

**II B. Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2016**  
**BUILDING MATERIALS AND CONSTRUCTION**  
(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 rock forming minerals? (3M)
- b) Explain the cornice and corbel in stone masonry work with sketches (4M)
- c) What are the ingredients of cement? (3M)
- d) List out how stairs are classified? (4M)
- e) Explain water proofing of a building and what materials are used? (4M)
- f) What are the properties of good coarse aggregate? (4M)

**PART -B**

2. a) Describe in detail how lime is manufactured? (8M)
- b) Distinguish between quick, fat and hydraulic lime. (8M)
3. a) What do you understand by natural seasoning of wood? What is its purpose? (8M)
- b) What is the function, use of form work and scaffolding in building construction? (8M)
4. a) Draw neat sketch of (i) king post truss (ii) rcc roof and explain them. (8M)
- b) Explain the precautions in blasting of rocks. (8M)
5. a) Define a lintel and mention the materials which are commonly used in their construction. (8M)
- b) What is a prefabricated roof? Explain their use in building construction. (8M)
6. a) What are the various ingredients of paint? Explain the function of each of them. (8M)
- b) Explain the bond strength of aggregate. (8M)
7. Write detailed notes on fiber reinforced concrete and polymer concrete. (16M)

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**PART -A**

1. a) Give a list of tools used for stone quarrying. (3M)
- b) Explain seasoning of timber (4M)
- c) What do you understand by hydration of cement? (4M)
- d) Define Intrados and soffit with reference to arches. (4M)
- e) What is the process of preventing moisture in building called? Explain. (3M)
- f) Draw the sketch of Madras terrace roof. (4M)

**PART -B**

2. a) Describe with neat sketch a brick manufacturing kiln. (10M)
- b) What is a FROG? Explain its importance in bricks. (6M)
3. Discuss the construction of cavity wall and partition wall in buildings and explain why and where they are adopted. (16M)
4. a) Explain crushing test and impact test of concrete. (6M)
- b) Explain the various types of tiles and their use for buildings. (10M)
5. a) Draw the sketch of a RCC lintel and weather shade with all details. (6M)
- b) Explain the classification of Arches Give a complete list of various types of arches. (10M)
6. a) How do you classify various types of paints. Explain in detail each type. (6M)
- b) Discuss about bulk density and porosity of aggregate. (10M)
7. Describe the various types of expansion joints, construction joints and their use in construction. (16M)

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**PART -A**

1. a) List out the characteristics of a good tile. (4M)
- b) Explain decay of timber. (4M)
- c) What are the various uses of lime. (3M)
- d) What is a vault? Explain with sketches. (4M)
- e) Indicate the type of paints used for old wood work and new iron work. (4M)
- f) Prepare a list of various tests for concrete. (3M)

**PART -B**

2. a) Discuss the three important types of rocks and their formation. (8M)
- b) Explain the constituents of lime stone. (8M)
3. a) Describe Ashlar stone masonry and state its use in construction of structures. (8M)
- b) Draw the cross section of a tree and explain the structure of timber. (8M)
4. a) Discuss about alternative materials for wood. (10M)
- b) Explain bulking of sand. (6M)
5. a) Explain the following items in case of staircases (8M)
  - (i) Balustrade           (ii) Handrail
  - (iii) soffit and       (iv) pitch
- b) Explain coupled roof with sketch. (8M)
6. a) Explain pointing and plastering (8M)
- b) Describe the various components of a building. (8M)
7. Write short notes on (16M)
  - (a) Properties of good building stone.
  - (b) Consistency and workability
  - (c) Tar and bitumen as building material
  - (d) Sieve analysis

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**PART -A**

1. a) Why is it important to study the properties of building materials. (4M)
- b) Give the list of tools required for stone masonry. (3M)
- c) What is the chemical composition of Portland cement? (4M)
- d) List out the various types of lintel used in the construction of buildings. (4M)
- e) Define paint, varnish and distemper. (3M)
- f) Draw the sketch of prefabricated roof. (4M)

