　　　　　　　　　　　　　　　　　　(3x5=15)

   a) What is a computer? Describe briefly the characteristics of a computer.
   b) Differentiate between a compiler and an interpreter.
   c) What is the use of software testing?
   d) What is a search engine? Name any three search engines.
   e) What are web browsers? What are its basic features?
   f) What is application window and document window in MS-Word application?
   g) How does a JPEG image differ from a MPEG image?
   h) Convert $(11010.11)_2 = (?)_8 = (?)_{16}$.

2. Write a short note on input and output devices. 　　　　　　(12)

3. Briefly discuss the Software Development Life Cycle. 　　　　(12)

4. What is an HTML document? Draw the structure of such document.

　　　　　　　　　　　　　　　　　　　　　　(6+6)

5. How can we start MS-Word? Discuss any three features of MS-Word.

　　　　　　　　　　　　　　　　　　　　　　(5+7)

6. What are the various tools available as a part of MS-Office? Briefly discuss the use of each of these tools. 　　　　　　　　(6+6)

7. Discuss the digital video and animation in detail. 　　　　　(12)

8. What is an E-Mail? Describe the process of attaching a file to your message 　　　　　　　　　　　　　　　　　　　　(5+7)

POYTECHNIC (LATERAL) I SEMESTER EXAMINATION 2010-11

Course Code: DME101   **Paper ID: 0551101**

Basic Mechanical Engineering

Time: 3 Hours   **Max. Marks: 75**

Note: Attempt six questions in all. Q. No. 1 is compulsory.

1. Answer any five of the following (limit your answer in 50 words).

                                                          (3x5=15)
   a) Differentiate between real fluid and ideal fluids.
   b) Explain in brief: density and surface tension.
   c) Write down the statement of Continuity Equation.
   d) Explain the microscopic point of view for thermodynamic analysis.
   e) Define Zeroth law of thermodynamics.
   f) Write down the various types of I.C. engines.
   g) Explain various types of links.
   h) Define the word 'Machine'.

2. Differentiate between Absolute, Gauge and Vacuum pressure.
                                                          (12)
3. State and Derive the Bernoulli's Equation.   (12)

4. Give the classification of turbines.   (12)

5. Explain the Carnot cycle with neat sketch.   (12)

6. Write down the limitations of 1st law of thermodynamics and give the statement of 2nd law of thermodynamics.   (12)

7. Write down the classification of Cam and follower.   (12)

8. Explain the degree of freedom for plane mechanism.   (12)

POLYTECHNIC (LATERAL) III SEMESTER EXAMINATION 2010-11

Course Code: DHM301   **Paper ID: 0113109**

Foundation English

Time: 3 Hours   **Max. Marks: 50**

Note: Attempt six questions in all. Q. No. 1 is compulsory.

1. Answer any five of the following (limit your answer in 50 words).
   (2x5=10)
   a) What is synthesis? Give two examples.
   b) What do you understand by 'Modals'? Give two examples
   c) What is the difference between formal and informal letters?
   d) Give the definition of précis.
   e) What is communication?
   f) What are the 7 c's of communication.
   g) What is electronic communication?
   h) What do you understand by commercial correspondence?

2. Rewrite any **four** of the following sentences after correcting the errors:
   (8)
   a. Do you have a twenty rupees note?
   b. Come, meet my cousin sister.
   c. I and she are friends.
   d. One should not conceal his talent.
   e. Name of the workers have arrived.
   f. Why don't you go by the air?

3. Write a précis of the following with a suitable title: (8)
   One great defect of our civilization is that it does not know what to do with its knowledge. Science as we have seen has given us powers fit for gods. Yet we use them like small children.
   For example we do not know how to manage our machines. Machines were made to be man's servants, yet man has grown so dependent on them that they are in a fair way to become his masters. Already most men spend most of their lives looking after and waiting upon machines. And the machines are very stern masters. They must be fed with fuel and must be maintained, cleaned and serviced. And if they don't get what is needed at the right time they grow sulky and refuse to work, or burst with rage and blow up spreading ruin and destruction all around them. So we have to wait upon them very attentively and do all that we can to keep them in a good temper. Already we find it difficult to work or play without the machines and a time may come when they will rule us altogether.

