

**INDIAN MARITIME UNIVERSITY**  
**DEPARTMENT OF MARINE ENGINEERING**  
**SEMESTER I – JULY 2012 EXAMINATION**

**T/111 COMMUNICATIVE ENGLISH AND SOCIOLOGY**

**Time: 3 HRS**

**Maximum Marks: 100**

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**PART A**

**(COMMUNICATIVE ENGLISH)**

1. **WRITE THE CORRECT PREPOSITIONS** ( 1 x 4 = 4 marks)
  - a) The train goes from Mumbai \_\_\_\_\_ Calcutta.
  - b) It was very hot and so I sat \_\_\_\_\_ a tree.
  - c) Pro. Rao is specialized \_\_\_\_\_ Ancient Indian History.
  - d) A hedonist is fond \_\_\_\_\_ the good things in life.
  
2. **REWRITE THE SENTENCE IN ACTIVE AND PASSIVE VOICE.** ( 1 x 5 = 5 marks)
  - a) Dr.Madhan teaches us German.
  - b) All his friends cheered him.
  - c) Romeo loves Juliet.
  - d) By whom was the crime committed.
  - e) A simple plan has to be made by me.
  
3. **FILL IN THE BLANKS WITH APPROPRIATE FORM OF THE VERB.** (4 x 1 = 4 marks)
  - a) Srinivasa Ramanujam \_\_\_\_\_(be) a great mathematical genius .  
He \_\_\_\_\_(accept) a clerical position in the Madras Port  
Trust office, While he \_\_\_\_\_(work) as a clerk.  
He \_\_\_\_\_(write) to G.H.Hardy of Cambridge University a letter  
that was to change His life.
  
4. **TRANSFORM THE SENTENCE INTO DIRECT OR INDIRECT SPEECH:** (4x1=4marks)
  - a) He said to me "I am going to the market now".
  - b) They said "We are doing well"
  - c) He says to me "I am very busy"
  - d) Vijay asked Vinoth why he hesitated.

5. **LETTER WRITING** (1x 10 = 10 marks)
- a) A reputed shipping company is looking for a service engineer with first Class B.Tech degree in Marine Engineering. The candidate should be below 26 years of age and should possess good communication skills. He must be willing to travel extensively anywhere within or outside the country. Apply along with your resume to Post Box Number 1234, The Daily Herald, New Delhi within 15 days from the date of publication of the advertisement.
6. **ESSAY WRITING (100 words) (ANY ONE)** (1x10= 10 marks)
- a) Global warming  
b) English Communication and its Importance  
c) Greening and Cleaning the Environment
7. **MAKE SENTENCES USING PHRASES:** (5x1=5 marks)
- a) under the tree  
b) from the market  
c) in the morning  
d) in this episode  
e) very quickly
8. **WRITE SHORT NOTES ON ONE OF THE FOLLOWING** (1 x 3 = 3 marks)
1. Explain shortly on barriers to communication.  
2. Write short notes on listening skills.
9. **ANSWER ANY ONE OF THE FOLLOWING** (1 x 5 = 5 marks)
1. Describe briefly on objectives of communication.  
2. Explain in detail on non verbal communication .

**PART B  
(SOCIOLOGY)**

10. **Answer should not exceed 50 words each. (Any five)** (5x2=10 marks)
- a) What is sociology?  
b) What is capitalism?  
c) Define society  
d) What is dictatorship?  
e) What is fascism?  
f) What is trade Union ?  
g) What is totalitarianism?

**11. Answer any 4 of the following**

(4x5=20 marks)

- a. Explain Employees provident fund act 1952.
- b. Explain distinctive human way of life that we call culture .
- c. What is a social value? Give examples of social value.
- d. Write short notes on the key features of the factories Act 1948.
- e. Mention the functions of the Trade Unions.
- f. Discuss the salient features of the industrial disputes Act 1947.

**12. Answer any 2 of the following not exceeding 250 words**

(2x10=20 marks)

- a. Explain the major social problems in general.
- b. Write short notes on social stratifications.
- c. What are the harmful effects of caste system in India?