**PART -B**

2. a) Discuss the use of non-ferrous materials in building construction. (10M+6M)
- b) Enumerate the principal reasons for decaying timber.
3. a) Explain English bond and Flemish bond with neat sketches. (10M+6M)
- b) Explain various types of cement and their properties
4. a) Explain pitched roof, flat roof and lean to roof. (10M+6M)
- b) What is damp proofing? Discuss the materials used.
5. a) Give a list of various types of floors and explain about any two. (8M+8M)
- b) Describe the materials required for preparing form work and scaffolding.
6. a) Explain white washing and colour washing. (8M+8M)
- b) What are the good qualities of sand for general use in buildings?
7. Write short notes on
  - (a) Geo synthetics
  - (b) Geo textiles
  - (c) Geo grids and
  - (d) Geo membranes (16M)

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**II B. Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2016****ELECTRICAL MACHINES-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**

**PART - A**

1. a) Explain the action of coupling medium in case of generator and motor.  
 b) Mention the difference between lap and wave winding.  
 c) What are the requirements of voltage build up in self excited D.C generator.  
 d) Why starter necessary for a dc motor?  
 e) What are the factors that affect the choice of number of poles.  
 f) Explain the function of commutator in DC generators.  
 g) What is the condition for maximum power developed in dc motors and what is the efficiency of the motor at that condition. (4M+4M+3M+4M+2M+3M+2M)

**PART - B**

2. a) What is an "Electromechanical energy conversion device"? Explain  
 b) In a rectangular electromagnetic relay the exciting coil has 100 turns. Cross sectional area of the core is  $25\text{cm}^2$  neglect the reluctance value of the magnetic circuit. Calculate maximum mechanical force on the armature if the saturated flux density in the iron is 1.8tesla.
3. The shunt generator delivers full load current of 200 A. The shunt field resistance is 60ohms and full load efficiency is 90%. The starting losses are 800w. Find,
  - a) armature resistance
  - b) current at which maximum efficiency occurs
  - c) total losses
  - d) armature copper losses
4. A 250V, 4 pole shunt has two circuit armature winding with 500 conductors. The armature circuit resistance is 0.25 ohms field resistance is 125 ohms and the flux per pole is 0.02 Wb neglect armature reaction. Find the speed and torque developed if the motor draws 14A from the mains.
5. If a break test conducted on a dc shunt motor the full load readings are observed as tension on tight side is 9.1kg tension on slake side is 0.8kg total current is 10A supply voltage is 110v speed is 1320 rpm radius of the pulley is 7.5 cm calculate full load efficiency.  
 Explain the purpose of retardation test and how it would be conducted on DC shunt motors?
6. Estimate the specific electric and magnetic loading of a 500kW, 500V, 500 rpm, 8 pole DC generator whose diameter is 1.0 m and length is 0.28 m, lap wound with 900 conductors.
7. What do you mean by armature reaction in D.C. machines? Show on a diagram its effect on the flux distribution.

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**II B. Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2016****ELECTRICAL MACHINES-I**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

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**PART - A**

1. a) What is energy balance equation?  
 b) Discuss the role of inter poles in improving commutation  
 c) Classify D.C generators based on their field excitation.  
 d) Explain constant and variable losses in DC motors.  
 e) Explain armature reaction in dc motors.  
 f) Explain the difference between 3-point and 4-point starters. (2M+4M+4M+4M+4M+4M)

**PART - B**

2. a) Give the example of singly- excited and doubly- excited electromechanical energy conversion devices.  
 b) In an electromagnetic relay, the exciting coil has 1200 turns the cross sectional area of the core is  $25 \text{ cm}^2$ . Reluctance of the magnetic path may be neglected. Find the inductance of the coil with an air gap of 1cm. Find the field energy and force on armature if current in the coil is 2 Amp.
3. A D.C shunt generator has following open circuit magnetizing curve at its rated speed
 