4. Write a note on the importance of communication.   (8)

5. What are the barriers to effective communication?   (8)

6. Write a letter to the district magistrate about the nuisance caused by the use of loudspeakers. (Limit within 150 words)   (8)

7. Write an application to your director requesting him for your fee concession. (Limit within 150 words)   (8)

8. Write a brief note on the elements of human communication.   (8)

POYTECHNIC (LATERAL) I SEMESTER EXAMINATION 2010-11

Course Code: DME301 **Paper ID: 0551107**

Applied Mechanics

Time: 3 Hours **Max. Marks: 75**

Note: Attempt six questions in all. Q. No. 1 is compulsory.

1. Answer any five of the following (limit your answer in 50 words).
(3x5=15)

   a) Differentiate between mass and weight.
   b) Define the term 'force'.
   c) What is lever? Give a few of its applications.
   d) What do you mean by parallel 'force'?
   e) Explain the term 'friction and limiting friction'.
   f) What are the laws of 'friction'?
   g) Briefly explain about 'stress and strain'.
   h) List the methods of analysis in trusses.

2. State the law of parallelogram of forces and find the magnitude and direction of the resultant R of four concurrent forces acting as shown in figure: (6)
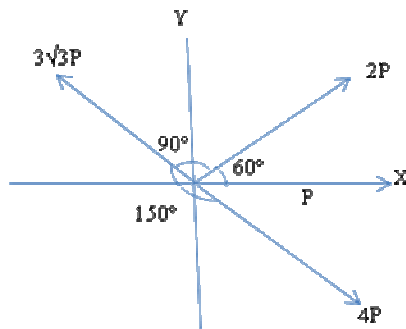

3. Prove that co-efficient of friction is equal to the tangent of angle of friction in the limiting equilibrium. (12)

4. Draw a typical stress-strain curve for mild steel and explain the salient points on it. (12)

5. A circular rod of diameter 16mm and 500mm long is subjected to a tensile force 40kN. The modulus of elasticity for steel may be taken as 200kN/nm^2. Find stress, strain and elongation of the bar due to applied load. (12)

6. With sketch, explain the following types of supports:
(4x3=12)

   a) Simple
   b) Hinged
   c) Fixed

7. Explain the assumptions made in the analysis of pin jointed trusses. (12)

8. The lever of a safety valve weight 3N and its C.G. lies at a distance of 80mm from the center of the valve which is at 70 mm from the fulcrum. If the diameter and weight of the valve are respectively 60mm and 5N, find the minimum weight that will be hung to end of 750mm long lever to conserve steam in the boiler at a pressure of 0.8MPa. (as shown as given figure) (12)
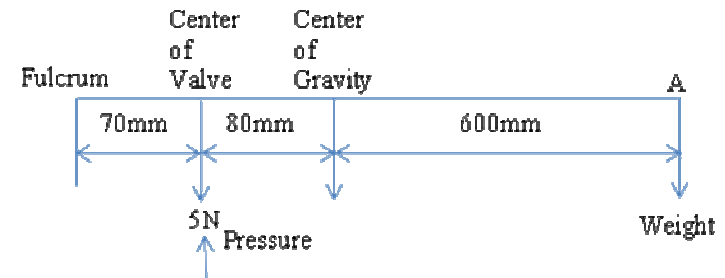
POYTECHNIC (LATERAL) I SEMESTER EXAMINATION 2010-11

Course Code: DGE301   **Paper ID: 0551115**

Basics of Engineering

Time: 3 Hours   **Max. Marks: 75**

Note: All students would attempt Section A and Section B. Students of Civil Engineering would attempt Section C and of Mechanical Engineering would attempt Section D.

Section (A)

Q. No. 1 is compulsory. Attempt any two from rest of the questions.

1. Attempt any two parts.   (2.5x2=5)
   a) The MKS unit of Charge is called…………….
   b) The dimensions of electrical conductivity are……………...
   c) Transformer works in the principle of ……………….

