Code No. 27

FACULTY OF ENGINEERING

B.E. 2/4 (Civil) I - Semester (Backlog) Examination, May/June 2018

Subject : Building Planning and Drawing

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

Note: Answer all questions from Part-A & any five questions from Part-B.

PART – A (25 Marks)

1 Draw the conventional sign for concrete and steel. (3)
2 What do you mean by brick bat? (2)
3 Draw the isometric view of bevelled closer and king closer. (3)
4 Give the standard sizes of doors and windows. (2)
5 Draw a line diagram of king post truss of 10 m span. (3)
6 Sketch the elevation of a fully paneled door? (2)
7 List the various type of roof trusses available depending upon span. (3)
8 List any three types of stairs. (2)
9 What are the principle of planning a building? (3)
10 What are the aspect of building planning? (2)

PART-B (50 Marks)

11 Draw the plan and isometric view of wall junction for one and a half brick wall in English bond. Draw minimum 3 layers. (10)

12 Draw front elevation and sectional elevation of a fully panelled door of 1.2m x 2.1m to a scale of 1: 50. (10)

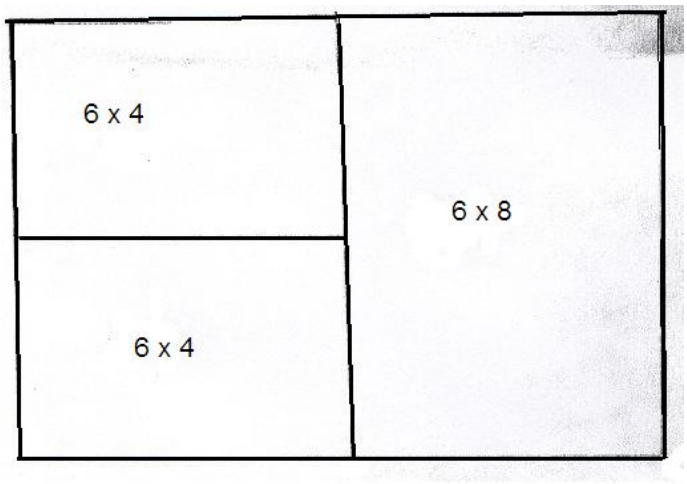
13 Sketch an RCC slab and also show the reinforcement details of 6m x 5m with 150 mm thickness. (10)

14) Draw the front and sectional elevation of a Dog legged staircase in a residential block to reach a floor height of 3.1m. (10)

15 Draw the plan and elevation of a RC square footing of foundation in a residential building. (10)

16 Draw the elevation of a compound fink roof truss. (10)

17 The line diagram of a building is shown in the figure below. Draw plan and sectional elevation to a scale of 1 : 50 and locate doors and windows . Take thickness of wall as 300mm. (10)



*****

Code No. 34

FACULTY OF ENGINEERING

B.E. 2/4 (EE / Inst.) I – Semester (Backlog) Examination, May / June 2018

Subject: Electronic Engineering – I

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

Note: Answer all questions from Part – A & any five questions from Part – B.

PART – A (25 Marks)

1 A Germanium diode carries a current of 1 mA at room temperature, when a forward bias of 0.15 V is applied. Estimate the reverse saturation current at room temperature. 2

2 Calculate the band gap energy of silicon at 450^{o} K. 2

3 Define the following terms: 3
   a) Ripple factor
   b) Voltage regulation

4 Draw the circuit of bridge rectifier and explain its advantages over other rectifiers. 2

5 A transistor has =150. Calculate the approximate collector and base current, if the emitter current is 1 mA. 2

6 What is punch through effect? 2

7 What is operating point? Explain its physical significance. 3

8 How does TRIAC differs from an SCR? 3

9 Compare JFET & MOSFET. 3

10 Draw the V-I characteristics of N-channel enhancement MOSFET. 3

PART – B (5x10 = 50 Marks)

11 a) Explain V-I characteristics of p-n junction diode. Discuss the temperature dependence of p n characteristics. 5+3

   b) What is Zener diode? 2

12 a) A 230 V, 50 Hz voltage is applied to the primary of a 5:1 step down, centre tapped transformer in a full wave rectifier having a load of $900\,\Omega$. Determine
      i) D.C. voltage across the load
      ii) D.C power delivered to the load
      iii) A.C. input power from transformer
      iv) Efficiency. 5

   b) Draw a neat block diagram of a general purpose CRO and explain function of each block. 5

..2

13 a) Draw and explain output characteristics of common emitter configuration for npn transistor. 5

b) What is stability factor and derive it for collector to base bias and emitter bias circuits. 5

14 a) A transistor has its H-parameters given by 1 $K\Omega$, 50, $2.5x10^{-4}$ and 25 μA/V in common emitter configuration using a load resistance of 5 $K\Omega$ and a source resistance of 1 $K\Omega$. Calculate A_v, A_{vs}, A_I, A_{IS}, R_i and R_o. 6

b) Draw the block and symbolic representation for SCR sketch the V-I characteristics of SCR. 4

15 a) Draw the structure of a JFET and explain its principle of operation with neat diagrams along with the V-I characteristics. Define pinch-off voltage and mark it on the characteristics. 6

b) Explain the difference between construction of an enhancement type MOSFET and depletion type MOSFET. 4

16 a) Draw circuit diagrams of TRIAC and DIAC and explain its working principle. 5

b) Draw the circuit diagram of UJT and explain its characteristics. 5

17 Write any two of the following: 10

a) Junction breakdown in diodes
b) Light emitting diodes
c) BJT as an amplifier.

