Code No. 429

FACULTY OF ENGINEERING

B.E. (Civil) III - Semester (CBCS) (Main) Examination, December 2017

Subject : Building Materials & Construction

Time : 3 Hours **Max. Marks: 70**

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

PART – A (20 Marks)

1 Explain the importance of dressing stones. (2)
2 What are laminates? (2)
3 What are the advantages of PPC and OPC? (2)
4 What is bulking of sand ? (2)
5 Write about RIVER SAND. (2)
6 Write about Blistering and Flacking in plastering. (2)
7 What are the important operations in manufacturing of bricks? (2)
8 Briefly explain sustainable development. (2)
9 Explain the importance of fire protection in structures. (2)
10 Why are joints required in concrete? (2)

PART – B (50 Marks)

11 (a) With the help of sketches explain the various methods of quarrying stones. (5)
(b) Write about classification of bricks based on quality. (5)

12 (a) Depending on the need and purpose, various types of cements are used, explain them. (5)
(b) Describe the different categories of mortors generally used. (5)

13 (a) What are the characteristics of good coarse and fine aggregates for manufacture of concrete? (6)
(b) Explain Nominal and Design mix of concrete. (4)

14 (a) Explain the advantages of using recycled and regional materials. (5)
(b) Explain the steps involved in the process of plastering. (5)

15 (a) Explain the debited process of pointing on old woodwork and Galvanized sheet. (5)
(b) What are the causes and effects of dampness in a building? (5)

16 With the help of neat sketches explain: (10)
(i) Formwork for walls
(ii) Formwork for floor and beams
(iii) Bricklayers scaffoldings
(iv) Cantilever or Needle scaffolding

17 (a) What arrangements are necessary to effecting control the spread of fire in a building? (5)
(b) What are the various causes of cracks in buildings? (5)

*****

Code No. 435/CBCS

FACULTY OF ENGINEERING

B.E. (EE/EIE) (CBCS) III – Semester (Main) Examination, December 2017

Subject: Digital Electronics & Logic Disign

Time: 3 Hours **Max. Marks: 70**

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

PART - A (20 Marks)

1. Simplify the expression: (a+$\bar{c}$) + abc + a $\overline{cd}$ + cd. 2
2. Use De Morgans theorem to convert the Boolean expression to its minterm form. $(\overline{A}+\overline{B}+C+D)-(A+\overline{B}+\overline{C}-D)$ 3
3. Give the classification of logic families. 2
4. Convert (9B2 - 1A) H to its decimal equivalent. 2
5. Brief the important characteristics of digital ICs. 2
6. Explain the design procedure for combinational circuits. 2
7. Define race around condition. 2
8. Convert J-K flip flop to S-R flip flop. 2
9. A 5-bit DAC has a current output. For a digital input of 101000, an output current of 10mA is produced. What will I_{OUT} be for a digital input of 11101? 3

PART - B (50 Marks)

10. Simplify using K-map F (P, Q, R, S) = π (0, 1, 2, 3, 6, 7, 13, 15).Implement the reduced function using NOR gate only. 10

11. Draw the internal schematic of: (a) a two-wide, four-input AND-OR-INVERT logic function in CMOS and (b) a two-wide, four-input OR-AND-INVERT logic function in CMOS. 10

12. With the help of a block schematic of the logic circuit, briefly describe how individual four-bit magnitude comparators can be used in a cascade arrangement to perform magnitude comparison of binary numbers of longer lengths. 10

13. Construct a JK flip-flop using a D flip-flop, a two-to-one-line multiplexer, and an inverter. 10

14. Describe with the help of a schematic diagram the principle of operation of a successive approximation type A/D converter. Explain the sequence of operation of conversion of an analogue signal to its digital equivalent when the expected digital output is 1010. 10

15. (a) Draw the logic diagram of a fourbit binary ripple countdown counter using flipflops that trigger on the positive edge of the clock. 5