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**SEMESTER I – JULY 2012 EXAMINATION**

**T/112 MATHEMATICS – I**

TIME 3 HRS

MAX MARKS: 100

**PART-A**  
**Compulsory Question**

(3x10 =30 Marks)

1. (a) If  $\frac{x^2}{a^2+u} + \frac{y^2}{b^2+u} + \frac{z^2}{c^2+u} = 1$ , prove that
- $$\left(\frac{\partial u}{\partial x}\right)^2 + \left(\frac{\partial u}{\partial y}\right)^2 + \left(\frac{\partial u}{\partial z}\right)^2 = 2\left(x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} + z\frac{\partial u}{\partial z}\right)$$
- (b) If  $u = \tan^{-1} \frac{x^3 + y^3}{x - y}$ , prove that
- $$x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = \sin 2u$$
- (c) Find the maximum and minimum distances of the point (3,4,12) from the sphere  $x^2 + y^2 + z^2 = 1$
- (d) Find the volume and surface area of a sphere of radius 'a' by intergration method.
- (e) Evaluate  $\int_0^1 \frac{x^{m-1} + x^{n-1}}{(1+x)^{m+n}} dx$
- (f) A vector field is given by  $\vec{A} = (x^2 + xy^2)\hat{i} + (y^2 + x^2y)\hat{j}$ . Show that the field is irrotational and find the scalar potential.
- (g) Using the transformation  $x+y = u$  and  $y = uv$  show that
- $$\int_0^1 \int_0^{1-x} e^{y(x+y)} dy dx = \frac{1}{2}(e-1)$$
- (h) Verify Cayley Hamilton theorem for the matrix
- $$A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$$
- i) Show that the matrix  $\begin{bmatrix} \alpha + i\gamma & -\beta + i\delta \\ \beta + i\delta & \alpha - i\gamma \end{bmatrix}$  is unitary if  $\alpha^2 + \beta^2 + \gamma^2 + \delta^2 = 1$
- (j) Prove that  $\int_c \frac{e^{2z}}{(z-1)^4} dz = \frac{8\pi i}{3e^2}$  where c is the circle  $|z|=3$

## PART B (5 x 14 = 70 marks)

Answer any five of the following

2. (a) show that  $\frac{d^n}{dx^n} \left( \frac{\log x}{x} \right) = (-1)^n \frac{1}{x^{n+1}} \left( \log x - 1 - \frac{1}{2} - \frac{1}{3} \dots - \frac{1}{n} \right)$
- (b) If  $f(x) = x^3 + 8x^2 + 15x - 24$ , calculate the value of  $f\left(\frac{11}{10}\right)$  by the application of Taylor's series. (8+6)
- 3(a) Show that the functions  $u = (x+y+z)^3 - 3(x+y+z) - 24xyz + a^3$  has a minimum at (1,1,1) and a maximum at (-1,-1,-1)
- b) Find the asymptotes to the curve  $4x^3 + 2x^2 - 3xy^2 - y^3 - 1 - xy - y^2 = 0$  (8+6)
- 4(a) Prove that  $\sqrt{\pi} \Gamma(2m) = 2^{2m-1} \Gamma(m) \Gamma\left(m + \frac{1}{2}\right)$
- (b) Apply the rule of differentiation under the sign of integral to integrate  $\int_0^{\pi/2} \log(\alpha \cos^2 \theta + \beta \sin^2 \theta) d\theta$  (6+8)
- 5(a) Find the volume of the solid generated by the revolution of the astroid  $x^{2/3} + y^{2/3} = a^{2/3}$  about -x - axis.
- (b) Prove that the shortest distance between two points in a plane is a straight line. (7+7)
- 6(a) A fluid motion is given by  $\vec{V} = (y+z)\hat{i} + (z+x)\hat{j} + (x+y)\hat{k}$
- (i) Is this motion irrotational? If so find the velocity potential.
- (ii) Is this motion possible for an incompressible fluid?
- (b) The temperature at any point in space is given by  $T = xy + yz + zx$
- Determine the directional derivative of T in the direction of the vector  $3\hat{i} - 4\hat{k}$  at the point (1,1,1) (8+6)
- 7(a) Solve the following equations by matrix method:
- $$\begin{aligned} x - y + 2z &= 3 \\ x + 2y + 3z &= 5 \\ 3x - 4y - 5z &= -13 \end{aligned}$$
- (b) Prove that the following matrices have the same characteristic equation.
- $$\begin{bmatrix} a & b & c \\ b & c & a \\ c & a & b \end{bmatrix}, \begin{bmatrix} b & c & a \\ c & a & b \\ a & b & c \end{bmatrix}, \begin{bmatrix} c & a & b \\ a & b & c \\ b & c & a \end{bmatrix} \quad (8+6)$$