Field current(A)	0.5	1.0	1.5	2	3	4
E.M.F(V)	180	340	450	500	550	570

The resistance of the field circuit is 200ohms. The generator is driven at its rated speed. Find the terminal voltage on open circuit.
4. a) Derive the condition for maximum efficiency in dc motor.  
 b) A 4 pole dc series motor has 100 wave connected armature conductors. At a certain load, the total mechanical power developed is 4kW and flux per pole is 20m Wb. Calculate the line current taken by the motor and the speed at which it will run with an applied voltage of 200V. The total motor resistance is 1ohm.
5. What are the different speed control methods of D.C shunt motor? Explain each method with advantages and disadvantages.
6. On what factors does the length of air gap in DC machine depend? Also find an expression for estimation of air gap length.
7. a) What are the conditions for parallel operation of shunt generators?  
 b) Two shunt generators are operating in parallel. The e.m.f. induced in one machine is 260 V and that induced in the other machine is 270 V. They supply together a load current of 1800 A. If the each machine has an armature resistance of 0.04 ohm and field resistance 50 ohms, determine: Terminal voltage and Output of each machine.

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**PART-A**

1. a) What is the significance of co energy?
- b) A 4 pole 1200 rpm generator with lap winding armature has 65 slots and 12 conductors per slot the flux per pole is 0.02webers calculate the emf induced in the armature.
- c) Give the applications of cumulative and differential compound excited D.C generator.
- d) Explain electric braking by plugging.
- e) How are demagnetising and cross- magnetising ampere – turns/ pole in a D.C. machine calculated.
- f) What are the causes of sparking in D.C. machines? (3M+4M+4M+4M+4M+3M)

**Part-B**

2. a) Derive the expression for force in a doubly excited system in the linear case.  
 b) In 300kw 500v 6 pole lap winding dc generator has 70 slots with 12 conductors per slot .if the brushes are advanced by 3.33 mechanical degrees. Find the number of demagnetising ampere turns required per pole.
3. What is critical field resistance? How do u calculate critical field resistance from magnetic characteristics in the laboratory?
4. a) Derive the equation for torque developed by a dc motor.  
 b) The no-load armature current of a 230V, dc shunt motor is 0.2A at a speed of 1200rpm. If the full load armature current is 40A,find the full load speed and torque developed. Assume that the armature resistance is 0.25ohm and the field flux remains unaltered.
5. Explain the Swinburne's test to determine no-load losses of DC machine. What are the limitations of this test?
6. Drive the output equation of a DC machine.
7. a) Obtain the condition for maximum efficiency in dc motors.  
 b) A 230V d.c. shunt motor takes 3A on no-load running at 1500rpm. The armature resistance is 1 ohm and shunt field resistance is 200 ohms calculate  
 i) the speed and ii) torque developed when the input is 7.5 kW.

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- ~~~~~

**PART-A**

1. a) Coil of 1200 turns on a core would create flux of 2mWb when carrying of 1 ampere. Calculate the energy stored in the magnetic field.
- b) Discuss armature reaction in D.C machines and its effect on the performance.
- c) Draw the schematic diagram of dc shunt motor. Also write the back emf, current and voltage equation.
- d) Explain regenerative braking in DC motors.
- e) What are the different methods of speed control of a D.C motor?
- f) Explain the role of Yoke in dc machines. (4M+3M+4M+4M+4M+3M)