****

Code No. 41

FACULTY OF ENGINEERING

B.E 2/4 (ECE) I – Semester (Backlog) Examination, May / June 2018

Subject : Electromagnetic Theory

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

Note: Answer all questions from Part – A & Any five questions from Part – B.

Part - A (25 Marks)

1. Describe three orthogonal surfaces that define the spherical co-ordinates of a point? (2)
2. State Divergence Theorem (2)
3. Given a vector function $F = a_x(3y-c_1z)+a_y(c_2x-2z)-a_z(c_3y+z)$, Determine the constants c_1, c_2 and c_3 if 'F' is irrotational (3)
4. Define Electric Potential (2)
5 State Biot - savart's Law (2)
6 List out the generalized forms of Maxwell's Equations in Integral form for The Time Varying fields (3)
7 The Electric field of a plane electromagnetic wave travelling in a non magnetic, non-conducting medium is given by $E=5\cos(10^9t+30z)a_x$. What is the dielectric constant of the medium. (2)
8 What is loss tangent? Discuss its significance (2)
9. A Uniform Plane Wave incident normally on a plane surface of a Dielectric material is reflected with a VSWR of 3. Calculate the percentage of incident power that is reflected (3)
10 What will be the reflected wave for an elliptically polarized wave incident on the interface of a dielectric at the Brewster angle? (3)

Part - B (50 Marks)

11. a) Determine the Electric field intensity of an infinitely long straight, line charge of uniform density ρ_L in air (5)
b) Point charges 1mC and -2mC are located at (3, 2, -1) and (-1, -1,4), respectively. Calculate the electric force on a 10nC charge located at (0, 3, 1) and the electric field intensity at that point (5)

12 a) Derive the expression for the Electro Static Energy stored in a Capacitor of Value 'C' in Terms of the total Charge 'Q' as well as the Voltage 'V'. (5)
b) State and Prove Uniqueness Theorem (5)

13 a) Explain the nature of line, surface and volume current distributions as applicable to static magnetic fields. List out the expressions for the magnetic field intensity in these three cases.
b) An infinitely long straight conducting rod of radius 'a' carries a current of 'I' in +z direction. Using Ampere's circuital law find 'H' in all regions (5)

14 a) Determine the magnetic field intensity inside an infinitely long solenoid with air core having 'n' closely wound turns per unit length and carrying a current 'I". (5)
b) Discuss the Electromagnetic boundary conditions between two lossless media (5)

..2

15 a) From the Maxwell's curl's equation derive the wave equations for an Electromagnetic wave in free space (6)
b) A sinusoidal electric intensity of amplitude 250(V/m) and frequency 1 (GHz) exists in a lossy dielectric medium that has a relative permittivity of 2.5 and a loss tangent of 0.001 Find the average power dissipated in the medium per cubic meter (4)

16 a) State and prove poynting Theorem (5)
b) Discuss the determination of the reflected and transmitted wave fields of a uniform plane wave incident normally onto a plane boundary between two material media (5)

17 a) What is Lorentz's condition and show that time varying Electric scalar potential and magnetic vector potential satisfy wave equations if Lorentz's condition is assumed (6)
b) Write short notes on EM wave Polarization (4)

****

Code No. 47

FACULTY OF ENGINEERING

B.E. 2/4 (M/P/AE) I - Semester (Baclog) Examination, May / June 2018

Subject : Mechanics of Materials

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

Note: Answer all questions from Part-A & answer any five questions from Part-B.

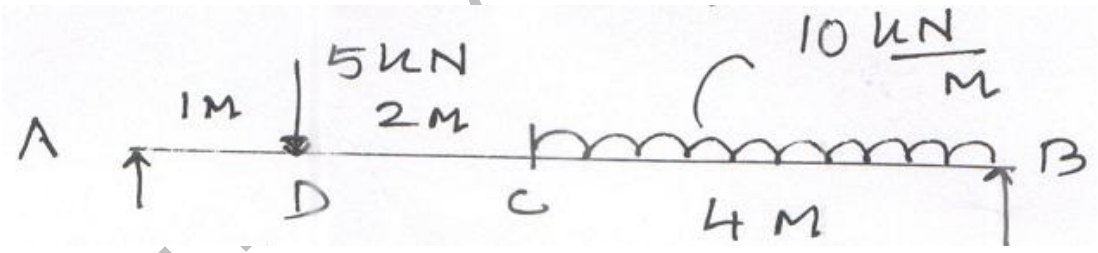
PART – A (25 Marks)

