Code No: RT22015  **R13**  SET - 1

**II B. Tech II Semester Regular Examinations, May/June - 2015**
**CONCRETE TECHNNOLOGY**
(Civil Engineering)

Time: 3 hours                                                                                   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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**PART-A**
1.  a) What is meant by the water of hydration?
    b) Define workability of concrete?
    c) Define poisson's ratio?
    d) Define creep of concrete?
    e) Write short note on cellular concrete                                   (4M+4M+4M+4M+6M)

**PART-B**

2.  a) What are the reactions of hydration of the main compounds in portland cement?
    b) What is meant by surface texture of aggregate?                          (8M+8M)

3.  a) How is the compacting factor measured?
    b) What are the factors affecting the workability of concrete?             (8M+8M)

4.  a) Explain in detail the factors influencing the strength results in case of hardened concrete.
    b) Write a brief note on Flexure strength of Concrete.                     (8M+8M)

5.  a) Describe the role of aggregate in creep of concrete.
    b) Discuss the influence of mix proportions of concrete on shrinkage?      (8M+8M)

6.  Design a concrete mix of M20 grade for a roof slab. Take a Standard deviation of 4MPa. The
    specific gravities of Coarse Aggregate and Fine Aggregate are 2.73 and 2.60 respectively. The
    bulk density of coarse aggregate is 1615kg/m$^3$ and fineness modulus of fine aggregate is 2.74.
    A slump of 55mm is necessary. The water absorption of coarse aggregate is 1% and free
    moisture in fine aggregate is 2%. Design the concrete mix using IS code method. Assume any
    missing data suitably.                                                     (16M)

7.  What is the need to study fiber reinforced concrete and explain briefly the factors effecting
    properties of fiber reinforced concrete?                                   (16M)

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**R13**

**SET - 2**

### II B. Tech II Semester Regular Examinations, May/June - 2015
### CONCRETE TECHNNOLOGY
(Civil Engineering)

Time: 3 hours
Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

1.  a) How is fineness of cement measured?
    b) What is meant by honeycombing?
    c) Define the gel/space ratio?
    d) What is a secant modulus of elasticity?
    e) Write short note on no fines concrete?　　　　　(4M+4M+4M+5M+5M)

## PART-B

2.  a) What is the pozzolanic activity index?
    b) Why do we determine the elongation index?
    c) What is bulking of sand?　　　　　(6M+6M+4M)

3.  a) Explain what is meant by bleeding of concrete?
    b) What are the factors affecting the workability of concrete?　　　　　(8M+8M)

4.  a) What is the importance of Non-Destructive tests?
    b) Write a brief note on split tensile strength of Concrete.　　　　　(8M+8M)

5.  a) Discuss the main factors affecting the creep of concrete
    b) Describe the mechanism of drying shrinkage of concrete　　　　　(8M+8M)

6.  Design a concrete mix of M30 grade for a roof slab. Take a Standard deviation of 5MPa. The specific gravities of Coarse Aggregate and Fine Aggregate are 2.74 and 2.62 respectively. The bulk density of coarse aggregate is 1620kg/m$^3$ and fineness modulus of fine aggregate is 2.76. A slump of 65mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using IS code method. Assume any missing data suitably.　　　　　(16M)

7.  Explain the following,
    a) Cellular concrete
    b) Polymer concrete
    c) High performance concrete　　　　　(5M+5M+6M)

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**R13**

**SET - 3**

### II B. Tech II Semester Regular Examinations, May/June - 2015
### CONCRETE TECHNNOLOGY
(Civil Engineering)

Time: 3 hours                                                                    Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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**PART-A**

1.  a) What are the major compounds in Portland cement?
    b) What is meant by segregation of a concrete mix?
    c) What is the effective water/cement ratio?
    d) What is a tangent modulus of elasticity?
    e) Write short note on self compacting concrete

                                                                     (4M+4M+4M+5M+5M)

**PART-B**

2.  a)  How are the strength tests of cement performed?
    b) Why do we determine the flakiness index?
    c) What are the advantages of a gap-graded mix?                    (6M+5M+5M)

3.  a) Discuss the factors affecting bleeding of concrete.
    b) What is relation between cohesiveness and segregation?          (8M+8M)

4.  a) Discuss the relation between modulus of elasticity and strength
    b) Write a brief note on rebound hammer test.                      (8M+8M)

5.  a) Write a brief note on factors affecting modulus of elasticity.
    b) Define Creep and explain how creep is measured.
    c) Explain in detail the classification of Shrinkage.              (6M+5M+5M)

6.  Design a concrete mix of M25 grade for a roof slab. Take a Standard deviation of 4MPa. The specific gravities of Coarse Aggregate and Fine Aggregate are 2.75 and 2.58 respectively. The bulk density of coarse aggregate is 1630kg/m$^3$ and fineness modulus of fine aggregate is 2.78. A slump of 60mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using IS code method. Assume any missing data suitably.                                                (16M)

7.  Explain the following,
    i) Light weight aggregate concrete
    ii) SIFCON
    iii) Types of polymer concrete                                     (5M+5M+6M)

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Code No: RT22015

**R13**

SET - 4

**II B. Tech II Semester Regular Examinations, May/June - 2015**
**CONCRETE TECHNNOLOGY**
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

1.  a)  What is meant by the total heat of hydration of cement?
    b) What is meant by bleeding of concrete?
    c) What is Abram's law?
    d) Explain what is meant by differential shrinkage?
    e) Write short note on self healing concrete

(4M+4M+4M+5M+5M)

## PART-B

2.  a) What is meant by soundness of aggregate
    b) What is a gap-graded mix?
    c) Define toughness of aggregate?                    (6M+5M+5M)

3.  a) Discuss the factors affecting cohesion of concrete?
    b) What is Workability and explain various factors influencing the Workability?      (7M+9M)

4.  a) What are the advantages of NDT over destructive tests?
    b) Write a brief note on compressive strength of Concrete.                    (8M+8M)

5.  a) Explain the term efflorescence.
    b) Define Creep and explain how creep is measured.
    c) Write about the thermal properties of concrete.                    (5M+6M+5M)

6.  Design a concrete mix of M35 grade for a roof slab. Take a Standard deviation of 5MPa. The specific gravities of Coarse Aggregate and Fine Aggregate are 2.76 and 2.59 respectively. The bulk density of coarse aggregate is 1625kg/m$^3$ and fineness modulus of fine aggregate is 2.82. A slump of 70mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 2%. Design the concrete mix using IS code method. Assume any missing data suitably.                    (16M)

7.  a) What are the factors affecting properties of fiber reinforced concrete?
    b) Difference between High performance concrete and high density concrete.          (8M+8M)

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**R13**

### II B. Tech II Semester Regular Examinations, May/June - 2015
### POWER SYSTEMS - I
(Electrical and Electronics Engineering)

Time: 3 hours                                                                      Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**
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## PART-A

1.  a) What are the functions of an economizer?
    b) What is the need of electrostatic precipitator in a thermal power station?
    c) What are the nuclear materials used in nuclear power station?
    d) What are the advantages and disadvantages of fast breeder reactor?
    e) What are the differences between radial and ring main distribution system.
    f) What are the merits of gas insulated substation over air insulated substation?
    g) What is meant by capacitance grading of a cable.
    h) Define the terms load factor and diversity factor.
    i) What are the desirable characteristics of a tariff method?

    (2M+3M+2M+3M+2M+3M+2M+2M+3M)

## PART-B

2.  a) Explain the factors to be considered for the selection of the site for a thermal power station.
    b) Explain the functions of Cooling tower and condenser with respect to a Thermal power station.                                                                       (8M+8M)

3.  a) With the help of neat diagram, describe the working of pressurized water reactor.
    b) Explain the radiation hazards and shielding in nuclear power plants.      (9M+7M)

4.  Explain, in detail the radial and ring main distribution systems. Discuss the characteristics of each system. Also explain the design features of each system.                       (16M)

5.  a) What are the various types of bus bar arrangements in the substations? Explain sectionalized single bus bar arrangement with suitable diagrams.
    b) Explain the constructional aspects of gas insulated substation.           (9M+7M)

6.  a) Derive the expression for electrostatic stress in a single core cable. Where does maximum stress occur and where is it minimum and why?
    b) A single core, 33kV cable has a conductor diameter of 3.4 cm and a sheath of inside diameter 6.2 cm. The cable has an inner layer of 1.5 cm thick of rubber of dielectric constant 5.1 and rest impregnated refer of dielectric constant 3.2. Find the maximum stresses in the rubber and in the paper.                                                     (8M+8M)

7.  a) A Domestic lighting installation having fifteen 60 watt lamps is operated as follows:
       i) 5 lamps from 6 p.m till 8 p.m          ii) 10 lamps from 8 p.m till 10 p.m
      iii) 6 lamps from 10 p.m till 12 p.m  iv) Determine the demand factor and the daily load factor.
    b) Explain two-part tariff and compare it with power factor tariff.          (8M+8M)

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**R13**

**SET - 2**

## II B. Tech II Semester Regular Examinations, May/June - 2015
### POWER SYSTEMS - I
(Electrical and Electronics Engineering)

Time: 3 hours                                                                                      Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

1.  a) What are the functions of an condenser?
    b) List the important functions of the boiler.
    c) List out the main parts of nuclear reactor.
    d) What are the advantages and disadvantages of boiling water reactor?
    e) What are the characteristics of ring main distribution system?
    f) Give the comparison of outdoor and indoor substations.
    g) Explain why and how the grading of cables in done.
    h) Define the terms demand factor and plant use factor.
    i) What is meant by block-rate tariff?                (2M+3M+2M+3M+2M+3M+2M+2M+3M)

## PART-B

2.  Draw the complete schematic diagram of a coal fired thermal power plant. Label each component. Discuss briefly the function of each component.                (16M)

3.  a) With the help of a neat diagram explain the working principle of a fast breeder reactor used in a nuclear power plant.
    b) Enumerate and explain essential components of a nuclear reactor.                (9M+7M)

4.  a) Explain the radial distribution system with neat diagram and list out its merits and demerits compared to ring main distributor.
    b) A D.C ring main system ABCDA fed from point A with 250 V supply and the loop resistances of various sections are AB = 0.09 ohms; BC = 0.4 ohms; CD = 0.3 ohms and DA = 0.08 ohms. The main supplies 110 A at B, 160A at C and 220 A at D. Calculate the voltages at each load point. If the points A and C are inter connected through a link of 0.08 ohm. Determine the voltages at the load points.                (8M+8M)

5.  a) What is the difference between indoor and outdoor substations? What are the factors which are to be considered for a selection of a site of a substation.
    b) Explain the installation and maintenance of gas insulated substation                (9M+7M)

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6. a) Deduce an expression for insulation resistance of a single core cable in terms of specific resistance of dielectric, its core and sheath diameter.

    b) A 3-core, 3-phase metal sheathed cable has capacitance between all conductors bunched and sheath is 0.9 μF and capacitance between two conductors bunched with sheath and third conductor is 0.7 μF. Determine the capacitance when the sheath is insulated for the following conditions: (i) Between any two conductors (ii) Between any two bunched conductors and the third conductor (iii) Calculate the capacitance to neutral and charging current taken by the cable when connected to 33 kV, 3-phase, 50 Hz systems.     (8M+8M)

7. a) Explain the following with respect to the economic aspects power generation: (i) Load duration curve, (ii) Diversity factor ,(iii) Maximum demand and (iv) Plant Capacity factor.