**PART-B**

2. a) Derive an expression for mechanical force developed for singly excited magnetic field system.
- b) A 4 pole lap wound dc generator drives a full load current of 400 amperes. It has shunt field current of 12 amperes and 123 commutator segments in a commutator ring of a machine. If the brushes are advanced by three commutator segments on full load. find  
 (i) demagnetising ampere turn per pole. (ii) Cross magnetising ampere turn per pole.
3. Draw a neat graph to show open circuit characteristics of a separately excited D.C generator. Why is a field regulator necessary for this machine
4. a) What are the losses that occur in dc machine? How they vary as the load increases.
- b) A 12 pole lap connected 230V shunt motor has 410 conductors. It takes 41A on full-load. The flux per pole is 0.05wb. The armature and field resistance are 0.1ohm and 230ohm respectively. Contact brush is 01.V. Determine the speed of motor at full-load.
5. Explain with neat circuit diagram, how can you find the efficiency of small DC motor with brake test.
6. The following results are obtained during Hopkinson's test on two similar 230v machines armature currents are 37A and 30A. Field currents are 0.85A and 0.8A calculate the efficiencies of the machines if each has an armature resistance of 0.33Ω.
7. A 240V DC shunt motor takes 60A and runs at 1200 rpm.  $R_a = 0.4$  ohms and  $R_f = 100$ ohms. Find the
  - (a) output
  - (b) copper losses and
  - (c) efficiency if iron and frictional losses amount to 1400W.

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**II B. Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2016**  
**ENVIRONMENTAL STUDIES**  
 (Com. to ECE, EIE, ECC)

Time: 3 hours

Max. Marks: 70

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**PART -A**

1. a) What is meant by food chain? (3M)
- b) List the effects of deforestation. (4M)
- c) What is meant by the term Biopiracy? (3M)
- d) Differentiate between smog and photochemical smog. (4M)
- e) Classify the rainwater harvesting methods. (4M)
- f) What are the objectives of Environmental impact assessment? (4M)

**PART -B**

2. a) List the major urban environmental issues in India. (8M)
- b) Explain the functioning of hydrological cycle. (8M)
3. a) Write about Mineral Resources in detail. (8M)
- b) Explain about the use and over utilization of surface and ground water (8M)
4. a) Write about the "India as a mega and diversity nation". (8M)
- b) Explain about conservation of Biodiversity (8M)
5. Explain about causes, effects and control measures of Air pollution? (16M)
6. a) Suggest various methods for the improvement of irrigation efficiency by (8M)  
reducing loss due to evaporation.
- b) Write the issues related to enforcement of environmental legislation (8M)
7. What is significance EIA and various stages of EIA. (16M)

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**PART -A**

1. a) What are ecological pyramids? (4M)
- b) Write a short notes on the mineral resources of India. (4M)
- c) Define the term Hotspot in Biodiversity. (4M)
- d) Define Marine pollution. (3M)
- e) What is acid rain? (4M)
- f) Write the key elements of EIA. (3M)

**PART -B**

2. a) Explain the components of environment and their major interactions. (8M)
- b) Compare the flow of energy and nutrients through an ecosystem. (8M)
3. Write about Food resources, World food problems and effects of modern agriculture. (16M)
4. a) Write about the Hot spots of Biodiversity in detail. (8M)
- b) Explain about the threats of Biodiversity (8M)
5. Explain about causes, effects and control measures of Water Pollution. (16M)
6. Write in detail about the water (Prevention and Control of Pollution) Act, 1974. (16M)
7. What is significance of EMP and various stages of EMP. (16M)

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(Com. To ECE, EIE, ECC)

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**PART -A**

1. a) What are pioneer species? (3M)
- b) What is geothermal energy? (4M)
- c) Explain the term Endemic Species with examples. (4M)
- d) Define noise. (3M)
- e) List the major pollution control acts in India. (4M)
- f) What are the possible avenues in which NGOs can contribute to the cause of environmental protection? (4M)

**PART -B**

2. a) Explain the possible impacts of ozone depletion on the ecosystem. (8M)
- b) Explain the components and functions of a forest ecosystem. (8M)
3. Write about renewable and non renewable energy resources. (16M)
4. a) Write about the values of Biodiversity in detail. (8M)
- b) Explain about Endangered and endemic species of India (8M)
5. Explain about causes, effects and control measures of Soil Pollution. (16M)
6. Write in detail about The Air (Prevention and Control of Pollution) Act, 1981. (16M)
7. What is the significance of EIS and various stages of EIS. (16M)