8(a) Evaluate  $\int_c \frac{12z-7}{(z-1)^2(2z+3)} dz$

Where  $c$  is the circle  $|z|=2$

(b) Let  $P(z) = a+bz+cz^2$  and  $\int_c \frac{P(z)}{z} dz = \int_c \frac{p(z)}{z^2} dz = \int_c \frac{p(z)}{z^3} dz = 2\pi i$

Where  $c$  is the circle  $|z|=1$ . Evaluate  $P(z)$ .

(7+7)

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**SEMESTER I – JULY 2012 EXAMINATION**

T/113-BASIC THERMODYNAMICS

TIME 3 HRS

MAX MARKS: 100

**PART-A (10×3=30)**

**QUESTION NO.1 IS COMPULSORY**

1.
  - a. State first law of thermodynamics.
  - b. Define system, boundary and surroundings.
  - c. Prove that for an isolated system, there is no change in internal energy.
  - d. Prove that the difference in specific heat capacities equal to  $C_p - C_v = R$
  - e. State phase rule.
  - f. Define "triple point" of a pure substance.
  - g. What is the function of economizer?
  - h. What is the function of super heater?
  - i. Define indicated power as applied to I.C engines.
  - j. Define Brake power as applied to I.C. engines.

**PART-B**

**NOTE: ANSWR ANY 5 FROM THE FOLLOWING 7 QUESTIONS (5× 14 =70)**

2. A) In the cylinder of an air motor the compressed air has a specific internal energy of 420 KJ/kg at the beginning of the expansion and a specific internal energy of 200 KJ/kg after expansion. Calculate the heat flow to or from the cylinder when the work done by the air during the expansion is 100 kJ/kg. (7 Marks)
- B) 3 kg of a gas at 75°C heated at constant volume until its pressure is 2 times is the initial pressure. Determine a) final temperature b) heat transfer c) change in internal energy d) change in enthalpy. (7 Marks)
3. A) A perfect gas of 0.2 kg has a pressure of 300 kpa, a temperature of 100°C and a volume of 0.06 m<sup>3</sup>. the gas undergoes an irreversible adiabatic process to a final pressure of 400 kpa and final volume of 0.15 m<sup>3</sup>, work done on the gas is 50 KJ. Find  $C_p$  and  $C_v$ . (7 Marks)
- B) Compute the specific volume of steam at 0.9 bar and 550 K using vanderwaals equation. Take critical temperature of steam is 647.3 K and critical pressure is 220.9 bar.

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Determine the molecular volume of any perfect gas at 600 N/m<sup>2</sup> and 30°C. universal gas constant may be taken as 8314 J/kg mole-K. (7 Marks)

4. A) A closed vessel of  $0.2\text{m}^3$  contains steam at 1 Mpa and temperature  $250^\circ\text{C}$ .if the vessel is Cooled so that pressure falls to 350 Kpa. Determine the final temperature, heat transfer & Change of entropy during the process. (6 marks)
- B) Draw the P-V diagram of pure substances and explain the various regions of the diagram in detail  
 a) P-V diagram of a substance that contracts on freezing. b) P-V diagram of a substance that expands on freezing. (8 marks)
5. A) Steam is contained in a closed vessel of 30 litres capacity at a pressure of 10 bar with dryness fraction 0.95.calculate its internal energy. Due to loss by radiation, the pressure of steam falls to 7 bar. Calculate the total loss of heat and final quality of steam. (6 marks)
- B) Draw the T-S diagram of water and explain various regions of the diagram in detail. (8 marks)
6. A) The following observations were made on a trial,  
 Mean temperature of feed water =  $40^\circ\text{C}$ ,Mass of coal used = 420 kg,Mass of water evaporated = 3500 kg,Steam pressure = 12 bar, Super heated steam temperature =  $275^\circ\text{C}$ , Calorific value of fuel = 32,000 kJ/kg. Assume specific heat of super heated steam is 2.1 kJ/kg-K. Find equivalent evaporation and boiler efficiency. (8 marks)
- B) A boiler working at a pressure of 14 bar evaporates 8.6 kg of water per kg of coal fired from feed water entering at  $39^\circ\text{C}$ .the steam at the boiler stop value is 0.92 dry. Determine the equivalent evaporation from and at  $100^\circ\text{C}$ .also determine the thermal efficiency of the boiler if the calorific value of the coal is 30,200 kJ/kg. (6 marks)
7. A) Air standard cycle consists of the following processes:  
 a) isentropic compression from  $15^\circ\text{C}$  and 1 bar to 5 bar. b) 2500 Kj/kg of heat is added at constant volume. c) isentropic expansion to initial volume. d) heat rejection at constant volume. Calculate the ideal efficiency, mean effective pressure and peak pressure. (8 marks)
- B) Derive the expression for efficiency in otto cycle or constant volume air cycle. (6 marks)
- 8) A) Define mechanical efficiency and thermal efficiency as applied to I.C engines. (4 marks)
- B) An engine working on constant volume cycle has the following data.  
 Clearance volume =  $0.04\text{ m}^3$ , Swept volume =  $0.13\text{ m}^3$ , Pressure and temperature at the beginning of the cycle are 1.15 bar and  $120^\circ\text{C}$ .maximum pressure of the cycle is limited to 23 bar. Calculate air standard efficiency, maximum temperature of the cycle and mean effective pressure. (10 marks)