    b) A Power station is to fed four regions of load whose peak loads are 12, 7, 10 and 8 MW. The diversity factor at the station is 1.4 and the average annual load factor is 65%. Determine the following: i) Maximum demand on the station ii) Annual energy supplied by the station and iii) Suggest the installed capacity.     (8M+8M)

**II B. Tech II Semester Regular Examinations, May/June - 2015**
**POWER SYSTEMS - I**
(Electrical and Electronics Engineering)

Time: 3 hours                                                                                     Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

1.  a) What are the functions of an Chimney?
    b) What is the need of cooling towers in a thermal power station?
    c) What are the factors considered for location of nuclear power plant?
    d) Give the advantages and disadvantages of pressurized water reactor?
    e) What are the characteristics of radial distribution system?
    f) State the advantages of outdoor substations over indoor substations.
    g) Discuss why loss angle of power cable is very low.
    h) Define connected load and maximum demand.
    i) What is meant by two-part tariff?                    (2M+3M+2M+3M+2M+3M+2M+2M+3M)

## PART-B

2.  a) Describe the functions of economizer and super heater in a thermal power plant.
    b) What are the essential requirements of steam power station design?          (8M+8M)

3.  a) Describe with the help of a neat sketch, construction and working of a boiling water reactor.
    b) Explain the factors considered for location of a nuclear power plant.          (9M+7M)

4.  a) Explain about stepped distributor and ring main distributor in a distribution system.
    b) A 500 m long single phase AC distributor has a total impedance of (0.02+j0.04) ohms and is fed from one end at 230V. It is loaded as follows: 50A at UPF, 200 m from feeding point, 100A at 0.8 p.f lag, 300 m from feeding point, 50A at 0.7 p.f lag at the far end. Calculate the total voltage drop and voltage at the far end.          (7M+9M)

5.  a) Draw the single line diagram of a GIS and explain.
    b) Explain with a neat lay out diagram of main and transfer bus bar system.          (8M+8M)

6.  a) Draw the cross section of a 3-core belted high voltage cable and describe its various parts.
    b) A 3-phase, single core 132 kV cable has a conductor diameter of 3.2 cm and a sheath of inside diameter 9 cm. If two intersheaths are introduced in such a way that the stress varies between the same maximum and minimum in the three layers. Find i) Positions of inters heaths ii) voltage on the inters heaths iii) Maximum and minimum stress.          (8M+8M)

7.  a) Discuss the objectives and requirements of tariff methods.
    b) A 2000 MW power station delivers 2000 MW for 3 hours, 600 MW for 7 hours and is shut down for the rest of each day. It is also shut down for maintenance for 70 days annually. Calculate its annual load factor.          (8M+8M)

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**R13**

**SET - 4**

## II B. Tech II Semester Regular Examinations, May/June - 2015
## POWER SYSTEMS - I
(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

1. a) What are the functions of an super heater?
   b) Write the differences between impulse and reaction turbine.
   c) Give the advantages and disadvantages of pressurized water reactor?
   d) What is the working principle of nuclear power station?
   e) Give the comparison between DC and AC distribution systems.
   f) What are the differences between single bus bar scheme and double bus bar scheme?
   g) What is meant by intersheath grading?
   h) Define the terms plant capacity factor and demand factor.
   i) What is meant by three-part tariff?                    (2M+3M+2M+3M+2M+3M+2M+2M+3M)

## PART-B

2. a) Describe briefly various components in modern thermal power station with neat flow
      diagram.
   b) Explain briefly about ash handling mechanism in a thermal plant.                (8M+8M)

3. a) Describe the fast breeder reactor with neat sketch? Discuss its merits.
   b) Discuss about the nuclear waste disposal mechanism in a nuclear power plant.     (9M+7M)

4. a) Give the classification of distribution systems and compare AC and DC distribution systems.
   b) A single-phase distributor has a total resistance of 0.3 ohms and a reactance of 0.4 ohms. At
      the midpoint 'A', a current of 75A at 0.75 p.f lead and at the far end 'B', a current of 100A
      at unity p.f is tapped. If the voltage at the midpoint is 230V, find the voltage at the supply
      end and also its phase angle with respect to voltage at the far end when the power factors are
      with reference to respective voltages at the load point.                (8M+8M)

5. a) What are the merits and demerits of GIS over air insulated substations.
   b) What are the various types of bus bar arrangements in the substation? Discuss double bar
      system.                                                              (8M+8M)

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6. a) A single core cable has a conductor diameter of 2.5 cm and a sheath of inside diameter 6 cm. Calculate the maximum stress. It is desired to reduce the maximum stress by using two intersheaths. Determine their best position, the maximum stress and the voltage on each. Consider the System voltage as 3-phase 66 kV.
   b) What is the most general criterion for the classification of cables? Draw the sketch of a single core low tension cable and label the various parts.     (8M+8M)

7. a) What are the various types of tariffs? Explain the power factor tariff.
   b) An industry working 12 hours a day for 360 days in a year. The following two systems of tariff are available: H.V supply at 5 paise per unit plus Rs. 4.5 per month per kVA of maximum demand, LV supply at Rs.4 per month per kVA of maximum demand plus 7 paise per unit. The industry has an average load of 300 kW at 0.8 p.f and a maximum demand of 125 kW at p.f of 0.85. The H.V equipment costs Rs. 50 per kVA and losses can be taken as 5%. The interest and depreciation charges are 5%. Calculate the differences in cost between the two systems. Comment on the results.     (8M+8M)

**R13**

## II B. Tech II Semester Regular Examinations, May/June - 2015
## FLUID MECHANICS AND HYDRALIC MACHINERY
(Com. to ME, AME)

Time: 3 hours                                                                                              Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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### PART-A

| | | | |
|---|---|---|---|
| 1 | a) | How does the viscosity of air vary with temperature? | (4) |
| | b) | Differentiate between stream function and velocity potential | (4) |
| | c) | What is a dimensionless number | (4) |
| | d) | What is velocity diagram for a turbine blade?  What is its use | (4) |
| | e) | Define specific speed of a centrifugal pump | (3) |
| | f) | Briefly explain the working of a hydraulic lift | (3) |

### PART-B

| | | | |
|---|---|---|---|
| 2 | a) | List all fluid properties and derive Newton's law of viscosity. | (8) |
| | b) | Find the height through which water rises by capillary action in a glass tube of 2mm bore if the surface tension at the prevailing temperature is 0.075 N/m. | (8) |
| | | | |
| 3 | a) | Define stream function and velocity potential. What are their uses? | (10) |
| | b) | Determine whether the following velocity components satisfy the continuity equation. i) $u = cx$, $v = -cy$       ii) $u = -cx/y$ , $v = c \log xy$ | (6) |
| | | | |
| 4 | a) | Explain the development of boundary layer formation over a flat plate. | (6) |
| | b) | Discuss displacement thickness, energy thickness and momentum thickness | (10) |
| | | | |
| 5 | a) | A jet of oil of specific gravity strikes a fixed curved symmetrical plate at its center and leaves at the outlet tips. The diameter of the jet is 62 mm and the velocity of the jet is 45 m/sec. If the jet is deflected by 100 degrees, calculate the force exerted on the curved plate. | (8) |
| | b) | How do you estimate the impact of a jet striking a moving normal plate in the direction of the jet | (8) |
| | | | |
| 6 | a) | A centrifugal pump while running at 800 rpm discharges 100 L/s against a net head of 14m. The manometric efficiency of the pump is 78%. If the vane angle at the outlet is 35 degrees and the velocity of flow is 2m/sec, determine the outer diameter of the impellor. | (10) |
| | b) | What is a reciprocating pump ? What are its types ? Explain its working with a neat sketch. | (6) |
| | | | |
| 7 | a) | Explain the classification of turbines ? Explain the working of Francis turbine with a neat sketch. | (8) |
| | b) | What is governing of turbines? How is it achieved? | (8) |

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Code No: RT22034

R13

SET - 2

**II B. Tech II Semester Regular Examinations, May/June - 2015**
**FLUID MECHANICS AND HYDRALIC MACHINERY**
(Com. to ME, AME)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

| | | | |
|---|---|---|---|
| 1 | a) | What are the applications of surface tension? | (4) |
| | b) | What is a flow net? What are its uses | (4) |
| | c) | Explain any one application of momentum equation | (4) |
| | d) | Differentiate between radial flow and tangential flow in turbines. | (4) |
| | e) | Define NPSH for a centrifugal pump | (3) |
| | f) | Explain the importance of governing of turbines | (3) |

## PART-B

2  a) Derive the equation for capillarity depression when a small glass tube is inserted in mercury. (6)

   b) A piston of 7.95 cm diameter and 30 cm long works in a cylinder of 8.0 cm diameter. The annular space of the pistion is filled with an oil of viscosity 2 poise. If an axial load of 10N is applied to the piston, calculate the speed of movement of the piston. (10)

3  a) Derive the Bernoulli's equation and discuss its significance. (10)

   b) A Water pipe changes in diameter from 400mm at section A to 800mm at section B which is 7 m above. The pressures at A and B are 100 KPa and 75 KPa respectively. The discharge is 400 litres/Sec. Find the direction of flow. (6)

|''|'|||||''|'''|'|'|

4  a)  What do you understand by Boundary Layer ? Explain the development of Boundary layer over a flat plate.          (8)

   b)  What are the dimensionless numbers in dimensional analysis. Discuss a few of them          (8)

5  a)  A nozzle of size 10 cm diameter issues a jet of water with a velocity of 50m/sec. The jet strikes a moving flat plate perpendicularly at the centre. The plate is moving with a velocity of 15m/sec in the direction of the jet. Calculate          (8)

       i.   The force exerted on the plate

       ii.  The work done

       iii. Efficiency of the jet

   b)  Derive the equation for the impact of jet striking a moving inclined plate in the direction of the jet          (8)

6  a)  A centrifugal pump delivers water against a net head of 10 m at a design speed of 800 rpm. The vanes are curved backwards and make an angle of 30 degrees with the tangent at the outer periphery. The impeller diameter is 30 cm and has a width of 5 cm  at the outlet. Determine the discharge of the pump if the manometric efficiency is 85%          (8)

   b)  What is indicator diagram for a reciprocating pump? Explain slip and coefficient of discharge of a reciprocating pump.          (8)

7  a)  How are turbines classified? Explain the working of Pelton wheel turbine with a neat sketch.          (8)

   b)  What is a draft tube? What are its functions?          (8)

**II B. Tech II Semester Regular Examinations, May/June - 2015**
**FLUID MECHANICS AND HYDRALIC MACHINERY**
(Com. to ME, AME)

Time: 3 hours                                                                                              Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

| | | | |
|---|---|---|---|
| 1 | a) | Derive the equation for capillary rise in a small tube dipped in a liquid | (4) |
| | b) | Explain the concept of stream tube in Fluid Mechanics & Hydraulic Machinery | (4) |
| | c) | Explain Boundary layer separation with a neat sketch | (4) |
| | d) | What is a velocity diagram? Explain with a sketch | (4) |
| | e) | When do you connect centrifugal pumps in series? | (3) |
| | f) | Explain the use of draft tube of a turbine | (3) |