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 (Com. To ECE, EIE, ECC)

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**PART -A**

1. a) Why decomposers are called 'micro consumers'? (4M)
- b) Define the term "Desertification". (3M)
- c) Define biodiversity. (4M)
- d) Define the Municipal solid waste. (4M)
- e) What are the principal functions of central pollution control board? (4M)
- f) List the different types of impact assessments possible. (3M)

**PART -B**

2. a) Explain the components and functions of a Grass Land ecosystem. (8M)
- b) Explain the role of renewable energy sources in achieving a sustainable energy base. (8M)
3. Write about the land resources, waste land reclamation and man induced land slides (16M)
4. a) Write about the Endangered and Endemic species of India in detail. (8M)
- b) Explain about man-wild life conflicts (8M)
5. Explain about causes, effects and control measures of Noise Pollution. (16M)
6. Write in detail about The Environment (Protection) Act, 1986. (16M)
7. What are significance and various stages Environmental audit and Ecotourism? (16M)

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**II B. Tech I Semester Supplementary Examinations, Oct/Nov - 2016**  
**FLUID MECHANICS**  
(Civil Engineering)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks

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1. a) A manometer containing mercury is connected to two points 15m apart on a pipeline conveying water. The pipeline is straight and slopes at an angle  $15^\circ$  with the horizontal. The manometer gives a reading of 150 mm. Determine the pressure difference between the two points of the pipeline. Take specific gravity of mercury as 13.6 and that of water as 1.0.  
b) Explain Bourdon's tube pressure gauge.
  
2. a) A rectangular plane surface 2 m wide and 3 m deep lies in water in such a way that its plane makes an angle of  $40^\circ$  with the free surface of water. Determine the total pressure and position of centre of pressure when the upper edge is 1.5 m below the free water surface.  
b) A triangular plate of 1m base and 1.8m altitude is immersed in water. The plane of the plate is inclined at  $30^\circ$  with the free surface of water and the base is parallel to and at a depth of 2m from water surface.
  
3. a) Derive continuity equation for three dimensional flow.  
b) A stream function is given by the expression :  $\Psi = 2x^2 - y^3$ . Find components of the velocity, as well as resultant velocity at a point  $P$
  
4. a) In a  $45^\circ$  bend a rectangular air duct of  $1\text{m}^2$  cross-sectional area is gradually reduced to  $0.5\text{m}^2$  area. Find the magnitude and direction of the force required to hold the duct in position if the velocity of flow at the  $1\text{m}^2$  section is 10 m/s and pressure is  $2.943\text{N/cm}^2$ . Take density of air as  $1.16\text{kg/m}^3$ .  
b) What is Euler's equation?



5. a) Explain the formation of boundary layer along a thin flat plate.  
b) For a linear velocity distribution in the boundary layer on a flat plate show that  $\delta^*/\theta=3$ .
6. a) Oil of viscosity 0.1 Pa.s and specific gravity 0.90 flows through a horizontal pipe of 25 mm diameter. If the pressure drop per metre length of the pipe is 12 k Pa find the rate of flow, the shear stress at the pipe wall, and the Reynolds number of the flow.  
b) Explain Reynolds experiment.
7. The rate of flow of water pumped into a pipe ABC which is 200 m long is 20 lps. The pipe is laid on an upward slope of 1 in 40. The length of the portion AB is 100 m and its diameter is 100 mm. while the length of the portion BC is also 100 m but its diameter is 200mm. The change of diameter at B is sudden. The flow is taking place from A to C where the pressure at A is  $19.62\text{N/cm}^2$  and end C is connected to a tank. Find the pressure at C and draw the Hydraulic gradient line and total energy line. Take  $f=0.008$ .
8. a) A rectangular channel 6m wide carries 2800 lps at a depth of 0.9m. What height of a broad crested rectangular weir must be installed to double the depth. Assume a wier coefficient of 0.86.  
b) Give the purpose of Pitot-tube. Also explain the principle behind it.