    (b) Design a fourbit binary synchronous counter with D flipflops. 5

16. (a) Draw the circuit diagram and explain the operation of 2 input TTL NAND gate with Totem-pole output 5

    (b) Show how two 2 – to – 1 multiplexers can be used to implement a half - adder 5

****

Code No. 442/CBCS

FACULTY OF ENGINEERING

B.E. (ECE) III-Semester (CBCS)(Main) Examination, December, 2017

Subject : Network Analysis & Synthesis

Time : 3 hours **Max. Marks : 70**

Note : Answer all questions from Part-A and any Five Questions from part-B

PART – A (20 Marks)

1. Define image parameters and find image parameters in terms of short circuit and open-circuit parameters.
2. For a two port network, Z-parameters are Z_{11}=50 Ω , Z_{12} =Z_{21}=25 Ω and Z_{22} = 30Ω. Compute ABCD parameters of network.
3. Differentiate Active and Passive filter?
4. Design a m-derived low pass filter having a cut-off frequency of 1KHz, design impedance of 400 ohms, and resonant frequency 1100Hz. Obtain T-section filters.
5. The expression of N in a full series equalizer considering Z_1 as inductor and Z_2 as capacitor is?
6. Derive an expression for design impedance.
7. State two properties of the R-L driving point Impedance function.
8. What is the relationship between the transfer function and impulse response? Elaborate.
9. What is positive real functions? Write the properties of positive real functions.
10. Write the properties of RC and RL immittances.

PART – B (50 Marks)

11. a) Find the Z-Parameter of the circuit shown in figure 1.

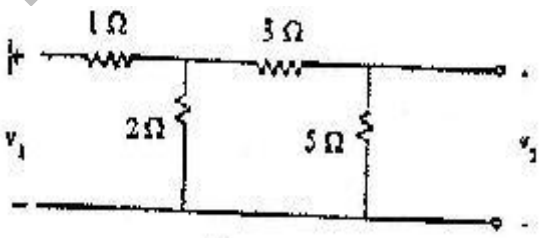


Figure 1

b) Prove that in a parallel –parallel interconnected two networks [Y_A] and [Y_B] respectively, the overall Y-matrix is given as [Y]=[Y_A]+[Y_B].

12. a) Design a prototype band pass filter section having cut-off frequencies of 2000Hz and 5000Hz and nominal characteristic impedance of 600Ω .

b) Explain nominal characteristic impedance R_0 of a band –stop filter or band-reject filter. Derive design parameters R_1 , R_2 , C_1 and C_2 of a band-reject filter in terms of corner frequencies.

13. a) An ® attenuator has been shown in figure 2, find Y parameter and draw the equivalent Y-parameter circuit.

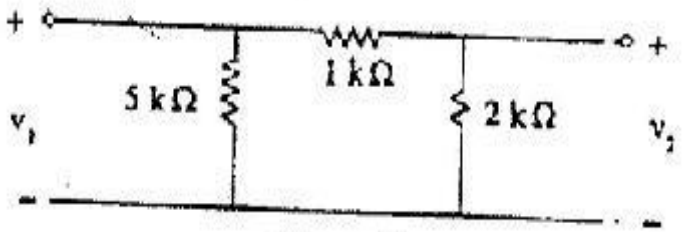


Figure 2

b) Explain the theory of P-type and L-type attenuator?

14. a) What do you mean by simple pole/zero, repeated pole/zero, complex conjugate pole/zero? Find the pole = 200 location of the current transfer ratio I_2/I_1 in the s-domain for the circuit shown in figure 3:

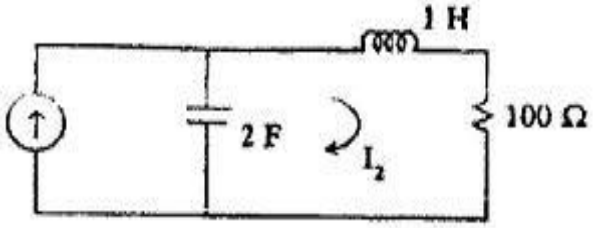


Figure 3

b) The unit-step response of a linear system is r(t) = $\left(2\,e^{-2t} - 1\right)u(t)$

i) Find the response r(t) to the input f(t) = t u(t).

ii) Sketch the response.