## PART-B

| | | | |
|---|---|---|---|
| 2 | a) | What is metacentric height? Explain how the same is calculated | (8) |
| | b) | What are the modes of measuring pressure? How can you convert the pressure in KPa into the liquid columns and vice versa. | (8) |
| | | | |
| 3 | a) | What are the different types of flow ? State and Explain Bernoulli's equation. | (8) |
| | b) | A pipe line 300 m long has a slope of 1 in 100 and tapers from 1.2m diameter at the high end to 0.6m at the low end. The discharge through the pipe is 5.4 $m^3$/minute. If the pressure at the high end is 70 kpa, find the pressure at the low end. Neglect the losses. | (8) |
| | | | |
| 4 | a) | What are the characteristics of boundary layer formation over a flat plate ? | (6) |
| | b) | Explain how the boundary layer thickness is defined in different ways. | (10) |
| | | | |
| 5 | a) | A jet of water strikes with a velocity of 50 m/sec a flat fixed plate inclined at 30 degrees with the axis of the jet. The cross sectional area of the plate is 100 $cm^2$. Find the force exerted by the jet on the plate and the ratio in which the jet gets divided after striking. | (8) |
| | b) | Derive the equation for the impact of jet striking a curved plate at the centre when the plate is stationary. | (8) |
| | | | |
| 6 | a) | A fluid is to be lifted against a head of 120m . The pumps that run at a speed of 1200 rpm with rated capacity of 300 litres per second are available. How many pumps are required to pump the water if specific speed is 700. | (8) |
| | b) | What is the working principle of a reciprocating pump ? Explain its working with the help of an indicator diagram. | (8) |
| | | | |
| 7 | a) | Differentiate between impulse turbine and reaction turbine. What is a draft tube and what are its functions? | (10) |
| | b) | What is geometric similarity? How do we maintain it | (6) |

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**R13**

**SET - 4**

## II B. Tech II Semester Regular Examinations, May/June - 2015
## FLUID MECHANICS AND HYDRALIC MACHINERY
(Com. to ME, AME)

Time: 3 hours                                                                                    Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**
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## PART-A

| | | | |
|---|---|---|---|
| 1 | a) | What is Pascal's law? Explain with an example | (4) |
| | b) | What is centre of pressure? Where does it lie in relation to centre of gravity | (4) |
| | c) | What is stream lined body? | (4) |
| | d) | How do you find the force when a jet is striking a fixed vertical plate with a velocity v. | (4) |
| | e) | Define cavitation in centrifugal pump. | (3) |
| | f) | Explain the working of a hydraulic ram | (3) |

## PART-B

| | | | |
|---|---|---|---|
| 2 | a) | List all the fluid properties and explain why water rises in a small glass tube when inserted in water. | (6) |
| | b) | The space between two parellel plates kept 3mm apart is filled with an oil of dynamic viscosity 0.2 Pa.s. What is the shear stress on the lower fixed plate, if the upper one is moved with a velocity of 1.50m/sec? | (10) |
| | | | |
| 3 | a) | Differentiate between laminar flow and turbulent flows, and rotational and irrotational flows. | (6) |
| | b) | Derive the continuity equation from fundamentals. Determine whether the following velocity components satisfy the continuity equation. i) $u = cx$, $v = -cy$  ii) $u = -cx/y$ , $v = c \log xy$ | (10) |

|''|'|||||'|'''|'|'|

4  a)  What is a boundary layer ? Differentiate between a laminar and turbulent boundary    (8)
       layer.

   b)  Explain how a boundary layer separates from boundary. What are the conditions    (8)
       under which separation takes place ?

5  a)  A jet of water of diameter 40 mm moving with a velocity of 30m/sec strikes a    (8)
       curved fixed symmetrical plate at the center. Find the force exerted by the water  on
       the plate, if the jet is deflected through an angle of 120 degrees at the outlet of the
       curved plate.

   b)  Derive the equation for impact of jet striking a curved plate at one tip and leaving at    (8)
       the other  tip, when the plate is stationary

6  a)  Water is to be pumped to a height of 90m . The pumps that run at a speed of 1000    (8)
       rpm with rated capacity of 200 litres per second are available. How many pumps are
       required to pump the water if specific speed is 800.

   b)  What is a manometric head of a centrifugal pump ? How do you define the specific    (8)
       speed of a centrifugal pump ?

7  a)  What type of turbine is Kaplan turbine? Explain how it works with a neat diagram.    (10)
       Discuss the importance of draft tube in reaction turbines.

   b)  What are the unit quantities to study the performance of turbines?    (6)

**R13**

SET - 1

### II B. Tech II Semester Regular Examinations, May/June - 2015
### MANAGEMENT SCIENCE
(Electronics and Communications Engineering)

Time: 3 hours                                                                                   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

1. Write short notes on the following:
   a) Management.
   b) EOQ.
   c) Recruitment.
   d) Vision.
   e) Business Ethics.
   f) Just-In-Time.                                                         (3M+4M+4M+4M+4M+3M)

## PART-B

2. a) Describe the nature and importance of Management.
   b) Explain Mc Gregor's theory of Motivation.                                        (8M+8M)

3. a) Define Method study. How do you carry it out?
   b) Explain PERT and its importance in Network analysis.                             (8M+8M)

4. a) Evaluate On-the-Job and Off-the-Job training methods.
   b) Explain the stages in Product Life Cycle with the help of diagram.              (8M+8M)

5. a) What is Mission? What are the characteristics of a Mission statement?
   b) Explain SWOT analysis. Analyze how SWOT analysis can be used to evolve appropriate
      corporate strategy.                                                              (8M+8M)

6. What do you meant by "Business Ethics"? Discuss critically ethical responsibilities of a
   business.                                                                           (16M)

7. a) Explain the importance of Six Sigma in production.
   b) How is Bench Marking useful?                                                     (8M+8M)

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**II B. Tech II Semester Regular Examinations, May/June - 2015**
**MANAGEMENT SCIENCE**
(Electronics and Communications Engineering)

Time: 3 hours                                                                                          Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
　　　 2. Answer **ALL** the question in **Part-A**
　　　 3. Answer any **THREE** Questions from **Part-B**
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## PART-A

1. Write short notes on the following:
   a) Motivation.
   b) Control Charts.
   c) Production Planning.
   d) Mission.
   e) Business Ethics.
   f) MIS.                                                                          (3M+4M+4M+4M+4M+3M)

## PART-B

2. a) What is Management? What are the functions of Management?
   b) Discuss the steps in decision making process.                                          (8M+8M)

3. a) What is meant by Inventory? What is the need for inventory control at different stages of
      production?
   b) Differentiate between CPM and PERT.                                                    (8M+8M)

4. a) Identify and briefly discuss the functions of Marketing.
   b) Explain the aims and advantages of Job Evaluation.                                      (8M+8M)

5. Discuss the essential steps in Corporate Planning.                                          (16M)

6. What is Business Ethics? What are the ethical responsibilities of business?                 (16M)

7. a) How does Just-In—Time (JIT) help in reducing costs.
   b) Describe the importance of Total Quality Management. (TQM)                               (8M+8M)

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**R13**

## II B. Tech II Semester Regular Examinations, May/June - 2015
## MANAGEMENT SCIENCE
(Electronics and Communications Engineering)

Time: 3 hours                                                                                           Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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### PART-A

1. Write short notes on the following:
   a) Leadership.
   b) Work Study.
   c) Marketing.
   d) Goal.
   e) Business Ethics.
   f) Total Quality Management (TQM).                    (3M+4M+4M+4M+4M+3M)

### PART-B

2. a) Define Management and discuss its nature and importance.
   b) Evaluate Democratic Leadership Style.                                      (8M+8M)

3. a) Explain the importance of Statistical Quality Control in industry.
   b) What is the need of classifying inventories? Discuss ABC analysis in this regard.
                                                                               (8M+8M)

4. a) Describe briefly the functions of Financial Management.
   b) What are the functions of channels of distribution?                       (8M+8M)

5. What is a Strategy? List out the steps in Strategy formulation, implementation and evaluation.
                                                                                  (16M)

6. Define Business Ethics. Describe the ethics to be followed by the management of an orgtanisation.                                                                  (16M)

7. a) What is JIT and what are its benefits.
   b) Explain the concept "Business Process outsourcing. (BPO)                    (8M+8M)

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**R13**

**II B. Tech II Semester Regular Examinations, May/June - 2015**
**MANAGEMENT SCIENCE**
(Electronics and Communications Engineering)

Time: 3 hours                                                                                          Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

1.  Write short notes on the following:
    a) Organisation.
    b) Project Management.
    c) Job Evaluation.
    d) Strategy.
    e) Ethics in HRM.
    f) Business Process Outsourcing (BPO).                          (3M+4M+4M+4M+4M+3M)

## PART-B

2.  a) "Management is getting things done through other people." Discuss.
    b) Illustrate any three types of organization structures.                          (8M+8M)

3.  a) Define Work Study and explain the need for work study in an enterprise.
    b) A company is requiring 10,000 units of raw material per annum. The cost per order is
       estimated to be Rs. 50. The storage cost is estimated to be Rs. 15 per unit of average
       inventory. What quantity should be ordered so that the total cost in minimum.      (8M+8M)

4.  a) Explain and evaluate any four methods of Merit rating.
    b) Analyze the features of different methods of production.                          (8M+8M)

5.  a) Briefly explain about environmental analysis.
    b) How do you formulate and implement a strategy? Explain.                          (8M+8M)

6.  What is Business Ethics? What are the ethics that business organisations should follow towards
    various stakeholders?                                                              (16M)

7.  Explain what different levels mean under Capability Maturity Models.                  (16M)

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**R13**

**SET - 1**

### II B. Tech II Semester Regular Examinations, May/June - 2015
### COMPUTER ORGANIZATION
(Com. to CSE, IT, ECC)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

1. a) Find (1001101 - 10101001) using 1's complement?
   b) What is instruction cycle?
   c) Write the advantage of RISC over CISC?
   d) Draw the circuit diagram and Truth table for Full adder?
   e) Draw the hierarchy of memory? Why memory hierarchy is important in computer system?
   f) Differentiate between Synchronous and Asynchronous modes of data transfer?

   (3M+3M+4M+4M+4M+4M)

## PART-B

2. a) Discuss three representations of Signed integers with suitable examples.
   b) Explain the components of the Computer system.                          (8M+8M)

3. a) List and explain the steps involved in the execution of a complete instruction
   b) What is Micro operation? Briefly explain the arithemetic micro operations?   (8M+8M)

4. a) Explain the organization of registers.
   b) Explain how microinstructions execution takes place.                     (8M+8M)

5. a) Explain the issue involved with multiplication operation.
   b) Design 4-bit adder/Subtractor and explain its function.                  (8M+8M)

6. What is a mapping function? What are the ways the cache can be mapped? Explain in detail.
                                                                               (16M)

7. a) What is multiprocessor system?  Explain the advantages of  multi processors over
      uniprocessors
   b) Explain the functions of typical input-output interface.                 (8M+8M)

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**II B. Tech II Semester Regular Examinations, May/June - 2015**
**COMPUTER ORGANIZATION**
(Com. to CSE, IT, ECC)

Time: 3 hours                                                                 Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
       2. Answer **ALL** the question in **Part-A**
       3. Answer any **THREE** Questions from **Part-B**

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## PART-A

1.  a) What are 2's Compliment? Give its Significance?
    b) What is interrupt? Give the steps for handling interrupt?
    c) Compare RISC and CISC?
    d) Realize full adder using two half adders and logic gate?
    e) What is Auxiliary memory?
    f) What are different forms of parallelism?                (4M+4M+4M+4M+3M+3M)

## PART-B

2.  a) Explain the functional architecture of the computer system.
    b) Discuss the concept of compliments used to represent signed numbers.        (8M+8M)

3.  a) What is instruction cycle? Briefly explain with the help of state diagram?
    b) Briefly explain the arithmetic logic shift unit                              (8M+8M)