1 Explain Bulk modulus. (2)
2 Define point of inflexsion. (2)
3 What is the ratio of max shear stress to average shear stress in a solid circular section of diameter "d"? (2)
4 What is meant by equivalent torque? (2)
5 Define resilience of a beam. (2)
6 Explain importance of spring index. (3)
7 Write down this assumption made in the theory of thin cylinders. (3)
8 Write demerits of Macaulay's method. (3)
9 State middle third rule. (3)
10 What is the meaning of Equivalent length of column? Write the importance. (3)

PART – B (50 Marks)

11 Derive the relation between shear modulus "C", Poisson's ratio, 1/m and modulus of elasticity E from the fundamentals.

12 Draw SFD and BMO



13 Derive pure bending equation $\frac{M}{I} = \frac{\pm}{Y} = \frac{E}{R}$

14 A simply supported beam of span 16M carries two point loads of 20 kN and 30 kN at 2m and 4M form left end respectively. Find max. deflection interms EI.

15 A solid circular shaft is used to transmit a power 500 H.p at 300 rpm. The max shear stress should not exceed 80 MPa and angle of twist is 2M length of the shaft should not exceed 4^o. Take C = 0.85 x 10^5 MPa. Determine its diameter.

16 Draw shear stress distribution cross the circular section and its variation along the depth.

17 A cast Iron pipe of 400mm internal diameter 100mm these carries water under a pressure of 10 MPa. Determine Maximum and Minimum intensities of Hoop stress across the section.

*****

Code No: 51

FACULTY OF ENGINEERING

BE 2/4 (CSE) I-Semester (Backlog) Examination, May / June 2018

Subject: Data Structures Using C++

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

Note: Answer All Questions From Part-A & Any Five Questions From Part-B.

PART-A (25 Marks)

1. Define non-linear data structures (2)
2. List out the basic operations that can be performed on a stack (3)
3. State the different types of linked lists? Write any two disadvantages of using a linked list? (3)
4. What do you mean by collision in hashing? (2)
5. List any four applications of queues? (3)
6. What is the use of threaded binary tree? (2)
7. What do you mean by balanced trees? (2)
8. Define B-tree of order M? (3)
9. Differentiate BFS and DFS? (3)
10. Explain kruskal's algorithm? (2)

PART-B (50 Marks)

11. With an example explain the procedure of transposing a sparse matrix?
12. a) Implement queue using templates?
    b) Write an algorithm to evaluate postfix expression?
13. a) What are the operations of a singly linked list? Discuss.
    b) Write an algorithm to count the number of elements in a linked list?
14. a) Define binary trees. State any three properties of binary trees?
    b) Write an algorithm to implement different tree traversals?
15. a) Write a routine to sort the given elements using Merge Sort?
    b) Trace the above routine for the following elements 12, 25, 5, 9, 1, 84, 63, 7, 15, 4,3
16. a) Explain Prim's Algorithm?
    b) What is Spanning tree? Explain about Depth first and breadth first Spanning trees?
17. Write short notes on the following:
    a) Red-Black trees
    b) Hashing
    c) Depth First Search

****

Code No. 57

FACULTY OF INFORMATICS

B.E. 2/4 (IT) I-Semester (Backlog) Examination, May / June 2018

Subject : Micro Electronics

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

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1	How N-type and P-type semi-conductors are formed?	3
2	List the applications of Cathode Ray Oscilloscope.	2
3	Draw the circuit symbols of npn and pnp transistors and compare the doping levels of emitter, base and collector.	3
4	How a BJT can be operated as a switch?	2
5	Write the advantages of negative feedback in amplifiers.	3
6	Define Bark-Hausen criteria.	2
7	Draw the circuit for Subtractor using Op-amp.	3
8	Define CMRR and slew rate of an Op-amp.	2
9	Define Propagation delay.	2
10	What are the advantages of CMOS logic?	3

PART – B (50 Marks)

11	a)	Explain about clipping and clamping circuit.	6
	b)	Explain about conduction in semi-conductors.	4
12	a)	Explain the physical structure and modes of operation of BJT.	6
	b)	Explain about different regions of operation of MOSFET.	4
13		What is an oscillator? Explain the operation of an RC phase shift oscillator.	10
14		Explain how an Op-amp can be used as a) Square wave generator b) Triangular wave generator	10
15	a)	Give the general structure of CMOS logic and explain.	4
	b)	Implement the following using CMOS logic and explain. i) 2 input NAND gate ii) 2-input XOR gate	6
16	a)	Explain how a Zener diode can be used as a regulator.	5
	b)	Explain the cross over distortion in a power amplifier.	5
17		Write short notes on the following : a) JFET b) Op-amp as integrator	10

******