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**II B. Tech I Semester Supplementary Examinations, Oct/Nov - 2016**  
**ELECTRONIC DEVICES AND CIRCUITS**  
 (Com. to EEE, ECE, EIE, ECC, CSE, IT, BME)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
 All Questions carry **Equal** Marks

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1. a) Derive the expressions for acceleration, velocity and displacement of a charged particle placed in an electrical field E.  
 b) Describe the different types of focusing systems used in CRO.
  2. a) Derive continuity equation and explain its importance.  
 b) Define the following terms:  
 (i) Mobility (ii) Conductivity (iii) Electron-hole pair
  3. a) Explain the construction and working of PIN diode? What are the applications of varactor diode?  
 b) A silicon diode at a temperature  $100^{\circ}\text{C}$  has a reverse saturation current of  $50\mu\text{A}$ . At a temperature of  $100^{\circ}\text{C}$ , calculate the dynamic resistance at  $0.3\text{V}$  forward bias and  $1.5\text{V}$  reverse bias conditions.
  4. a) Explain a zener shunt regulator circuit. What are the disadvantages of zener shunt regulator?  
 b) A full wave rectifier circuit is step down the ac source of  $220\text{V}$  in the ratio  $10:1$ . The circuit is connected to a load of  $500\ \Omega/1\text{watt}$  and diode forward resistance is  $50\ \Omega$ . Calculate the maximum and average value of current.
  5. a) What are the different breakdowns in a transistor? Explain in detail.  
 b) When a transistor operates in common-emitter configuration, the base current is  $20\mu\text{A}$ . The collector current has been changed from  $4.5\ \text{mA}$  to  $4.7\ \text{mA}$  if the collector-emitter voltage is changed from  $8.2\ \text{V}$  to  $11.5\ \text{V}$ . Determine the output resistance and dc current gains  $\alpha$  and  $\beta$ .
  6. a) Derive the relationship between transconductance ( $g_m$ ), drain resistance ( $r_d$ ) and amplification factor ( $\mu$ ).  
 b) Describe briefly J-FET and MOSFET and compare and contrast them.
  7. a) Explain how thermistor is used for bias compensation.  
 b) Derive an expression for stability factor  $S''$  for fixed-bias circuit with emitter resistor.
  8. a) Obtain CB parameters interms of CE parameters.  
 b) In common emitter configuration, a transistor has the following parameters  $h_{ie}=2.4\ \text{K}\Omega$ ,  $h_{re}=1.5 \times 10^{-4}$ ,  $h_{fe}=55$ ,  $h_{oe}=50 \times 10^{-6}\ \mu\ \text{siemens}$ ,  $R_s=1\ \text{K}\Omega$  and  $R_L=2\ \text{K}\Omega$ . Determine the voltage gain.

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**II B. Tech I Semester Supplementary Examinations, Oct/Nov - 2016**

**MATHEMATICS - III**

(Com. to EEE, ECE, EIE, ECC)