4.  a) Explain the various addressing modes with examples.
    b) Explain the basic organization of microprogrammed control unit              (8M+8M)

5.  a) Design carry look ahead adder and explain its function.
    b) Derive and explain an algorithm for adding and subtracting 2 floating point binary numbers
                                                                                   (8M+8M)

6.  a) Explain the Address Translation in Virtual Memory
    b) Explain different types of mapping functions in cache memory                (8M+8M)

7.  a) How data transfers can be controlled using handshaking technique?
    b) Explain organization of multiprocessor system with neat sketch.             (8M+8M)

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**R13**

SET - 3

### II B. Tech II Semester Regular Examinations, May/June - 2015
### COMPUTER ORGANIZATION
(Com. to CSE, IT, ECC)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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## PART-A

Part A

1. a) What is parity? Give its significance?
   b) What is one address, two address and three address instruction formats?
   c) What is Register Indirect Addressing mode? Give an example?
   d) Draw the circuit diagram and Truth table for half adder?
   e) What is Cache memory? Mention its advantages?
   f) What is the use of priority interrupt?                    (3M+4M+4M+4M+4M+3M)

## PART-B

2. a) Describe the connections between the processor and memory with a neat structure diagram
   b) Find 2's complement of the following
      i) 10010        ii) 111000      iii) 0101010          iv) 111111          (8M+8M)

3. a) Explain the Memory reference instructions? Give examples?
   b) List and explain the shift micro operations?                    (8M+8M)

4. a) Explain micro instruction sequencing in detail.
   b) With a neat diagram explain the internal organization of a processor.          (8M+8M)

5. a) Explain hardware implementation of Binary multiplier with example.
   b) Discuss decimal arithmetic operations                    (8M+8M)

6. a) Explain about associative memory
   b) Explain internal organization of memory chips.                    (8M+8M)

7. a) With a neat sketch explain the working principle of DMA
   b) Explain the interconnection structure for multiprocessor systems          (8M+8M)

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**R13**

## II B. Tech II Semester Regular Examinations, May/June - 2015
## COMPUTER ORGANIZATION
(Com. to CSE, IT, ECC)

Time: 3 hours
Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **THREE** Questions from **Part-B**

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### PART-A

1. a) What Sign magnitude representation? Give an example?
   b) Draw the structure of basic computer system?
   c) What is addressing mode? List any four Addressing modes?
   d) Draw the diagram for 4-bit adder?
   e) What is Virtual memory? Why it is significant?
   f) What is DMA? Write its Advantages?                    (4M+3M+4M+3M+4M+4M)

### PART-B

2. a) Discuss about fixed point and floating point representations
   b) What are functions of ALU and explain.                    (8M+8M)

3. a) What is RTL? Explain with suitable examples? What is its significance Instructions?
   b) What is Interrupt? Explain Input output interrupts?                    (8M+8M)

4. a) Explain different addressing modes.
   b) Mention the advantages and disadvantages of microprogrammed control hardwired control
                                                                                    (8M+8M)

5. a) Explain division algorithm with example.
   b) Explain Booth Multiplication algorithm with example.                    (8M+8M)

6. a) Analyze the memory hierarchy in terms of speed, size and Cost.
   b) Design 64k X 16 memory chip using 16k X 8 memory chips                    (8M+8M)

7. a) What are handshaking signals. Explain the handshake control of data transfer during input
      and output operation
   b) What is parallel processing? Explain any parallel processing mechanism.                    (8M+8M)

**R10**

**SET - 1**

**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**HYDRAULICS AND HYDRAULIC MACHINERY**
(Civil Engineering)

Time: 3 hours                                                                                           Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Distinguish between
    i) Steady and unsteady flow            ii) Uniform and non uniform flow
    iii) Gradually and rapidly varied flow       iv) Critical and subcritical flows
   b) Determine the most economical section of rectangular channel carrying water at 0.75 m$^3$/s.
      The bed slope of the channel is being 1/1500. Take chezy's constant C = 60.

2. a) A sluice gate discharges water into horizontal rectangular channel with a velocity of 10 m/s
      and depth of flow of 1 m. Determine the depth of flow of water after the jump and
      consequent loss in total head.
   b) What is the essential difference between gradually varied flow and rapidly varied flow?
      Illustrate with neatly drawn sketches.

3. a) Explain the terms distorted models and undistorted models. What is the use of distorted
      models.
   b) Define the terms: model, prototype, model analysis, and hydraulic similitude.

4. a) Derive an expression for the force, work done, and efficiency of a moving curved vane.
   b) Find the force exerted by a jet of water of diameter 75 mm on a stationary flat plate when
      the jet strikes the plate normally with velocity of 20 m/s.

5. a) Differentiate between an impulse turbines and a reaction turbines.
   b) Describe briefly the functions of various main components of Pelton turbine with neat
      sketches

6. a) What is cavitation? How can it be avoided in reaction turbine?
   b) What is specific speed? State its significance in the study of hydraulic machines.

7. a) Name the various types of pumps used in civil engineering practice indicating their uses
   b) State the difference between closed, semi-closed, and open impellers

8. a) Compare and contrast between hydropower station and thermal power station.
   b) Discuss various classifications of different types of hydropower plants

1 of 1

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**HYDRAULICS AND HYDRAULIC MACHINERY**
(Civil Engineering)

Time: 3 hours                                            Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Derive standard Chezy's equation for uniform flow in an open channel
   b) Compute the hydraulic radius and hydraulic depth of the trapezoidal section of the bed width 6m, depth of flow 2m and side slopes2H:1V.

2. a) Prove that the loss of energy head in a hydraulic jump is equal to $(d_2-d_1)^3/4d_1d_2$, where $d_1$ and $d_2$ are the conjugate depths.
   b) Determine the length of the backwater curve caused by an afflux of 1.5 min rectangular channel of width 50m and depth 2.0 m. The slope of the bed is given as 1 in 2000. Take Manning's N as 0.03.

3. a) What are the methods of dimensional analysis? Describe the Rayleigh's method for dimensional analysis.
   b) What is meant by geometric, kinematic and dynamic similarities?

4. a) Derive the expression for force, work done and efficiency of  a jet striking at the center of the series of vanes connected to a rim , such that each time one vane is facing the jet.
   b) A 4 cm diameter water jet with a velocity of 35 m/s impinges on a single vane moving in the same direction at a velocity of 20 m/s. The jet enters the vane tangentially along the x direction. The vane deflects the jet by 150°. Calculate the force exerted by the water on the vane.

5. a) Write a brief note on the classification of hydraulic turbines
   b) What is the basis of selection of a turbine at a particular place?

6. a)  Define specific speed of a turbine and derive an expression for the same?
   b) What is cavitation ? How can it be avoided in reaction turbine?

7. a) What is priming of a centrifugal pump? Explain clearly why priming is essential before starting a centrifugal pump
   b) Explain the term manometric efficiency, mechanical efficiency and overall efficiency s applied to centrifugal pump

8. a) What are the main components of hydropower plants and explain each in detail
   b)  Define the terms: (i) load factor, (ii) utilization factor and (iii) capacity factor

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**R10**

SET - 3

**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**HYDRAULICS AND HYDRAULIC MACHINERY**
(Civil Engineering)

Time: 3 hours                                                                                                Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) What is meant by the most economical channel? Show that length of the sloping side is equal to half of the top width for a most economical trapezoidal channel section.
   b) Explain the difference between pipe flow and open channel flow. Derive the predominant dimensionless numbers of pipe flow and open channel flow.

2. a) A 3.6 m wide rectangular channel conveys 9.0 cumecs of water with a velocity of 6 m/s. Is there a condition for hydraulic jump to occur? If so, calculate the height, length, and strength of the jump.
   b) Obtain the relationship between the Froude Number of flow before and after the hydraulic jump in a horizontal rectangular channel.

3. a) What do you mean by dimensionless number? Name any three dimensionless number
   b) Explain the different types of hydraulic similarities that must exist between a prototype and its model.

4. a) Derive the expression for force, work done and efficiency of a jet striking at one end of the vane and leaves other end of the vane of a series of vanes connected to a rim , such that each time one vane is facing the jet.
   b) A jet of water of diameter 100 mm moving with a velocity of 30 m/s strikes a curved fixed symmetrical plate at the center. Find the force exerted by the jet of water in the direction of the jet, if the jet is deflected through an angle of 120° at the outlet of the curved plate.

5. a) Define the terms unit power, unit speed, and unit discharge with reference to a hydraulic turbine.
   b) Explain the difference between Kaplan turbine and Propeller turbine

6. Define the terms 'unit power', 'unit speed', and 'unit discharge' with reference to hydraulic turbine. Also derive expression for these terms.

7. a) Derive the expression for specific speed of a centrifugal pump
   b) Define the terms: suction head, delivery head, static head and manometric head

8. Write short notes on the following:
   a) Firm Power      b) Secondary power   c) Diversity factor      d) Load duration curve.

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**R10**

**SET - 4**

### II B. Tech II Semester Supplementary Examinations, May/June - 2015
### HYDRAULICS AND HYDRAULIC MACHINERY
(Civil Engineering)

Time: 3 hours                                                                                            Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) Develop the criterion for the most economical triangular section of a channel
    b) Define specific energy. Draw a neat sketch of specific energy curve for a rectangular channel showing all the details

2.  a) Define the following
        i) Critical depth       ii) Conjugate depth     iii) Normal depth       iv) Alternative depth
    b) Determine the depth of flow of a hydraulic jump in a horizontal rectangular channel and consequent loss in total head when the sluice gate discharges water into a channel with velocity 15m/s and a depth of 2m.

3.  a) State Buckingham's Π-theorem. Why this theorem is considered superior over the Rayleigh's method for dimensional analysis.
    b) What do you mean by repeating variables? How are the repeating variables selected for dimensional analysis?

4.  a) Derive an expression for the force of a jet on a fixed plate
    b) A blade turns the jet of diameter 3 cm at a velocity of 20 m/s by 60°. Determine the force exerted by the blade on the fluid.

5.  a) What do you understand by the term turbine? Discuss briefly the uses of turbines
    b) Draw a neat sketchs of Pelton turbine and Francis turbine.

6.  What do you understand by the characteristics curves of turbine? Name the important characteristics of a turbine.

7.  a) How does a centrifugal pump impart pressure energy to the fluid? Indicate the mechanism involved.
    b) Explain the working principles of a centrifugal pump with sketches

8.  a) List out twelve important hydropower plants in India.
    b) How do you estimate hydropower potential?

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**R10**

**SET - 1**

**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**POWER SYSTEMS - I**
(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) Draw the diagram of super heater? Explain.
    b) Discussion function of condenser and where it is located

2.  a) Explain clearly how the operation of nuclear reactor is controlled for generation of electric power
    b) Discuss the boiling water reactor, mentioning its merits and demerits

3.  Draw the schematic diagram of gas based power plant? Explain its working principle.

4.  A single phase distributor has a total resistance of 0.2 ohm and a reactance of 0.3 ohm. At the mid point (A) a current of 100A at 0.6 p.f. logging and at the far end (B) a current of 100A at 0.8 p.f. lagging is tapped. If the voltage at the far end is 230V. Find the voltage at the supply end and also its phase angle w.r.to voltage at far end when
    The p.f.'s are w.r. to respective voltages at the load points
    The p.f's are w.r. to voltage at the far end.