15. a) Test whether the polynomial P(s) is Hurwitz or not.

i) $s^5 + 3s^2 + 2s$ ii) $s^4 + 5s^3 + 5s^2 + 4s + 10$

b) Find the Cauer forms of the RL impedance functions.

$Z(s) = 2(s+1)(s+3) / (s+2)(s+6)$

16. a) Derive the Relation between Z and Transmission parameters?

b) Discuss about the effect of Resistance on filter operation?

17. a) Write about Restriction on location of poles and zeros in driving point function?

b) The impedance function of a network is given by $Z(s) = 6s^3+5s^2+6s+4/2s^3+2s$. Realise the network?

****

Code No. 450/CBCS

FACULTY OF INFORMATICS

B.E. (AE) III-Semester (CBCS) (Main) Examination, December, 2017

Subject : Fluid Mechanics & Machinery

Time : 3 hours **Max. Marks : 70**

Note : Answer all questions from Part-A and any Five Questions from part-B

PART – A (20 Marks)

1. What is the difference between an ideal and real fluid.
2. What are the differential Manometers.
3. Differentiate rotational and Irrotational flow.
4. The pipe having diameter at section 1&2 are 100mm and 150mm respectively. If the velocity of water flowing through the pipe at section 1 is 5m/s. Find: Discharge through the pipe and also velocity at section 2.
5. What are the characteristics of laminar flow and Turbulent flow.
6. Differentiate between major energy losses and minor energy losses.
7. What are the efficiencies of the hydraulic Turbines?
8. Enumerate some methods to avoid cavitation.
9. How does the specific speed of a centrifugal pump different from that of a turbine.
10. How are reciprocating pumps classified?

PART – B (50 Marks)

11. a) State and express Newton's law of viscosity.
    b) What are the gauge and absolute pressure at a point 4m below. The free surface of a liquid of specific gravity 1.53. If atmospheric pressure is equivalent to 750 mm of mercury.

12. a) Define velocity potential function and stream function.
    b) Obtain an expression for continuity equation for a three-dimensional flow.

13. A fluid of viscosity 0.5 Poise and sp.gr 1.20 is flowing through a circular pipe of diameter 100 mm. The maximum shear stress at the pipe wall is given as 147.15 N/m^2. Find: i) The pressure gradient ii) The average velocity and the Reynolds number of the flow.

14. The hub diameter of a Kaplan turbine, working under a head of 12m is 0.35 times the diameter of the runner. The turbine is running at 100 rpm. If the vane angle of the extreme edge of the runner at outlet is 15^0 and flow ratio is 0.6,find: i) Diameter of the runner ii) Diameter of the boss, iii) Discharge through the runner. The velocity of whirl at outlet is given as zero.

15 A centrifugal pump having outer diameter equal to two times of inner diameter and running at 1000 rpm works against a total head of 40m. The velocity of flow through the impeller is constant and equal to 2.5 m/s. The vanes are set back at an angle of 40^0 at outlet. If the outer diameter is 500 mm and width at outlet is 50mm, determine, i) Vane angle at inlet, ii) Work done by the impeller on water per second and iii) Manometric efficiency.

16 a) How will you obtain Bernoulli's equation from Euler's equation of motion.

b) Find the velocity of flow of an oil through a pipe, when the difference of mercury level in a differential U-tube manometer connected to the two tappings of the Pitot tube is 15cm. Take sp.gr of oil =0.8 and co-efficient of Pitot tube as 0.98.