2. What do you mean by the potential energy of a system of charges? Derive energy expression for two point charges separated by a distance.   (10)

3. Explain Kirchhoff's rules with the help of a neat diagram.   (10)

4. A town situated 20 km away from a power plant generating power at 440 V, requires 600 kW of electric power at 200 V. The resistance of the two-wire line carrying power is 0.4 Ω/km. The town gets power from the line through a 3000-220 V step-down transformer at a substation in the town.   (10)
   a) Estimate the line power loss as heat
   b) How much power must the plant supply, assuming no power leakage.

Section (B)

Q. No. 1 is compulsory. Attempt any two from rest of the questions.

1. Attempt any **two** parts.   (2.5x2=5)
   a) The process of adding impurity to an intrinsic semiconductor in a controlled manner is called…………
   b) The diffusion current in a p-n junction is …………
   c) The three parts of transistor are…………

2. Explain in detail carbon resistors and color code.   (10)

3. Draw a circuit diagram for p-n junction diode in forward bias. Sketch and discuss the voltage versus current graph for the same.   (10)

4. Give the symbols of p-n-p and n-p-n transistors. Show the biasing of an n-p-n transistor and explain transistor action.   (10)

Section (C)

Q. No. 1 is compulsory. Attempt any two from rest of the questions.

1. Attempt any **two** parts.   (2.5x2=5)
   a) The unit of fluid pressure is ……………..
   b) The Bernoulli's equation in the case of study and ir-rotational flow can be given as ………………
   c) Work is a function of a ……………….

2. The area of cross section of a large tank is 0.5 m2. It has an opening near the bottom having area of cross section 1 cm2. A load of 20 kg is applied on the water at the top. Find the velocity of the water coming out of the opening at the time when the height of water level is 50 cm above the bottom.   (10)

3. How heat engines and refrigerators are characterized? Explain with the help of schematic diagrams.   (10)

4. Discuss all types of Links for transmission of energy.   (10)

Section (D)

Q. No. 1 is compulsory. Attempt any two from rest of the questions.

1. Attempt any **two** parts. (2.5x2=5)
   a) Define principles of surveying.
   b) What is bearing capacity of soil?
   c) Briefly explain role of Remote Sensing in GIS.

2. What do you understand by Bonds in the brick masonry? Also explain all types of bonds with sketches. (10)

3. What do you understand by classification of soil? (10)

4. Draw cross section of a two storied building from foundation to parapet wall. (10)

POYTECHNIC (LATERAL) I SEMESTER EXAMINATION 2010-11

Course Code: DAS303   **Paper ID: 0551107**

Applied Mathematics

Time: 3 Hours   **Max. Marks: 75**

Note: Attempt six questions in all. Q. No. 1 is compulsory.

1. Answer any five of the following (limit your answer in 50 words). (3x5=15)
   a) Find the equation of the ellipse.
   b) Find the value of i^{91}.
   c) $\dfrac{d}{dx}(x+5)^2$
   d) Find the nth term of
      2, 4, 6, 8,---------
   e) Discuss $y^2 = 4ax$
   f) Find the sum of
      (7 + 77 + 777 + 7777 +-------------n terms)
   g) Evaluate $\dfrac{(\cos\theta + i\,\sin\theta)^4}{(\cos 2\theta + i\sin 3\theta)^3}$
   h) $\int \log x\, dx$

2. Solve by Cramer's rule- (12)
$$6x + y - 3z = 5$$
$$x + 3y - 2z = 5$$
$$2x + y + 4z = 8$$

3. Evaluate $\int \sqrt{1+\sin 2x}\ dx$ (12)

4. In ΔABC prove that (12)
$$\tan\frac{A-B}{2} = \frac{a-b}{a+b}$$

5.
   a) Prove that (6)
$$\begin{vmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{vmatrix} = (a-b)(b-c)(c-a)$$
   b) Prove that (6)
$$(\cos\theta + i\sin\theta)^n = \cos n\theta + i\sin n\theta$$

6. Write in the form of $A + iB$ (12)
$$\frac{1}{1+2i} + \frac{1}{1+4i}$$

7. Find the equation of Parabola whose focus [p,0] and Dirtrix is $x + 5 = 0$ (12)

8. Evaluate (6+6)
   a) $\dfrac{d}{dx}\sqrt{\dfrac{x-a}{x\_a}}$

   b) $\int \dfrac{\log x}{x}\, dx$