5.  a) Explain the 3-phase GIS with circuit diagram
    b) Contrast between air insulated substations and gas insulated substations

6.  a) Derive the formula for insulation resistance of a cable
    b) Determine the economical core diameter of a single core cable working on 22 kV, single phase system. The maximum permissible stress in the dielectric is not to exceed 33 kV/cm.

7.  a) Define the load curve and illustrate it with different demands
    b) A generating station supplies 4 feeders with the maximum demand (in MW) of 16 MW, 12 MW and 7 MW. The overall maximum demand on the station is 20MW and the annual load factor is 45%. Calculate the diversity factor and the number of units generated annually.

8.  a) Explain briefly the different types of tariff in electrical system
    b) A power station has an installed capacity of 50 MW and it costs Rs. 1000 per KW. The annual fixed cost is 15% of the capital cost and at 100% load factor, the variable cost per annum is 1.3 times the fixed cost. Assuming there is no reserve; determine the cost of generation per unit at a load factor of 50%.

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**POWER SYSTEMS - I**
(Electrical and Electronics Engineering)

Time: 3 hours                                                                                    Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. Draw the complete schematic diagram of a coal fired thermal power plant. Label each component. Discuss briefly the function of each component.

2. a) What are the types of nuclear reaction? Describe briefly
   b) Explain the external hazards due to radiations

3. a) Explain the principle of operation of gas based power plant
   b) Draw the line diagram of solar energy storage? Explain the point focusing collector

4. a) Prove that the total voltage drop in a uniformly loaded distributor fed at one end only is equal to the drop produced by the whole load assumed to be concentrated at the mid point of the distributor
   b) A 2-wire DC street mains AB, 600m long is fed from both ends at 220V, loads of 20A, 40A, 50A and 30A are tapped at distances of 100m, 250m, 400m and 500m from the end A respectively. If the area of cross section of distributor conductor is 1cm$^2$, find the minimum consumer voltage. Take $\rho = 1.7\mu$ Ω-cm.

5. a) Explain the classification of substations according to design
   b) What are the advantages and disadvantages of outdoor substation as compared to indoor substation?

6. a) What is the function of sheath in cables? How are sheath losses reduced in modern multicore cables
   b) A single core cable has an inner diameter of 5 cm and core diameter of 2.0.cm. Its paper dielectric has maximum working dielectric stress of 55 kV/cm. Calculate the maximum permissible line voltage when such cables are used for 3-phase power system.

7. a) Explain the typical load curves of various categories of consumers
   b) A consumer has the following connected loads: 10 lamps of 60W each and two heaters of 1,000W each. His maximum demand is 1,500W. On the average he uses 8 lamps 5 hours a day and each heater for 3 hours a day. Find his average load, monthly energy consumption and load factor.

8. a) Give the basis for expressing the service lost of an electric supply as A + B KW + C KWh and explain the factors on which A, B and C depend.
   b) An industrial consumer having a maximum demand of 200 KW, maintain a load factor of 70%. The tariff rates are Rs. 900 per KVA of maximum demand per annum plus Rs. 2 per KWh of energy consumed. If the average p.f is 0.7 lagging, calculate the total energy consumed per annum and the annual electricity bill. Also workout the overall cost per KWh consumed.

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**R10**

**SET - 3**

**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**POWER SYSTEMS - I**
(Electrical and Electronics Engineering)

Time: 3 hours                                                                                      Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) What is the difference between fire tube boiler and water tube boiler?
    b) What is super heater? What are its advantages in the thermal station? How many types of super heaters are there? What are the differences between them?

2.  a) What are the functions of moderator and control rods in a nuclear power plants.
    b) Distinguish between thermal and fast reactors. Classify each according to moderator, coolant and fuel utilized.

3.  a) Explain the solar power generation with schematic diagram
    b) What are the various types of solar energy collectors? Discuss them briefly.

4.  a) Prove that the voltage drop of two wire DC distributor fed at one end is equal to the sum of moment of load currents about the feeding point.
    b) Find out the voltage drop at a distance of 300m of a 400m long distribution which is uniformly loaded at the rate of 0.8 A/m
       When it is fed from one end at 220V and
       When it is fed from both ends at 220V
       The resistances of each conductor for both go and return per metre is 0.0002Ω. Also calculated the power loss in the above cases.

5.  a) What are the different types of bus bar arrangements? Illustrate your answer with suitable diagrams
    b) Explain the construction aspects of gas insulated substations

6.  a) Draw the cross section of a 3-core belted cable. Discuss the function of each part
    b) A single-phase core cable 6 km long has an insulation resistance of 0.45 MΩ. The core diameter is 2.2 cm and the diameter of the cable over the insulation is 5.5 cm. Calculate the resistivity of the insulation material.

7.  a) Discussion effect of load factor and diversity factor on the cost of generation in a power system
    b) A power station has a maximum demand of 15MW, a load factor of 70%, a plant capacity factor of 52.5% and a plant use factor of 85%. Find (i) the daily energy produced (ii), the reserve capacity of the plant and (iii) the maximum energy that could be produced daily if the plant were in use all the time.

8.  a) What are the factors to be considered in fixing up the tariff
    b) An industrial consumer having a maximum demand of 100 KW, maintain a load factor of 60%. The tariff rates are Rs. 900 per KVA of maximum demand per annum plus Rs. 1.8 per KWh of energy consumed. If the average p.f is 0.8 lagging, calculate the total energy consumed per annum and the annual electricity bill. Also workout the overall cost per KWh consumed.

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**R10**

**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**POWER SYSTEMS - I**
(Electrical and Electronics Engineering)

Time: 3 hours
Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) What are the functions of economizer and super heater in a thermal power plant?
    b) What are the types of chimneys and briefly describe the types.

2.  a) What is the comparison of thermal and fast breeder reactors?
    b) Describe the internal hazards due to radiations

3.  a) Draw the block diagram of gas power generation? Discuss its working principle.
    b) Briefly discuss the various types of solar energy collectors

4.  a) What are the important requirement for a good distribution system
    b) A distributor is fed at both ends at same voltage of 250V. The total length of the feeder is
       250m and the loads the tapped off as follows: 60A at 50m from X, 50A at 80m from X, 40A
       at 120m from X and 30A of 160m from X. Find out (i) the point of minimum potential
       (ii) the current in each section and (iii) the voltage at minimum potential. The resistance per
       Km of the conductor for go and return is 0.9Ω.

5.  a) Explain the main and transfer bus bar system with circuit diagram
    b) Describe the installation and maintenance of GIS

6.  a) Explain how grading of cables to obtain maximum field strength is done and hence develop
       the relationship between maximum field strengths with and without inters heaths
    b) A single core 13 kV, 50Hz 5 km long cable has a core diameter of 1.7 cm and diameter of
       under sheath 3.0 cm. The relative permittivity of the insulating material is 2.7. The power
       factor on open circuit is 0.06. Find (i) the capacitance of the cable (ii) charging per
       conductor (iii) dielectric loss (iv)The equivalent insulation resistance.

7.  a) Define the terms plant capacity factor and plant use factor and explain their importance in an
       electric supply system.
    b) A generating station has the following daily load cycle
       Time(hrs)    :    0-6    6-10    10-12    12-16    16-20    20-24
       Load (MW)    :    40     50      60       50       70       40
       Draw the load curve and find (i) maximum demand (ii) units generated per day (iii) average
       load and load factor

8.  a) What are the factors influencing the formulation of tariff.
    b) Daily load of an industry is 200kW for first 1 hour, 150 kW for next 7 hours, 50 kW for next
       8 hours and 1 kW for the remaining time. If the tariff in force is Rs. 1,000 per KW of
       maximum demand per annum plus s. 2.25 per KWh, find the electricity expenditure per
       year.

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**R10**

**II B. Tech II Semester Supplementary Examinations May/June - 2015**
**ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES**
(Com. to ECE, EIE)

Time: 3 hours                                                                                      Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) State and Explain coulomb's law.
    b) Two dipoles with moments -5 $a_z$ nC/m and 9 $a_z$ nC/m are located at points (0, 0, -2) and
       (0, 0, 3) respectively. Find the potential the origin.                              (8M+7M)

2.  a) State and explain Biot – Savart's law.
    b) State Maxwell's equations for magneto static fields.                              (8M+7M)

3.  a) Distinguish the terms transformer EMF and Motional EMF.
    b) A parallel plate capacitor with plate area of 5 $cm^2$ and plate separation of 3 mm has a voltage
       50 sin $10^3$t V applied to its plates. Calculate the displacement current assuming $\varepsilon = 2\varepsilon_0$.
                                                                                          (8M+7M)

4.  a) Define the term attenuation constant and derive the expression for it..
    b) In a non magnetic medium **E** = 4 sin ($2\pi$ X $10^7$ t – 0.8x) $a_z$ V/m. Find $\varepsilon_r$, $\eta$ .        (8M+7M)

5.  a) State and prove poynting theorem.
    b) Define the term "plane of incidence" and give the significance of it.              (10M+5M)

6.  Explain the following terms in detail.
    a) Wave impedance
    b) Phase and group velocities                                                          (8M+7M)

7.  a) List out different types of transmission lines and write the applications of transmission lines.
    b) A transmission line has operating at 500 MHz has $Z_o$ = 80 $\Omega$, $\alpha$ = 0.04 Np/m, $\beta$ = 1.5 rad/m.
       Find the line parameters R, L, G and C.                                            (8M+7M)

8.  a) Derive the expressions for the input impedance of a transmission line.
    b) A certain transmission line 2 m long operating at $\omega = 10^6$ rad/s has $\alpha$ = 8 dB/m, $\beta$ = 1 rad/m,
       and $Z_0$ = 60 + j40 $\Omega$. If the line is connected to a source of $10\angle0^0$ V, $Z_g$ = 40 $\Omega$ and
       terminated by a load of 20 + j50$\Omega$, determine the input impedance.              (8M+7M)

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**R10**

**II B. Tech II Semester Supplementary Examinations May/June - 2015**
**ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES**
(Com. to ECE, EIE)

Time: 3 hours                                                                Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) State and Explain Gauss law. Write the applications of Gauss law.
    b) Point charges 1mC and -2mC are located at (3, 2, -1) and (-1, -1, 4) respectively. Calculate the electric force on a 10 nC charge located at (0, 3, 1) and electric field intensity at that point.                                                                (8M+7M)

2.  a) Derive the expression for magnetic field due to a straight filamentary conductor carrying current I.
    b) Define the term Magnetic flux density and explain why isolated magnetic pole does not exist.                                                                (8M+7M)

3.  a) Explain the inconsistency of Ampere's circuit law.
    b) Write the expression for Maxwell equations for Time Harmonic EM fields.          (8M+7M)

4.  a) Discuss about wave propagation in Good conductors.
    b) The magnetic field component of a wave is given by $\mathbf{H} = 30 \cos (10^8 t - 6x)\, \mathbf{a_y}$ mA/m. Determine
    i) Direction of wave propagation
    ii) The wavelength
    iii) The wave velocity.                                                                (8M+7M)

5.  a) Derive an expression for reflection coefficient when a wave is incident on a dielectric obliquely with parallel polarization.
    b) Explain the terms Brewster and critical angles.                                (8M+7M)

6.  Derive the expressions for the E and H field components for TM waves in a parallel plane wave guide.                                                                (15M)

7.  a) Define the term characteristic impedance and derive the expression for it.
    b) A distortion less line has $Z_o = 60\ \Omega$, α = 20 mNp/m, u = 0.6c, where c is the speed of light in vacuum. Find the line parameters R, L, G, C at 100 MHz.                                (8M+7M)