17. Write a short note on

a) Importance of Darcy Weibach equation

b) Double acting reciprocating pump.

c) Gear pump

****

Code No. 457/CBCS

FACULTY OF ENGINEERING

B.E. (I.T) III - Semester (CBCS) (Main) Examination, December 2017

Subject: Digital Electronics and Logic Design

Time: 3 Hours **Max. Marks: 70**

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

PART-A (20 Marks)

1. Minimize f (x_1, x_2) = Σm (0,1,3) using k-maps Method.
2. Write VHDL program to implement half adder circuit
3. Define shannon's expansion theorem.
4. Differentiate between CPLDs and FPGAs.
5. Draw block diagram for Ring counter.
6. Write excitation table for JK flip – flop.
7. Differentiate between Mealy and Moore models.
8. Give elements used in ASM charts.
9. Write two points on significance of Hazards.
10. What is clock skew?

PART – B (5 x 10 = 50 Marks)

(Answer any FIVE questions)

11. a) Implement $f(x_1, x_2, x_3) = \Pi M(0,2,3,7)$
    Using (i) Only NOR gates
    (ii) Only NAND gates. [6M]

    b) Explain block diagram of Digital design of hardware design process. [4M]

12. a) Convert BCD to 7 – segment display and implement this code converter using basic gates. [8M]

    b) Explain 2 – input and 3 – input look up tables. [2M]

13. a) Explain synchronous up counter using neat diagram, with timing diagram. [5M]

    b) Write VHDL code for D flip – flop. [5M]

14. a) Design synchronous sequential circuit for detecting two consecutive ones using Moore model, using JK flip – flops. [8M]

    b) Draw ASM chart for detecting two consecutive ones using Moore model, using JK flip flops

15. a) Reduce the following flow table using merging procedure. [7M]

Present State	Next State				Output Z
	w_2w_1=00	01	10	11	
A	(A)	H	B	-	0
B	F	-	(B)	C	0
C	-	H	-	(C)	1
D	A	(D)	-	E	1
E	-	D	G	(E)	1
F	(F)	D	-	-	0
G	F	-	(G)	-	0
H	-	(H)	-	E	0

b) Explain setup and hold time of a flip – flop. [3M]

16. a) Explain how state hazard occurred in the following function $f = x_1x_2 + \overline{x_1}x_3$ and how to eliminate static hazard. [5M]

b) Explain priority encoder in detail. [5M]

17. a) Explain parallel access shift register in detail. [5M]

b) Design a mod – 15 counter using T-Flip – flop. [5M]

****

Code No. 30

FACULTY OF ENGINEERING

B.E. 2/4 (Civil) I – Semester (Backlog) Examination, December 2017

Subject: Strength of Materials – I

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

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

PART – A (25 Marks)

1	Define Poisson's ratio and volumetric strain.	3
2	Draw stress-strain diagram for mild steel.	3
3	Calculate the section modulus of a solid circular section of diameter 80 mm.	2
4	Draw bending moment diagram for a cantilever beam of span 'ℓ' subjected to a clockwise couple 'M' at a distance $\ell/4$ from free end.	2
5	What is core of a section? Calculate the core diameter of a circular section having 100 mm diameter.	3
6	What is a flitched beam? Sketch its section.	3
7	Calculate torsional rigidity of a circular shaft of 100 mm diameter. Take C = 200 GPa.	2
8	State Lame's equations for pressure and hoop stress distribution in a thick cylinder.	3
9	Explain the terms thermal stress and strain.	2
10	Calculate the thickness of a thin spherical shell of internal diameter 400 mm, when it is subjected to an internal pressure of 8 N/mm^2. The permissible stress is 80 N/mm^2.	2

PART – B (5x10 = 50 Marks)

11 A bar 400 mm long and 24 mm in diameter is subjected to a pull of 40 kN. The elongation of the bar is 0.165 mm and the change in diameter is 0.003 mm. Calculate Poisson's ratio, Young's modulus and bulk modulus.