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**SEMESTER I – JULY 2012 EXAMINATION**

**T/114 BASIC ELECTRICAL AND ELECTRONICS ENGG**

**TIME 3 HRS**

**MAX MARKS: 100**

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**PART-A (3 × 10 =30 Marks)**

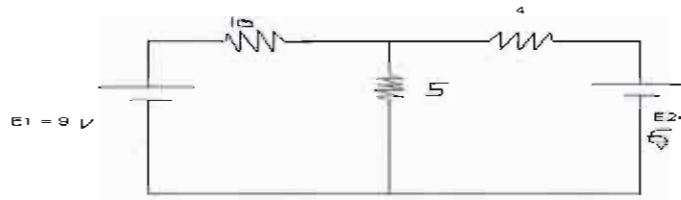
**Compulsory question**

1. (a) Why we group cells in series, parallel, and series and parallel combination?
- (b) What is hysteresis? Draw B-H curve for a transformer core and Label it.
- (c) An alternating current varying sinusoidally with a frequency of 50 Hz has an RMS value of 20 ampere. Write down the equation for the instantaneous value. At what time, measured from a positive maximum value, will the instantaneous current be 14.14 ampere?
- (d) In an analog type of measuring instrument, what is meant by damping? Why is damping necessary?
- (e) What is a transducer? Give three examples where transducers are used in practice.
- (f) Explain the term “Work function” and “threshold frequency” in connection with electron emission.
- (g) What do you mean by Non linear resistance? Give three examples of non linear resistors
- (h) What is PN junction? Draw its circuit symbol. Explain how the junction behaves when it is forward biased and reversed biased
- (i) What are the three modes in which a transistor can operate? Draw diagram for each mode of operations and label it.
- (j) Give a table of comparison between CE and CB configurations with regard to the important parameters

**PART B (5× 14 = 70 Marks)**

**Answer Any Five of the following**

- 2) (a) State maximum power theorem. Prove that the maximum power abstracted by a Resistive load from a network =  $E^2 / 4 R_L$ .  
Where E = E.M.F. of the source and  $R_L$ = Resistive load
- (b) What is photo electric emission? How is the electron emission affected if the frequency of the incident radiations is increased?
- (c) Using Thevenin’s theorem, calculate the current through the 4  $\Omega$  resistor of the circuit. (5+4+5 Marks)