8.  a) Explain how the smith chart is constructed.
    b) Sketch the variation of input impedance of lossless transmission line with electrical length when it is        i) Open circuited        and ii) Shorted line                                (8M+7M)

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**R10**

SET - 3

II B. Tech II Semester Supplementary Examinations May/June - 2015
**ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES**
(Com. to ECE, EIE)

Time: 3 hours                                                                 Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) Derive the relationship between electric field intensity and electric potential.

    b) If $J = \dfrac{1}{r^3}$ (2 cos θ $\mathbf{a_r}$ + sin θ $\mathbf{a_\theta}$) A/m², calculate the current passing through

    i) A hemispherical shell of radius 20 cm, $0 < \theta < \pi/2$, $0 < \Phi < 2\pi$
    ii) A spherical shell of radius 10 cm                                    (8M+7M)

2.  a) A circular loop located on $x^2 + y^2 = 9$, z = 0 carries a direct current of 10 A along $\mathbf{a_\Phi}$.
        Determine H at (0, 0, 4) and (0, 0 -4).
    b) Derive the expression for magnetic field due to Infinite line current using Ampere's circuit
        law.                                                                 (8M+7M)

3.  a) Define the term displacement current density and give the significance of this term.
    b) Write the Maxwell's equations for static fields.                      (8M+7M)

4.  a) Show that when a uniform plane wave propagating in particular direction, it does not contain
        any field components in that particular direction.
    b) A uniform plane wave in air has $\mathbf{E} = 10 \cos (2\pi \times 10^6 t - \beta z)$ $\mathbf{a_y}$ V/m. Calculate β, λ and $\mathbf{H}$.
                                                                             (8M+7M)

5.  a) Determine the Expression for Electric field of plane wave when it is incident on a perfect
        conductor normally.
    b) Obtain an expression for power loss in a plane conductor in terms of surface resistance.
                                                                             (8M+7M)

6.  Derive the expressions for the E and H field components for TE waves in a parallel plane wave
    guide.                                                                   (15M)

7.  a) What are the primary and secondary constants of transmission lines. Give the expressions for
        these constants.
    b) A telephone line has R = 30 Ω/km, L = 100 mH/km, G = 0, and C = 20 µF/km. At f = 1
    KHz, find the characteristic impedance of the line and propagation constant.    (8M+7M)

8.  a) Define the terms reflection coefficient and derive the expression for it.
    b) Write the applications of smith chart.                                (8M+7M)

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**II B. Tech II Semester Supplementary Examinations May/June - 2015**
**ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES**
(Com. to ECE, EIE)

Time: 3 hours                                                                                          Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) Define the term electric potential and hence deduce the expression for electric potential at any point due to point charge located the origin.
    b) The point charges -1 nC, 4 nC and 3 nC are located at (0, 0, 0), (0, 0, 1) and (1, 0, 0) respectively. Find the energy in the system.                                              (8M+7M)

2.  a) State and explain ampere's circuit law.
    b) Derive the expression for magnetic field due to Infinite sheet of current using Ampere's circuit law.                                                                         (8M+7M)

3.  What is meant by boundary conditions? Derive the boundary conditions for electrostatic fields.
                                                                                                 (15M)

4.  a) Discuss about wave propagation in free space.
    b) Define the term loss tangent and give the significance of it.                       (8M+7M)

5.  a) Determine the Expressions for Electric fields of plane wave when it is incident on a perfect dielectric normally.
    b) List out various applications of poynting theorem.                                 (8M+7M)

6.  a) Explain why TEM wave propagation does not exist in wave guides.
    b) Sketch the electric and magnetic fields in a parallel plate and coaxial lines.     (8M+7M)

7.  a) Discuss about distortion less transmission lines.
    b) Draw the $\pi$ – type and T – type equivalent circuits of transmission lines.       (8M+7M)

8.  a) Explain about low loss transmission lines.
    b) Explain the procedure for finding reflection coefficient and standing wave ratio using smith chart.                                                                             (8M+7M)

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**R10**

**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**COMPUTER ORGANIZATION**
(Com. to CSE, ECC)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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| | | | |
|---|---|---|---|
| 1 | a) | State and explain the instruction formats and data operation instructions for the 8085 microprocessor. | [8] |
| | b) | Write and explain different types of assembly instruction based on the functions they perform | [7] |
| | | | |
| 2 | a) | What is System clock? How it is useful? Explain the timing diagram for memory Read and memory Write operations. | [8] |
| | b) | Design 32X8 memory subsystem with lower order interleaving and split interleaving for computer system with an 8-bit address bus. | [7] |
| | | | |
| 3 | a) | Explain the complete design of simple system to implement RTL code using direct connections, bus and tri-state buffers. | [8] |
| | b) | What is modulo counter? Explain the state table and state diagram of modulo 6 counters. | [7] |
| | | | |
| 4 | a) | Explain Hardwired control unit for simple CPU with diagram. | [8] |
| | b) | Explain micro sequencer organization with a neat sketch. | [7] |
| | | | |
| 5 | | Explain Booth's Algorithm (U=1011, V=0111), Show hard ware implementation. | [15] |
| | | | |
| 6 | a) | Explain Associative memory organization with an example. | [8] |
| | b) | Explain Cache memory organization with Associative mapping? Explain how it improves the memory access time? | [7] |
| | | | |
| 7 | a) | Show internal configuration of a DMA controller diagrammatically and explain how it's working. | [8] |
| | b) | Explain about Prioritized Interrupts. | [7] |
| | | | |
| 8 | a) | What is instruction pipeline and speedup? Explain how it can be pipelining can be done with an example. | [8] |
| | b) | Explain about Register windowing. How it is useful? | [7] |

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**R10**

SET - 2

**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**COMPUTER ORGANIZATION**
(Com. to CSE, ECC)

Time: 3 hours                                                                 Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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| | | | |
|---|---|---|---|
| 1 | a) | With neat sketch explain the process of converting program to machine readable form for personal computers and workstations. | [8] |
| | b) | Consider a program for finding sum of 20 natural numbers and show the execution trace of the loop summation for the program. | [7] |
| 2 | a) | With neat sketch explain the CPU internal organization | [8] |
| | b) | Show how the following values are stored in memory in big endian and little endian formats. Each value starts at location 22H : 12345678H, 0927H, 5551212H 0693H | [7] |
| 3 | a) | Define micro-operation and explain the four Basic types of shift micro-operation and their variants. | [8] |
| | b) | Explain the state diagram and state table of toll booth controller. | [7] |
| 4 | a) | In a simple CPU explain, how Data transfers between registers by using Data Bus and show required control signals. | [8] |
| | b) | Compare Micro programmed control and Hardwired control. | [7] |
| 5 | a) | Differentiate between non-restoring division algorithm and restoring division algorithm. | [8] |
| | b) | Explain division algorithm with numerical example | [7] |
| 6 | | Explain the following mapping techniques:<br>a) Direct mapping<br>b) Associative mapping<br>c) Set-Associative mapping | [15] |
| 7 | a) | Explain DMA Transfer modes? What is the performance of CPU if DMA operates with cycle stealing? | [8] |
| | b) | Explain Daisy Chaining. Differentiate it from priority interrupts. | [7] |
| 8 | a) | What is pipe lining? Explain Instruction pipeline in detail | [8] |
| | b) | Discuss in detail about No-operations, Instruction reordering and Data forwarding | [7] |

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**R10**

### II B. Tech II Semester Supplementary Examinations, May/June - 2015
### COMPUTER ORGANIZATION
(Com. to CSE, ECC)

Time: 3 hours                                                                                    Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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| | | | |
|---|---|---|---|
| 1 | a) | Write about the instruction formats for the relatively simple CPU with 3-byte and 1-byte formats. | [8] |
| | b) | Explain the usage of program control instructions and interrupts with an example program | [7] |
| | | | |
| 2 | a) | Explain the various configurations used in memory subsystem, consider the 16X2 memory subsystem with two 8X2 ROM chips. | [8] |
| | b) | With neat sketch explain the final design of relatively simple computer. | [7] |
| | | | |
| 3 | a) | What is micro-operation? Explain how Register Transfer Language related to this with an example. | [8] |
| | b) | Write the advantages of VHDL design. And also explain VHDL design with a high level of abstractions. | [7] |
| | | | |
| 4 | a) | Explain the generic hardwired control used in the design of control unit and specify various guidelines to be followed in this process. | [8] |
| | b) | Discuss FETCH and DECODE cycle for a simple CPU. | [7] |
| | | | |
| 5 | a) | Explain how we can reduce the number of microinstructions. | [8] |
| | b) | Discuss hardware implementation for BCD addition and Subtraction. | [7] |
| | | | |
| 6 | a) | Explain Cache with Set- Associative mapping. Assume your own example address and explain. | [8] |
| | b) | Explain Techniques used to replace Data in the Cache | [7] |
| | | | |
| 7 | a) | Explain Types of Interrupts with an example for each | [8] |
| | b) | Explain with neat diagram, how system configuration incorporating an I/O processor. | [7] |
| | | | |
| 8 | a) | Explain how to resolve branch conflicts in Instruction pipeline | [8] |
| | b) | Write about (i) No-operations   (ii) instruction reordering  (iii) annulling | [7] |

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**COMPUTER ORGANIZATION**
(Com. to CSE, ECC)

Time: 3 hours                                                                                    Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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| | | | |
|---|---|---|---|
| 1 | a) | Write and explain the process of address generations in various addressing modes with an example each. | [8] |
| | b) | In detail discuss about the issues raised in the design of instruction set architecture. | [7] |
| 2 | a) | Describe about various types of memory and their internal linear and two-dimensional organizations | [8] |
| | b) | Explain bidirectional and unidirectional input output interface design with enable and load logic | [7] |
| 3 | a) | Write and explain the possible ways of implementing data transfer A: X←Y using RTL. | [8] |
| | b) | Show the logic design for the modulo 6 counter and its VHDL implementation with low level of abstraction. | [7] |
| 4 | a) | Write the specifications of simple CPU and also explain the fetch and decode cycles of it. | [8] |
| | b) | Discuss how to design and implement a very simple CPU with instructions like ADD,AND,JMP and INC | [7] |
| 5 | a) | What are the methods we can use to round the floating point numbers? | [8] |
| | b) | Explain addition and subtraction of a floating point number. | [7] |
| 6 | a) | Explain Cache with two ways Set- Associative mapping with a line size of 4 bytes. | [8] |
| | b) | What are the techniques used to writing Data to the Cache? | [7] |
| 7 | a) | Explain how to transfer data between CPU and I/O devices. | [8] |
| | b) | What is Interrupt Service Routine? Explain how it services the interrupt. | [7] |
| 8 | a) | What is pipe lining? Explain parallelism in uniprocessor system | [7] |
| | b) | What are the features distinguishes RISC processors from their CISE processors | [8] |

**R10**

SET - 1

**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**COMPUTER ORGANIZATION AND ARCHITECTURE**
(Information Technology)

Time: 3 hours                                                                                   Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) Describe the role of system software to improve the performance of a computer.

    b) Design a 4-bit adder/ subtractor circuit using full adders and explain its function.(8+7)

2.  a) Draw and explain the block diagram of a complete processor.

    b) Briefly explain about various instruction formats with suitable examples.(8+7)

3.  a) List and explain the key aspects in gaining the performance in pipelined systems.

    b) Compare RISC and CISC architecture.                                          (8+7)

4.  a) What is a micro operation? Give suitable examples of some four types of micro operations.

    b) Briefly describe the design of a hardwired control unit.                  (8+7)