12 Draw shear force and bending moment diagrams for the beam shown in Fig. 1.

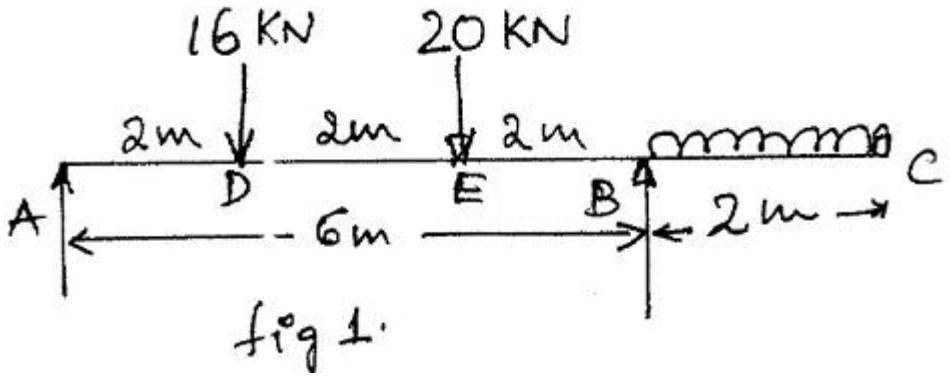


fig 1.

13 Sketch the shear stress distribution across the I-section in which the flanges are 60 mm x 10 mm each and web is 120 mm x 10 mm, subjected to a shear force of 200 kN.

14 The principal stresses at a point in a material are 160 N/mm^2 (tensile) and 80 N/m^2 (compression). Find normal and tangential stress on a plane making 60^o with the axis of tensile stress. Also, calculate the max shear stress induced.

15 A cylindrical shell of 800 mm diameter and 3 m long is subjected to an internal pressure of 4 N/mm^2. Determine the changes in diameter and volume. E = 200 GPa and 1/m = 0.3.

16 A hollow circular shaft has to transmit 120 kW at 200 r.p.m. Find the external and internal diameters of the shaft, if the maximum torque exceeds the mean by 20% with permissible shear stress of 70 N/mm^2 and the diameter ratio is 0.6.

17 Derive the flexure equation and state various assumptions in it.

****

Code No. 35

FACULTY OF ENGINEERING

B.E. II/IV (EEE) I – Semester (Backlog) Examination, December 2017

Subject: Principles of Mechanical Engineering

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

Note: (i) Answer All Questions From Part-A & Answer Any five Questions From Part-B.
(ii) Missing date, if any may suitably be assumed.

PART – A (25 Marks)

1. What are the limitations of First law of thermodynamics?
2. State the differences between two stroke and four stroke engines
3. Compare Otto cycle and Diesel cycle
4. Write various applications of refrigeration systems
5. What are various applications of steady flow energy equation?
6. What is the effect of slip in belt drives
7. What is draft tube? What are its functions?
8. What is a gear train? Draw the figure of reverted gear train
9. Define coefficient of performance of any refrigerating system
10. In how many ways a Boiler can be classified?

PART – B (50 Marks)

11. a) Derive steady flow equation for a system undergoing a flow process
    b) What are the various factors to be considered for selecting a Boiler? Write in-brief the classification of Boilers.

12. a) Describe with neat sketches the working of a simple constant pressure open cycle gas turbine.
    b) Define I.C. engine and explain how they are classified.

13. a) With a neat sketch obtain the condition for maximum power to be transmitted by any Belt - drive.
    b) In a fiat belt drive system the tension in the tight side is 2600N and the contact angle is 145^0. If the coefficient of friction is 0.31, find the tension in slack side.

14. a) Describe how friction losses are calculated in pipes
    b) Describe the working principle of Kaplan turbine.

15. a) Define cavitation, what are the effects of cavitation? Give the necessary precautions against cavitation.
    b) Describe the reciprocating pump operations with a neat sketch.