- 3) (a) Define Magneto motive force .Draw a simple magnetic circuit and show leakage flux, useful flux, and fringing. How will you detect the presence of leakage flux? How the magnetic leakage can be minimized (1+4+1+1 marks)
- (b) A ring has a diameter of 25 cms and a cross sectional area of  $10 \text{ cm}^2$ . The ring is made up of semicircular sections of Cast iron and Cast steel, with each joint having reluctance equal to an air gap of 0.2 mm. Find the ampere turns required to produce a flux of  $8 \times 10^{-4}$  Weber. The relative permeability of cast steel and cast iron are 800 and 166 respectively (7 Marks)
- 4) (a) In a three phase star connected balanced system of voltage generation differentiate between Line voltage and phase voltage. Establish a relation between the Line voltage and phase voltage that is, line voltage =  $\sqrt{3}$  phase voltage (2+5 marks)
- (b) A pure resistance of  $50\Omega$  is in series with a pure capacitance of  $100 \mu\text{F}$ . The series combination is connected across 100V, 50 HZ supply. Find (a) The impedance (b)circuit current (c)Power factor (d)Phase angle (e)Voltage across resistor (f) Voltage across capacitor (7 marks)
- 5) (a) with a labeled sketch explain the working of a moving coil (PMMC type) ammeter. Can this instrument be used for measuring alternating current? Justify your answer. (7 marks)
- (b) A moving coil instrument has a resistance of  $10\Omega$  and gives full scale deflection when carrying a current of 100mA. Show how it can be adopted to measure Voltage up to 500volts and current up to 100 amps. (7 marks)
- 6) (a) You have 2 wattmeters available .How will you measure the input power to a star connected balanced three phase load (motor).Draw the circuit to show the connection of the two wattmeters for the purpose (7marks)
- (b) The arms of an a.c. Maxwell Bridge are arranged as follows: AB and BC are non-reactive resistors of  $100\Omega$  each. DA is a standard variable reactor L1 of resistance  $32.7 \Omega$  and CD comprises a standard variable resistor R in series with a coil of unknown impedance. Balance was obtained with  $L1 = 47.8\text{mH}$  and  $R = 1.36 \Omega$ . Find the resistance and inductance of the coil. (7 marks)
- 7) (a) Define the following as applied to a PN junction  
(i) Depletion region and Barrier voltage

- (ii) With a neat diagram explain the working of a full wave rectifier using center-tapped transformer. In your circuit show the direction of current flowing through the load during positive and negative half of the cycle. Show the input & output wave form (2+5 marks)
- (b) A half wave rectifier which prevents current flowing in one direction is connected in series with an a.c. ammeter and a permanent magnet moving coil ammeter. The supply is sinusoidal. The reading on the a.c. ammeter is 10A. Find the reading given by the other ammeter. What should be the reading on the ammeters if the other half – wave were rectified instead of being cut off? (7 marks)
- 8) (a) Draw the circuits of an NPN and PNP transistors in CE configuration. Show the biasing. Define the following (i) CE dc current gain (ii) CE ac current gain  
(b) Draw input and output characteristics of common base transistor configuration. Show the biasing for the transistor.  
(c) Establish the relation  $\alpha = \beta / 1 + \beta$   
(d) Explain how a transistor can act like a switch (4+4+2+4 marks)

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**INDIAN MARITIME UNIVERSITY**  
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**SEMESTER I – JULY 2012 EXAMINATION**  
**T/115 ENGINEERING MECHANICS I**

TIME 3 HRS

MAX MARKS: 100

Note: (i) Non- programmable scientific calculator is allowed.

(ii) Attempt six questions

(iii) Question no. 1 is compulsory

**PART A**

(1×30=30MARKS)

**ANSWER THE COMPULSARY QUESTION**

1.

- a) State parallelogram and triangle law of forces. (3)
- b) Determine the resultant of the three forces  $F_1 = 2.0i + 3.3j - 2.6k$ ;  $F_2 = -i + 5.2j - 2.9k$ ; and  $F_3 = 8.3i - 6.6j + 5.8k$ , which are concurrent at the point (2, 2, -5). The forces are in Newton and the distances are in metres. (3)
- c) What is the principle of virtual work? (3)
- d) State the theorems of Pappus and Guldinus to find out the surface area and the volume of a body. (3)
- e) State Varignon's theorem. (3)
- f) Match the following  

I. Computing forces	1) No resultant couple
II. $T_z A = 0$ ; $T_z B = 0$	2) Right Hand Rule
III. Moment	3) Cartesian Vector Notation
IV. Resolving into components	4) Forced polygon