Time: 3 hours

Max. Marks: 80

Answer any FIVE Questions  
All Questions carry Equal Marks

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1. a) Evaluate i)  $\int_0^1 x^2(1-x)^3 dx$  ii)  $\int_0^1 x^3(1-x^2)^{5/2} dx$  (8M)
- b) Prove that  $4J_n'(x) = J_{n-2}(x) - 2J_n(x) + J_{n+1}(x)$ . (8M)
2. a) Show that i)  $f(z) = e^z$  ii)  $f(z) = e^{\bar{z}}$  in analytic everywhere in the complex plane and find  $f'(z)$  (8M)
- b) If  $f(z) = u + iv$  is analytic and  $v = \frac{2 \sin x \sin y}{\cos 2x + \cosh 2y}$ , find  $u(x, y)$ . (8M)
3. a) Separate  $\tan^{-1}(x + iy)$  into real and imaginary parts. (8M)
- b) Given  $\frac{1}{\rho} = \frac{1}{L\rho i} + c\rho i + \frac{1}{R}$ , where  $L, \rho, R$  are real, express  $\rho$  in the form  $Ae^{i\theta}$  giving the value of  $A$  and  $\theta$  (8M)
4. a) Verify Cauchy's theorem for the function  $f(z) = 3z^2 + iz - 4$  if  $c$  is the square with vertices at  $1 \pm i, -1 \pm i$ . (8M)
- b) Using Cauchy's integral formula, evaluate  $\int_c \frac{z}{(z-1)(z-2)^2} dz$  where (8M)
- $c: |z-2| = \frac{1}{2}$ .



5. a) Find the residue of  $\frac{z^2}{z^4+1}$  at the singular point which lies inside the circle  $|z|=2$ . (8M)
- b) Find the Laurent series expansion of the function  $\frac{z^2-1}{z^2+5z+6}$  about  $z=0$  in region  $2<|z|<3$ . (8M)
6. a) Evaluate  $\int_C \frac{e^z}{(z^2+\pi^2)^2} dz$  where  $C$  is  $|z|=4$ . (8M)
- b) Evaluate  $\int_0^\infty \frac{\cos x}{(1+x^2)^2} dx$ . (8M)
7. a) State and prove Rouché's theorem. (8M)
- b) Find all the zeros of the following functions (8M)
- i)  $\cos z$ ,    ii)  $\sin z$ ,    iii)  $(z^2-1)(z^2-3z+2)$ ,    iv)  $\frac{z^3-1}{z^3+1}$
8. a) Find the bilinear transformation which maps the points  $(z, i, -z)$  in the  $z$ -plane into  $(1, i, -1)$  in  $w$ -plane. (8M)
- b) Find the image of the line  $x=4$  in  $z$ -plane under the transformation  $w = z^2$  (8M)

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**II B. Tech I Semester Supplementary Examinations, Oct/Nov - 2016****UNIX AND SHELL PROGRAMMING**

(Com. to CSE, IT)

Time: 3 hours

Max. Marks: 80

Answer any **FIVE** QuestionsAll Questions carry **Equal** Marks

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1. a) Describe the features of UNIX that made it so popular. (8M)  
 b) Explain the following commands (8M)  
     i) PATH    ii) more    iii) mkdir    iv) Cat
2. a) Explain the two basic modes of the vi editor. Also explain various commands of the vi editor. (8M)  
 b) Explain the following Unix commands (8M)  
     i) find    ii) mount    iii) sort    iv) tee
3. a) What is a Shell? Explain the two different duties of a Shell. How can you create a sub shell? How can you move to the parent shell after creating a sub shell. (8M)  
 b) Explain the two UNIX commands to display beginning and end of files. (8M)
4. a) Define a Regular Expression? Name the components of a Regular Expression? How many types of atoms are defined in a regular expression? (8M)  
 b) Define the grep family. Mention the primary difference between fgrep and the other two members of the grep family. (8M)
5. a) What is an awk utility? Explain the two formats of the awk command. Can the awk command accept a regular expression? (8M)  
 b) With a neat flow chart explain the operation of awk script in detail. (8M)
6. a) Discuss the features of Korn shell. (8M)  
 b) What is a Shell variable? What are the two broad classifications of variables? What is the purpose of quoting? What are the three sets of quoting tokens? (8M)
7. a) Explain the concept of storing filenames and file contents in C shell programming. (8M)  
 b) What is the application of eval command in C shell and also explain the execution of eval command with suitable example. (8M)
8. a) Explain the following System calls (8M)  
     i) lseek    ii) symlink  
 b) Explain any two API directories. (8M)

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