16. a) Classify the heat exchangers and give examples of each in the industrial application/

    b) Describe the factors affecting air conditioning

17. Write **short notes** on the following:

    a) Priming and its significance

    b) Concept of black body radiation

    c) Applications of Bernoulli's equation.

****

Code No. 37

FACULTY OF ENGINEERING

B.E. 2/4 (Inst.) I - Semester (Backlog) Examination, December 2017

Subject: Elements of Production Techniques

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

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

PART-A (25 Marks)

1. What are the properties of core, material?
2. Define Manufacturing.
3. What are the resistance welding processes?
4. Differentiate between consumable and non – consumable electrodes.
5. Differentiate between drilling and boring
6. What are the limitations of CNC machining?
7. What is the function of dielectric fluid in EDM?
8. What is the principle of material removal in USM?
9. What is the difference between drop forging and press forging?
10. What is power metallurgy?

PART-B (50 Marks)

11. (a) What are the merits and limitations of manufacturing processes
    (b) What are the criteria for selection of process for manufacturing a product?
12. (a) Sketch and explain arc welding process
    (b) Sketch and explain resistance butt welding
13. (a) What are the classifications of lathe machines, sketch a simple lathe machine?
    (b) What are the basic elements of FMS?
14. (a) Sketch and explain the working principle of EBM
    (b) Sketch and explain the working principle of LBM
15. (a) What iSketch and explain extrusion process
    (b) Sketch and explain deep drawing process
16. (a) Sketch and explain the different types of flames in gas welding
    (b) What are the procedures to make sand moulds?
17. Write short notes on the following.
    (a) Rolling (b) Brazing (c) Equipments used in forging.

****

Code No. 42

FACULTY OF ENGINEERING

B.E 2/4 (ECE) I – Semester Examination, December, 2017

Subject : Elements of Mechanical Engineering

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

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

PART - A (25 MARKS)

1. What are the applications of reciprocating air compressors
2. Sketch Valve timing diagram of a vertical four stroke petrol engine.
3. Define thermal conductivity and five K values of any three good conductors.
4. Sketch temperature Vs Length profile of a parallel flow and counter flow heat exchangers
5. List different eco friendly refrigerants
6. Define the COP of Bell coleman cycle.
7. List various operations that can be carried out on a lathe machine.
8. Sketch various flames generated during a gas welding process
9. Write the advantages of V-Belts as compared to flat belts
10. List different applications of gear trains.

PART - B (50 MARKS)

11. a) Describe the working of a four stroke diesel engine with a neat sketch (5)

    b) Determine the power required to compress 1kg/sec of air from 1 bar and 27^{o}C to 6 bar in a single stage air compressor. The law of compression is $pv^{1.35}$=const. Assume R = 0.287kJ/kg K. (5)

12 a) A certain insulation has a thermal conductivity of 12W/m^{o}C. What thickness is necessary to effect a temperature drop of 600^{o}C for a heat flow of 450W/m^{2}. (5)

    b) Water at the rate of 70kg/min is heated from 35^{o}C to 75^{o}C by an oil having a specific heat of 2.0kJ/kg^{o}C The fluids are used in a counter flow double pipe hat exchanger and the oil enters the heat exchanger at 115^{o}C and leaves at 80^{o}C. The overall heat transfer coefficient is 320 W/m^{2o}C. Determine the heat exchanger area. (5)

13 a) Describe the working of vapor compression refrigeration cycle with the help of a sketch. (6)

    b) Discuss any four psychrometric properties (4)

14 a) Describe the working of Drilling machine with a block diagram (5)

    b) Discuss about various forming processes (5)

15 a) Sketch compound gear train and derive its velocity ratio (4)

b) A belt drive is designed to transmit 10.5 kW at a belt speed of 14 m/sec. The ratio of belt tensions is 2.20 Determine the angle of lap and belt tensions if coefficient of friction is 0.23. (6)