5.  Explain the basic organization of a micro programmed control unit and the generation of control signals using micro program.                                          (15)

6.  a) What is semiconductor memory? Elaborate on Types of ROM chips.

    b) Explain how virtual address is converted into real address in a paged virtual memory system?                                                                           (8+7)

7.  a) Describe the hardware mechanism for handling multiple interrupt requests.

    b) What is DMA? List and explain various modes of operation available in DMA.(8+7)

8.  a) What is meant by parallel processing? Describe the main objective of parallel processing.

    b) Briefly explain about various approaches to vector computation.(8+7)

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**COMPUTER ORGANIZATION AND ARCHITECTURE**
(Information Technology)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.　a) What are the special registers in a typical computer? Explain their purpose in detail.

　　b) Design a 4-bit fast adder and explain its function in detail. (8+7)


2.　a) What is an addressing mode? How is it different from instruction format?

　　b) Give the register organization of 8086 micro processor. (5+10)


3.　a) What is pipelining? Give its merits and demerits.

　　b) Describe the role of cache memory in pipelined system.(7+8)


4.　a) Give the Architecture of 8085 microprocessor with neat diagram

　　b) Briefly discuss about the preprocessor directives of 8085 processor. (8+7)


5.　a) What is Nano-programming? How is it different from micro programming?

　　b) Under what situations the micro program counter is not incremented after a new instruction
　　　 is fetched from micro program array? (10+5)


6.　Briefly describe magnetic disk principles. Also explain the organization and accessing of data
　　on a disk.


7.　a) Distinguish between isolated I/O and memory mapped I/O.

　　b) How data transfers can be controlled using handshaking technique? (8+7)


8.　a) What is cache coherence problem? How can it be handled? What are the Cache
　　　 inconsistencies resulting from it?

　　b) Give the multi core organization of 8086 processor. (8+7)

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**R10**

**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**COMPUTER ORGANIZATION AND ARCHITECTURE**
(Information Technology)

Time: 3 hours                                                                                    Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Describe the connections between the processor and memory with a neat structure diagram.

   b) Explain Booth's multiplication algorithm with suitable example.  (8+7)

2. Write the zero address, one address and three address instructions for the expression:

   X = (A+B)*(A+C)                                                                (15)

3. Explain how the instruction pipeline works. What are the various situations where an instruction pipeline can stall? How it can be resolved?                    (15)

4. a) Show how nine bit micro operation field in a micro instruction can be divided into sub fields? Explain with an example.

   b) Briefly explain about the instruction set of 8085 processor.  (8+7)

5. a) Describe the structure of a typical micro program sequencer in detail.

   b) List the advantages and disadvantages of hardwired and micro programmed control.  (8+7)

6. a) Analyze the memory hierarchy in terms of speed, size and Cost.

   b) Write a note on Asynchronous and Synchronous DRAMs.  (8+7)

7. What are the needs for input-output interface? Explain the functions of 8-bit parallel interface in detail.                    (15)

8. a) Describe the Daisy chained bus arbitration scheme in a multiprocessor system through an appropriate diagram. Explain its advantages and its shortcomings.

   b) What are the issues relating to Multithreading? What are the solutions to these issues? (8+7)

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**R10**

**SET - 4**

**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**COMPUTER ORGANIZATION AND ARCHITECTURE**
(Information Technology)

Time: 3 hours                                                                                    Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) Give the flowchart for division of two binary numbers and explain

    b) Using 8-bit 2's complement integers, perform the following computations:

       i) 20-(-6)        ii) -8+12                                                        (7+8)


2.  a) What is an instruction cycle? Explain with a flowchart.

    b) Discuss how effective address is calculated in different types of addressing modes with suitable examples?   (8+7)


3.   What is pipelining hazard? Explain the methods of dealing with the pipelining hazards (15)


4.  a) List out the requirements for an effective assembly language programming.

    b) Discuss the following logic micro-operations with examples.

       i) selective set          ii) selective complement              iii) selective clean  (8+7)


5.  a) With the help of a block diagram, describe the components of a micro programmed control unit.

    b) Write the sequence of micro operations needed to execute the following instructions:   LDA, ISZ, BUN  (8+7)


6.  a) Describe the physical characteristics of disk system.

    b) Explain various mapping techniques associated with cache memories.  (8+7)

7.   What do you mean by initialization of DMA controller? How DMA controller works? Explain with suitable block diagram.  (15)


8.  a) What is vector processing? Draw the architecture of a typical vector processor and explain.

    b) Explain the Flynn's classification of parallel processing. (8+7)

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**ELECTRICAL MACHINES - II**
(Electrical and Electronics Engineering)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.　a) What are the main types of Transformers. Explain them with a neat diagram.
　　b) List the assumptions made for an ideal transformer.

2.　Define voltage regulation of a transformer and explain its significance. With the help of approximate equivalent circuit and phasor diagram obtain an expression for it.

3.　a) Describe various losses in a transformer. Explain how each loss varies with different paameters
　　b) What is an auto transformer.Show that for the same capacity and voltage ratio, the auto transformer requires less copper than a two-winding transformer.

4.　a) What are the main features of star-star, delta-delta, delta-star, star-delta three-phase connections.
　　b) What is meant by tertiary winding? Why is it needed, explain?

5.　a) state the effects of increasing rotor resistance on starting current, starting torque, maximum torque and full load slip of an induction motor.
　　b) Show that a rotating magnetic field is produced in a three-phase winding fed by three-phase supply.

6.　Derive equation for the torque developed in an induction motor. Draw a typical torque-slip curve and deduce the condition for maximum torque.

7.　a) Explain briefly about star-delta starting. Also mention its advantages.
　　b) Explain the procedure for blocked rotor test with neat circuit diagram

8.　State the effects of increasing the supply frequency on starting torque, synchronous speed, full load speed and full load current of 3 phase induction motor.

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**ELECTRICAL MACHINES - II**
(Electrical and Electronics Engineering)

Time: 3 hours                                                                                          Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a)  Explain the principle and operation of a single phase transformer, with a neat diagram
    b) Draw the phasor diagram of an ideal transformer and explain it briefly.

2.  a) what are the different types of losses in a single phase transformer explain them briefly.
    b)  Why the Transformer is rated in kVA and not in kW explain.

3.  a) Why are the iron losses in a transformer substantially independent of the load current,
    explain.
    b) Explain how a short circuit test is performed on a single –phase transformer with a neat
    circuit diagram

4.  Explain the construction and possible methods of connecting a three-phase transformer.

5.  a) Explain the working principle of 3 phase induction motor. Explain ,why the rotor of
    induction motor cannot run at synchronous speed. Explain, why.
    b) Briefly explain how the rotation of the induction motor is produced.

6.  With single line diagram, describe power flow in a three-phase induction motor. Also explain
    why it is advantageous to operate induction motor with a slip as small possible.

7.  Which type of starters are used for low rating induction motors. And show that the starting
    current is equal to short circuit current.

8.  a) Explain the principle and operation of induction generator.
    b)  What is meant by pole changing state its importance?

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**ELECTRICAL MACHINES - II**
(Electrical and Electronics Engineering)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.　a) Draw and explain the phasor diagram of single phase transformer with resistive Load.
　　b) Derive the e.m.f equation of a single phase transformer.

2.　a) Explain the effect of frequency and supply voltage on iron losses, in a transformer
　　b) Define all day efficiency and discuss its significance.

3.　With neat circuit diagrams explain the procedures of open circuit and short circuit tests on a two-winding transformer. How can parameters of equivalent circuit be determined from these tests.

4.　a) Discuss relative advantages and disadvantages of employing three single phase transformers for use in three-phase operation over employing a single unit three-phase transformer.
　　b) For what purposes are tertiary windings used on a three-winding transformer. Explain how they can assist in unbalanced loading condition if suitably connected.

5.　With the help of neat diagram, explain the construction of three-phase Squirrel Cage Induction Motor. What are the advantages and disadvantages of this motor over a wound rotor motor?

6.　a) Derive torque, mechanical power and rotor output equations of a three phase induction motor connected from A.C. mains.
　　b) Explain what we can achieve from torque-slip characteristics of an induction motor

7.　Compare the different starting methods of three-phase induction motor.

8.　Describe methods of speed control of three phase induction motors .Also mention advantages, limitations and applications of each.

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**ELECTRICAL MACHINES - II**
(Electrical and Electronics Engineering)

Time: 3 hours                                                                 Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) What is transformer and explain its construction and working.
    b) Draw different load phasor diagrams of transformer and explain the significance of each phasor. Also draw corresponding equivalent circuit.

2.  Draw the equivalent circuit of a single phase transformer. Explain the tests performed to obtain the parameters of the equivalent circuit.

3.  a) Describe sumpner's test and explain how losses and efficiency are determined.
    b) Discuss the advantages, disadvantages and applications of auto transformers.

4.  a) Draw the different three-phase transformer connections. Also derive the phase and line transformation ratio expression for each connection.
    b) Draw the connection and phasor diagrams of a star-delta transformer.

5.  a) Discuss the principle of operation of three-phase induction motor.
    b) What is the effect of introducing resistance into the rotor circuit of a slip ring induction motor while it is running on a constant load torque?

6.  a) Draw and explain the equivalent circuit of a three-phase induction motor.
    b) Explain the torque/slip characteristic of an induction motor.

7.  Why are starters needed to start the induction motor? Explain various starters used for cage and wound rotor type induction motors.

8.  Explain in brief, the different methods of speed control of a three-phase induction motor.

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**R07**

## II B. Tech II Semester Supplementary Examinations May/June - 2015
## ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES
(Electronics and Communications Engineering)

Time: 3 hours

Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) State and Explain coulomb's law.
   b) Two dipoles with moments -5 $\mathbf{a_z}$ nC/m and 9 $\mathbf{a_z}$ nC/m are located at points (0, 0, -2) and (0, 0, 3) respectively. Find the potential the origin. (8M+8M)

2. a) State and explain Biot – Savart's law.
   b) State Maxwell's equations for magneto static fields. (8M+8M)

3. a) Distinguish the terms transformer EMF and Motional EMF.
   b) A parallel plate capacitor with plate area of 5 cm$^2$ and plate separation of 3 mm has a voltage 50 sin $10^3$t V applied to its plates. Calculate the displacement current assuming $\varepsilon = 2\varepsilon_0$. (8M+8M)

4. a) Define the term attenuation constant and derive the expression for it..
   b) In a non magnetic medium $\mathbf{E}$ = 4 sin ($2\pi$ X $10^7$ t – 0.8x) $\mathbf{a_z}$ V/m. Find $\varepsilon_r$ , $\eta$ . (8M+8M)

5. a) State and prove poynting theorem.
   b) Define the term "plane of incidence" and give the significance of it. (10M+6M)

6. Explain the following terms in detail.
   a) Wave impedance
   b) Phase and group velocities (8M+8M)

7. a) List out different types of transmission lines and write the applications of transmission lines.
   b) A transmission line has operating at 500 MHz has $Z_o$ = 80 $\Omega$, $\alpha$ = 0.04 Np/m, $\beta$ = 1.5 rad/m. Find the line parameters R, L, G and C. (8M+8M)

8. a) Derive the expressions for the input impedance of a transmission line.
   b) A certain transmission line 2 m long operating at $\omega$ = $10^6$ rad/s has $\alpha$ = 8 dB/m, $\beta$ = 1 rad/m, and $Z_0$ = 60 + j40 $\Omega$. If the line is connected to a source of 10∠0$^0$ V, $Z_g$ = 40 $\Omega$ and terminated by a load of 20 + j50$\Omega$, determine the input impedance. (8M+8M)