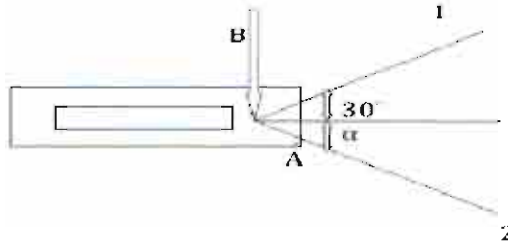
(3)
- g) State D' Alembert's principle. (3)
- h) Determine the position of a particle, whose motion is given by  $x = t^3 - 3t^2 - 9t + 12$ , when velocity becomes zero. (3)
- i) The motion of a particle is defined by the relation  $x = t^3 - 15t^2 - 20$ , where 'x' is expressed in metres and 't' in seconds. Determine the acceleration of the particle at  $t = 3$  seconds. (3)
- j) Explain all the types of rigid body planar motion. (3)

**PART B**

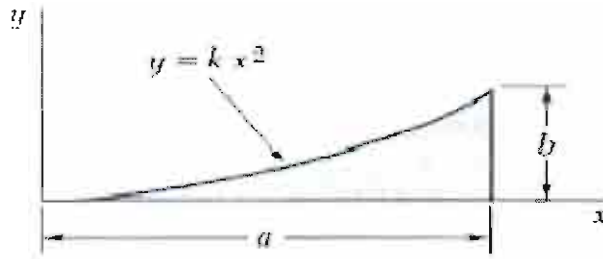
(5×14=70 MARKS)

**ANSWER ANY FIVE QUESTIONS**

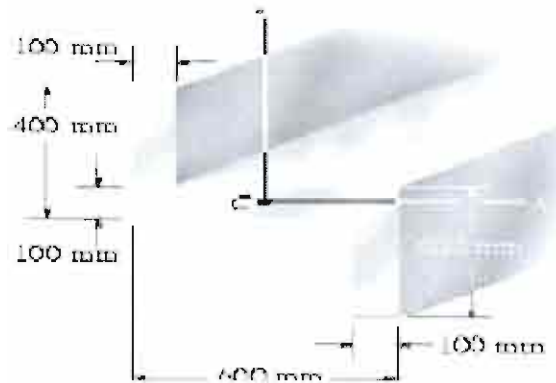
2. A barge is pulled by two tugboats. If the resultant of the forces exerted by the tugboats is a 25kN force directed along the axis of the barge, Determine
- Tension in each of the ropes, knowing that  $\alpha = 45^\circ$  (7)
  - The value of  $\alpha$ , such that the tension in rope 2 is minimum. (7)



3. a) What are the assumptions to be made for truss calculations? (4)  
 b) Explain method of joints with an example? (4)  
 c) What are zero force members? (2)  
 d) Explain method of sections with an example? (4)
4. Determine by direct integration the location of the centroid of a parabolic spandrel. (14)



5. Determine the moments of inertia of the beam's cross-sectional area about the x and y centroidal axes. (14)



6. The position of a particle which moves along a straight line is defined by the relation  $x = t^3 - 6t^2 - 15t + 40$ , where  $x$  is expressed in meters and  $t$  in seconds. Determine,

- a) The time at which velocity will be zero, (4)
- b) The position and distance traveled by the particle at that time, (4)
- c) The acceleration of the particle at that time, (2)
- d) The distance traveled by the particle from  $t = 4\text{s}$  to  $6\text{s}$ . (4)

7.

- a) Give position, velocity, and acceleration vectors to a fixed Cartesian coordinate system. (7)
- b) What are the different phases of projectile? Explain. (7)

8.

- a) What happens when a system of rigid bodies moves under the action of conservative forces? Explain with an example? (8)
- b) Explain Kinetic Energy of a Rigid Body in Plane Motion. (6)

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**INDIAN MARITIME UNIVERSITY**  
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**SEMESTER I – JULY 2012 EXAMINATION**  
**T/116- WORKSHOP TECHNOLOGY**

TIME 3 HRS

MAX MARKS: 100

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**PART A**

(3X10=30 MARKS)

**COMPULSORY QUESTIONS**

1. (a) Draw the hand vice used for gripping small drills? And describe it in detail.
- (b) "Measuring Machines" Describe it in detail.
- (c) Explain boundary type Lubrications in metal working operations? With neat drawing.
- (d) Write approximate amount of scrap produced in various manufacturing processes Mentioned below in percentage,  
(i) Powder Metallurgy, (ii) hot closed Die Forging (iii) Ring Rolling Operation
- (e) Write Recommended Cutting speeds for turning operations for following Titanium alloys and Aluminum alloys
- (f) Draw the simple sketch of Spring Loaded safety Valve.
- (g) Draw the simple sketch of Reducing Valve for Steam.
- (h) List out various safety equipments used by a Marine Officer in Ship for safe sailing.
- (i) Which are the gases used in Gas welding? How are those gases stored for direct use?
- (j) Which fluxes are used in gas welding of ferrous metal and copper alloys?