16 a) Air flows through a turbine in an adiabatic process from 3.5 bar and 1000K to 1 bar. The inlet velocity is 30 m/sec and the outlet velocity is 250 m/sec. Calculate the work output of the turbine per kg of air. (6)

b) Derive Fourier's law of conduction (4)

17 Write short notes on any two of the following 5+5

a) Working of vapour absorption refrigeration system

b) Working of a lathe machine

c) Inverted gear train

****

Code No. 48

FACULTY OF ENGINEERING

B.E. 2/4 (M/P/AE) I - Semester (Backlog) Examination, December 2017

Subject : Managerial Economics and Accountancy

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

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

PART – A (25 Marks)

1 Economics is a science of scarcity and science of choice- explain. 2

2 What is managerial economics? 2

3 What is meant by demand? 2

4 What is break –even analysis? 2

5 State the Law of diminishing marginal utility. 2

6 What is production function? 3

7 Internal rate of return method. 3

8 Write a note on journal and ledger? 3

9 What is petty cash book? 3

10 Show the treatment in final accounts. 3

In trial balance salaries given Rs.10,000 in adjustment salary outstanding Rs.2,000.

PART – B (50 Marks)

11 Define managerial economics its usefulness to engineers.

12 What is demand curve? What are the reasons demand curve slopes downward from left to right?

13 Internal and external economies of scale explain.

14 Calculate P/V Ratio, B.E.P. and Margin of safety from the following particulars. Sales Rs.20,,000 Fixed expenses Rs 5,700 Variable expenses Rs.10,000.

15 There are two mutually exclusive projects X and Y each requiring investment of Rs.1,00,000.

Year	1	2	3	4	5
X	30,000	30,000	30,000	20,000	22,000
Y	25,000	30,000	25,000	25,000	21,000

which project should be accepted based on payback period method.

16 Prepare a Bank Reconciliation Statement as on 31-01-2016.
(a) Cash book balance as on 31-01-2016 Rs.10,000
(b) Cheques issued but not presented for payment Rs.1,400
(c) A cheque of Rs.1,200 deposited but not cleared upto 31-01-2016
(d) Interest on investment Rs.200 was collected and credited by bank
(e) Bank charges debited in pass book Rs.50/-

17 Prepare Final Accounts of Mr.Gopal krishna for the year ending 31-12-2016 from the following Trial Balance.

Trial Balance as on 31-12-2008

Debit Balance	Rs.	Credit Balance	Rs.
Wages	3,500	Capital	35,000
Machinery	20,000	Sales	61,604
Freight on sales	503	Purchase returns	222
Salaries	10,600	Creditors	3,903
Opening stock	17,525		
Rent & taxes	2001		
Freight on purchase	200		
Purchases	25,200		
Sales returns	1,200		
Furniture	1,600		
Debtors	10,400		
Cash at bank	8,000		
	1,00,729		**1,00,729**

Adjustments:

1. Closing stock Rs. 16,800
2. Outstanding salaries Rs. 400
3. Prepaid rent & taxes Rs. 201
4. Depreciation on machinery @10% 5. Provide bad debts reserve at 5% 6.
5. Calculate interest on capital at 5%

*****

Code No. 55

FACULTY OF ENGINEERING

B.E. 2/4 (CSE) I - Semester (Suppl.) Examination, December 2017

Subject : Basic Electronics

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

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

PART – A (25 Marks)

1 The reverse saturation current of a silicon diode is 10 « A. Calculate the diode current for the forward bias voltage of 0.6V at room temperature. 3

2 Differentiate between Drift current and Diffusion current. 2

3 The current gain of a transistor in CE mode is 49. Calculate its Common-base current gain. Also, find the base current when emitter current is 3 mA. 3