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**II B. Tech II Semester Supplementary Examinations May/June - 2015**
**ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES**
(Electronics and Communications Engineering)

Time: 3 hours
Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) State and Explain Gauss law. Write the applications of Gauss law.
    b) Point charges 1mC and -2mC are located at (3, 2, -1) and (-1, -1, 4) respectively. Calculate the electric force on a 10 nC charge located at (0, 3, 1) and electric field intensity at that point.                                                                          (8M+8M)

2.  a) Derive the expression for magnetic field due to a straight filamentary conductor carrying current I.
    b) Define the term Magnetic flux density and explain why isolated magnetic pole does not exist.                                                                                                        (8M+8M)

3.  a) Explain the inconsistency of Ampere's circuit law.
    b) Write the expression for Maxwell equations for Time Harmonic EM fields.        (8M+8M)

4.  a) Discuss about wave propagation in Good conductors.
    b) The magnetic field component of a wave is given by $\mathbf{H} = 30 \cos (10^8 t – 6x) \, \mathbf{a_y}$ mA/m. Determine
    i) Direction of wave propagation
    ii) The wavelength
    iii) The wave velocity.                                                                                        (8M+8M)

5.  a) Derive an expression for reflection coefficient when a wave is incident on a dielectric obliquely with parallel polarization.
    b) Explain the terms Brewster and critical angles.                                                (8M+8M)

6.  Derive the expressions for the E and H field components for TM waves in a parallel plane wave guide.                                                                                                              (16M)

7.  a) Define the term characteristic impedance and derive the expression for it.
    b) A distortion less line has $Z_o = 60 \, \Omega$, $\alpha = 20$ mNp/m, u = 0.6c, where c is the speed of light in vacuum. Find the line parameters R, L, G, C at 100 MHz.                            (8M+8M)

8.  a) Explain how the smith chart is constructed.
    b) Sketch the variation of input impedance of lossless transmission line with electrical length when it is        i) Open circuited        and ii) Shorted line                            (8M+8M)

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**II B. Tech II Semester Supplementary Examinations May/June - 2015**
**ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES**
(Electronics and Communications Engineering)

Time: 3 hours                                                      Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Derive the relationship between electric field intensity and electric potential.

   b) If $J = \dfrac{1}{r^3}$ $(2 \cos \theta\ \mathbf{a_r} + \sin \theta\ \mathbf{a_\theta})$ A/m$^2$, calculate the current passing through

   i) A hemispherical shell of radius 20 cm, $0 < \theta < \pi/2$, $0 < \Phi < 2\pi$
   ii) A spherical shell of radius 10 cm                         (8M+8M)

2. a) A circular loop located on $x^2 + y^2 = 9$, $z = 0$ carries a direct current of 10 A along $\mathbf{a_\Phi}$. Determine H at $(0, 0, 4)$ and $(0, 0\ -4)$.
   b) Derive the expression for magnetic field due to Infinite line current using Ampere's circuit law.                                            (8M+8M)

3. a) Define the term displacement current density and give the significance of this term.
   b) Write the Maxwell's equations for static fields.                   (8M+8M)

4. a) Show that when a uniform plane wave propagating in particular direction, it does not contain any field components in that particular direction.
   b) A uniform plane wave in air has $\mathbf{E} = 10 \cos (2\pi \times 10^6\, t – \beta z)\ \mathbf{a_y}$ V/m. Calculate $\beta$, $\lambda$ and $\mathbf{H}$.                                                     (8M+8M)

5. a) Determine the Expression for Electric field of plane wave when it is incident on a perfect conductor normally.
   b) Obtain an expression for power loss in a plane conductor in terms of surface resistance.                                                      (8M+8M)

6. Derive the expressions for the E and H field components for TE waves in a parallel plane wave guide.                                                  (16M)

7. a) What are the primary and secondary constants of transmission lines. Give the expressions for these constants.
   b) A telephone line has R = 30 $\Omega$/km, L = 100 mH/km, G = 0, and C = 20 $\mu$F/km. At f = 1 KHz, find the characteristic impedance of the line and propagation constant.          (8M+8M)

8. a) Define the terms reflection coefficient and derive the expression for it.
   b) Write the applications of smith chart.                                         (8M+8M)

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### II B. Tech II Semester Supplementary Examinations May/June - 2015
### ELECTRO MAGNETIC WAVES AND TRANSMISSION LINES
(Electronics and Communications Engineering)

Time: 3 hours                                                    Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) Define the term electric potential and hence deduce the expression for electric potential at any point due to point charge located the origin.
    b) The point charges -1 nC, 4 nC and 3 nC are located at (0, 0, 0), (0, 0, 1) and (1, 0, 0) respectively. Find the energy in the system.                                (8M+8M)

2.  a) State and explain ampere's circuit law.
    b) Derive the expression for magnetic field due to Infinite sheet of current using Ampere's circuit law.                                                             (8M+8M)

3.  What is meant by boundary conditions? Derive the boundary conditions for electrostatic fields.
                                                                                (16M)

4.  a) Discuss about wave propagation in free space.
    b) Define the term loss tangent and give the significance of it.              (8M+8M)

5.  a) Determine the Expressions for  Electric fields of plane wave when it is incident on a perfect dielectric normally.
    b) List out various applications of poynting theorem.                         (8M+8M)

6.  a) Explain why TEM wave propagation does not exist in wave guides.
    b) Sketch the electric and magnetic fields in a parallel plate and coaxial lines.     (8M+8M)

7.  a) Discuss about distortion less transmission lines.
    b) Draw the $\pi$ – type and T – type equivalent circuits of transmission lines.        (8M+8M)

8.  a) Explain about low loss transmission lines.
    b) Explain the procedure for finding reflection coefficient and standing wave ratio using smith chart.                                                                   (8M+8M)

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**COMPUTER ORGANIZATION**
(Com. to CSE, IT, ECC)

Time: 3 hours                                                   Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Explain sign magnitude and 2's complement representation of numbers. Explain why 2's complement method is in wide use.
   b) How error is detected and corrected using Hamming code? Give suitable example.(8M+8M)

2. a) Explain the architecture of RISC? List the differences between RISC and CISC
   b) Explain the addressing mode that do not need address field at all and addressing modes that uses content of PC for calculating effective address.      (8M+8M)

3. a) Define the following

         i) Micro operation              ii) Micro instruction
          iii) Macro program            iv) Macro code.
   b) Explain the different branching techniques used in microprogrammed control unit. (8M+8M)

4 a) What are the problems in floating point arithmetic?
   b) Subtract $(111001)_2$ from $(101001)_2$ using the 1's complement and 2's complement method.
   c) Draw and explain the flowchart for floating point division.        (4M+4M+8M)

5 a) Explain direct mapping scheme for transformation of data from main memory to cache memory
   b) How to access data on a disk memory?
   c) Explain the following methods for mapping a main memory address into a cache address.
       i) Direct mapped cache        ii) Associative mapped cache
       Assume a cache of 4K words, main memory of 64K words and a cache block of 256 words.
                                                          (4M+4M+8M)

6 a) Explain in detail about the communication between CPU and IOP.
   b) Draw and explain the block diagram of typical DMA controller.        (8M+8M)

7 a) What is instruction pipeline?
   b) Draw and explain the space diagram for 4-stage pipeline.
   c) Explain Vector processing in detail
                            (4M+4M+8M)

8 a) What is a multi processor system? What are the benefits of multiprocessor system
   b) What is cache coherence? Explain memory update policies to prevent cache coherence problem.               (8M+8M)

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**COMPUTER ORGANIZATION**
(Com. to CSE, IT, ECC)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.　a) Represent $(1259.125)_{10}$ in single precision and double precision IEEE 754 standards.
　　b) Explain about the multiprocessor and multicomputer systems.　　　　　(8M+8M)

2.　a) Explain different types of instructions and describe their formats
　　b) What are register transfer logic languages? Explain few RTL statements for branching
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(8M+8M)

3.　a) Explain differences between microprogramming and nanoprogramming.
　　b) Hardwired control unit is faster than microprogammed control unit. Justify this statement.
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(8M+8M)

4.　Explain floating point arithmetic operations in detailed with suitable examples　　(16M)

5.　a) Draw and explain the virtual memory organization.
　　b) What is RAID? Explain different RAID types in deatil　　　　　　　(8M+8M)

6.　a) Explain the Input-Output Processor (IOP) in detail
　　b) Give the features of IEEE 1394 bus.　　　　　　　　　　　　　　(8M+8M)

7.　Explain the following in detail
　　a) RISC Pipeline
　　b) Array Processors.　　　　　　　　　　　　　　　　　　　　　(8M+8M)

8.　a)  Explain the characteristics of multiprocessors.
　　b) Explain Vector processing in detail　　　　　　　　　　　　　　(8M+8M)

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**II B. Tech II Semester Supplementary Examinations, May/June - 2015**
**COMPUTER ORGANIZATION**
(Com. to CSE, IT, ECC)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Explain the use of program counter and instruction register.
   b) What is MFLOPS? What is its significance?
   c)  Summarize the operation of a computer.　　　　　　　　(4M+4M+8M)

2. a) What are the properties of RISC architecture? Explain the advantages and disadvantages of RISC architecture.
   b) Explain various arithmetic microoperations.　　　　　　　(8M+8M)

3. a) Explain the functions of a control unit
   b) Explain the terms control word, control memory,    control address register and control buffer register.
   c) Differentiate between microprogramming and nanoprogramming.　　(4M+4M+8M)

4. Explain hardware implementation and algorithm for addition and subtraction of fixed point signed magnitude data?　　　　　　　　　　　　　　　　　(16M)

5. a) Explain Memory hierarchy in detailed
   b) Explain the working of page translation mechanism.　　　　(8M+8M)

6. Explain the following in detail
   a) Programmed I/O
   b) Interrupt- initiated I/O
   c) Direct memory access　　　　　　　　　　　　　　　　(5M+5M+6M)

7. a) What is pipe lining? Explain four segment pipelining
   b) Draw and explain the typical functional structure of a SIMD array processor.　(8M+8M)

8. a) Draw and explain the distributed shared memory architecture.
   b) What is cache coherence? Explain cache coherence protocols.　　(8M+8M)

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**R07**

### II B. Tech II Semester Supplementary Examinations, May/June - 2015
### COMPUTER ORGANIZATION
(Com. to CSE, IT, ECC)

Time: 3 hours                                                                              Max. Marks: 80

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1.  a) Explain the functional units and components that are used for understanding of computer organization.
    b) Explain about multi processors and multi computers in detail                    (8M+8M)

2.  a) Explain different addressing modes in detail
    b) What is stack? Explain its organization in detail                              (8M+8M)

3.  a) How do you map micro-operation to a micro instruction address.
    b) Compare hardwired control unit and microprogrammed control unit.        (4M+4M+8M)

4.  a) Explain an arithmetic processor in detail?
    b) Multiply 10011 with 11011 using booths algorithm                              (8M+8M)

5.  Explain the following
       i) Auxiliary memory
       ii) Associative memory
       iii) Cache memory                                                             (5M+6M+5M)

6.  Explain different asynchronous data transfer modes in detail.                       (16M)

7.  a) Explain the flynn',s classification of computers.
    b) What is arithmetic pipeline? Explain arithmetic pipeline for floating point addition and
       subtraction with the help of one example.                                     (8M+8M)

8.  Write short notes on of the following.
    a) Characteristics of multi processors b) inter processor Arbitration            (8M+8M)