**PART B**

(5X14=70 MARKS).

**ANSWER ANY FIVE OF THE FOLLOWING**

2. (a) Why clearance is given for Hand Hack saw?
- (b) Draw and explain in detail any three from the following tools (8)  
(i) 'V' Block (ii) Try Square (iii) Surface plate (iv) Prick Punch (v) Scriber
- (c) Write short notes on following (4)  
(i) Diamond –point –Chisel (ii) Half round chisel

3. (a) Write short notes on following (4)
  - (i) Hermaphrodite caliper (ii) Transfer
- (b) Draw and explain in detail (8)
  - (i) Telescopic gauge (ii) Depth gauge (iii) Combination Set
- (c) Define Measuring instrument? (2)
4. (a) Sketch and describe in brief the sensitive drilling machine? (5)
  - (b) What is trepanning? Describe it. (3)
  - (c) What is thread chaser? Describe it (3)
  - (d) "principle of metal cutting"-discuss (3)
5. (a) How to improve the efficiency of cutting operation with respect to friction and Heat sources (4)
  - (b) Write short notes on (i) Flank wear (ii) Crater (3)
  - (c) Multipoint Tools with respect to the productivity – Significant relevance ? (3)
  - (d) Explain any two common operations performed on lathe machine in detail with sketches (4)
6. (a) Draw and explain in detail about any one type of Valve used in Ships, with sketches (5)
  - (b) Draw and explain Temporary Fasteners used in joints in Marine Machineries in Ship (4)
  - (c) "Various Types of Cocks " – Discuss in detail with sketches . (5)
7. (a) Why safety is preferred first over productivity in Marine Industries? (3)
  - (b) How the systems are developed for safety in Ship? How to identify the accidental hazards? (3)
  - (c) In Welding Shop and Machine Shop ,What safety equipment /devices /codes installed for better Performance? (4)
  - (d) Factory act regulation and Safety Engineering – Discuss in detail (4)



- (8) (a) Welding processes in which electrode is not consumed are -----and----- (3)
- (b) Distinguish between Low pressure and High pressure Gas Welding ? (3)
- (c ) Write short notes on following (4)
- (i) Principle of Electric arc Welding
  - (ii) Straight polarity and reversed Polarity
- (d) Describe and explain the following Welding methods giving their advantages, limitations and specific applications
- (i) Electro Slag Welding
  - (ii) Atomic Hydrogen Welding (4)

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**DEPARTMENT OF MARINE ENGINEERING**  
**SEMESTER II – JULY 2012 EXAMINATION**

**T/121 – SEAMANSHIP, ELEMENTARY NAVIGATION & SURVIVAL AT SEA**

TIME 3 HRS

MAX MARKS: 100

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**PART A**

- 1.
- a) Give the meaning of any 6 alphabet flags. 3
  - b) Write short notes on : 1) Reef Knot 2) Sheep shank 3) Monkey fist 3
  - c) How is the local time related to longitude? 3
  - d) Write short notes on: a) Sextant. b) Echo Sounder c) Barometer 3
  - e) Describe the specifications of an immersion suit. 3
  - f) What pyrotechnics are carried on a lifeboat? 3
  - g) What is a muster list? What does it contain? 3
  - h) What are the requirements by ships and port facilities as per the ISPS code? 3
  - i) Enumerate some new amendments introduced in STCW 2010 3
  - j) What is SECA? What is done at the time of entering SECA? 3

**PART B**

- 2. a) With the aid of a sketch, show the position, colour and arc of visibility and range of the navigation lights. 9
- b) Give some examples of sound signals and their meaning 5
- 3. Describe the process of anchoring, including preparation and precautions 14
- 4. Describe the following equipment, along with the principle of its working:-
  - a) The Radar. b) The Magnetic Compass c) Anemometer 14
- 5. List the equipment carried in a liferaft 14
- 6. Sketch and describe the construction of the inflatable liferaft. 14
- 7. What does MARPOL deal with? Give a detailed answer with examples from each annexe. 14
- 8. What is SOLAS? Give a brief outline of each chapter of SOLAS 14

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