4 Differentiate between BJT and FET 2

5 Draw the equivalent circuit of a crystal oscillator. 2

6 Write the advantages of negative feedback 3

7 Define a) CMRR b) Slew rate 2

8 Draw the truth table of Half adder and realize using NAND gates. 3

9 Define a) Transducer b) Gauge Factor 2

10 Draw the symbols of a) Photo Transistor b) LED c) LCD 3

PART- B (50 Marks)

11 (a) Describe the working of Full Wave Rectifier and derive the parameters
a) Ripple factor b) Efficiency c) TUF d) % regulation e) PIV 7
(b) Define Hall effect. Write its applications 3

12 (a) Analyze the CE amplifier using h-parameter equivalent circuit to determine A_i, A_V, R_i and R_o. 7

(b) Prove that $g_m = \frac{-2\sqrt{I_D I_{DSS}}}{Vp}$ 3

13 With neat circuit diagram explain the working of RC-Phase shift Oscillator. Derive the expression for frequency of oscillations and obtain the condition for sustained oscillations. 10

14 (a) Write the truth table of Full adder and realize using NAND gates. 5
(b) With the help of neat circuit diagram, explain the application of Op- amp as a differentiator. Also, derive the equation for output voltage. 5

15 (a) Explain the working and V-I characteristics of UJT. 6
(b) Explain the application of CRO in frequency and phase measurement. 4

16 (a) Obtain the h-parameters of CE transistor from its static characteristics. 5
(b) Draw the block diagrams of all feedback topologies. 5

17 Write short notes on
(a) Breakdown mechanisms 3
(b) Application of Op-amp as an Integrator 4
(c) LVDT 3

*****

Code No. 59

FACULTY OF INFORMATICS

B.E. 2/4 (IT) I-Semester (Backlog) Examination, December 2017

Subject : Data Structures

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

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

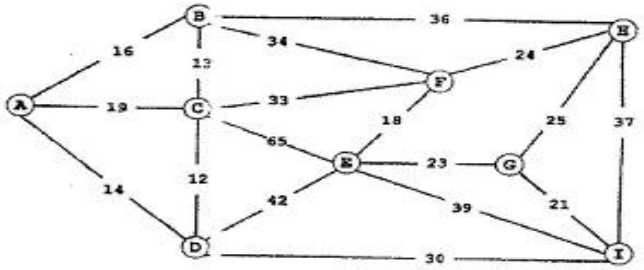
PART – A (25 Marks)

1 What are sparse matrices? 2
2 Define abstract data types (ADT). 2
3 Differentiate between arrays and linked list. 3
4 What is the postfix expression for the infix expression (A/B*C*D+E). 3
5 Give applications of queues. 2
6 Write a function to check whether a circular queue is full or not. 3
7 Give the example of weighted graph. 2
8 Define Max heap with an example. 3
9 What is the advantage of using dummy header in circular linked list? 2
10 Define performance of program? What are the components of space complexity. 3

PART – B (50 Marks)

11 a) Write a complete program to perform addition of two polynomials. 6
b) Discuss about Asymptotic notation. 4

12 a) Write C++ code to implement following operations on a linked list
i) Find nth element from last position in single pass 3
ii) Find position of element X 3
b) Consider the weighted graph. Give the list of edges in the minimum spanning tree in the order that kruskal's algorithm insert them. 4



13 Write a C++ function for quick sort. Trace the algorithm for elements 10, 4, 1, 3, 6, 7 specify the time complexity. 10

14 a) Write the algorithm for insertion into an AVL tree. 7
b) Explain B+ tree with an example. 3

15 Define a heap. Write algorithm for heap sort. Trace heap sort for following keys 3, 1, 4, 1, 5, 7, 2, 6, 5, 4. Find time complexity. 10

16 a) Define a graph. Write algorithms for graph search methods and explain with example. 7
b) Compare Linked list and linear list. 3

17 Write short notes on : 10
a) Secure hash function
b) Iterators for chains

******