Code No. 62

FACULTY OF ENGINEERING

B.E. 2/4 (Civil) II – Semester (Suppl.) Examination, December 2017

Subject: Surveying – II

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	How is the size of a theodolite expressed?	2
2	Differentiate between horizontal and vertical axes of a theodolite.	2
3	What is trigonometric leveling? What are its uses?	2
4	Define the terms consecutive coordinates and independent coordinates.	2
5	With a neat sketch, explain first tangent and second tangent.	2
6	Enumerate the problems in setting out simple curves.	3
7	Explain the functions of a sag curve.	3
8	What is a true spiral?	3
9	What are the applications of Total station in Civil Engineering?	3
10	What is an anallactic lens? State its limitations.	3

PART – B (5x10 = 50 Marks)

11 With a neat sketch, explain the collimation adjustments. (Both cases). 10

12 From a closed traverse run with a theodolite, the following data were available. Compute the length and reduced bearing of QR. 10

Line	Length (m)	W.C.B.
PQ	1200	115^o
QR	?	?
RS	1050	310^o
SP	550	60^o

13 A compound curve is to connect two straights having a deflection angle of 90^o. As determined from the plan, the lengths of the two tangents are 350 m and 400 m respectively. Calculate the lengths of the two arcs if the radius of the first curve is to be 300 m. Draw a neat sketch of the curve. 10

14 Calculate the length of the vertical curve for the following data – (1) the sight-distance is twice the length of the vertical curve, g_1 = 1%, g_2 = -1.5% and h = 1.12 m. (2) the sight-distance is half the length of the vertical curve, g_1 = 1.5%, g_2 = -2.5% and h = 1.12 m. 10

15 Points P, Q and R all lie in one vertical plane. A tacheometer having the constants as 100 and zero is set up at R, which lies between P and Q. The observations taken on a vertically held staff at P and Q from R are as follows. If the RL of P is 250.750 m, determine the length of PQ and the RL of Q. Draw a neat sketch of the same. 10

Instrument Station	Staff Point	Bearing	Vertical Angle	Hair Reading (m)
R	P	$40^o24'$	$-4^o24'$	0.876, 1.962, 3.049
R	Q	$220^o35'$	$-5^o12'$	0.873, 1.866, 2.859

16 Determine the offsets to be set out at ½ chain interval along the tangents to locate a 16-chain curve, the length of each chain being 20 m. 10

17 What is GIS? What are its objectives? What are its components? Write a note about data structures. 10

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Code No. 68

FACULTY OF ENGINEERING

B.E 2/4 (EEE/ Inst.) II Semester (Suppl.) Examination, December 2017

Subject: Solid Mechanics

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 Volumetric strain (2)

2 Draw the stress strain curve for wood. (2)

3 Give the relationship between shear force and bending moment. (3)

4 Draw the shear force and bending moment diagram for fig.1 (3)

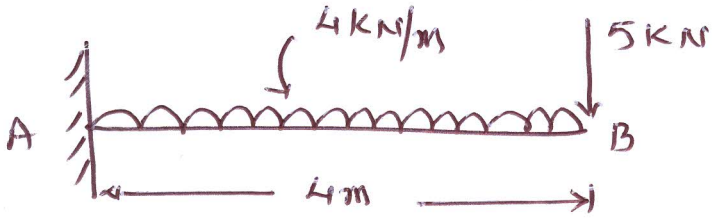

Fig. 1.

5 Define cantilever and over hanging beams. (3)

6 Define section modulus. (2)

7 Explain pure torsion theory. (3)

8 What is double integration method? Explain. (3)

9 Give the expressions for sudden and Impact loads. (2)

10 What do you understand from strain energy in springs? (2)

PART – B (10x5 = 50 Marks)

11 a) Explain the Hook's law and temperature stresses. (4)

b) Obtain the relationship between E, N and K. (6)

12. Draw the shear force and bending moment diagrams for the fig.2 as shown. (10)

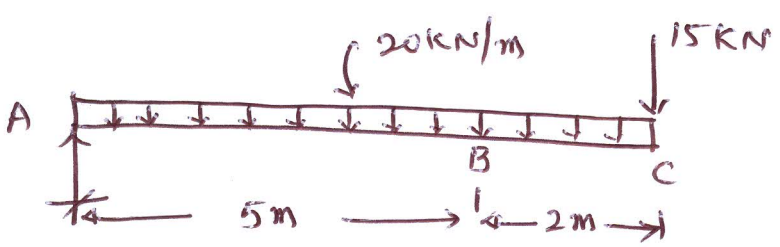

Fig 2.

13. Define pure bending theory and obtain the equation for pure bending. (10)

14 A beam of triangular section having base width 20 cm and height of 30 cm is subjected to a shear force of 3 KN. Find the value of maximum shear stress and Sketch the shear stress distribution along the depth of the beam. (10)

15. Obtain the maximum deflection of the beam shown in fig.3 (10)

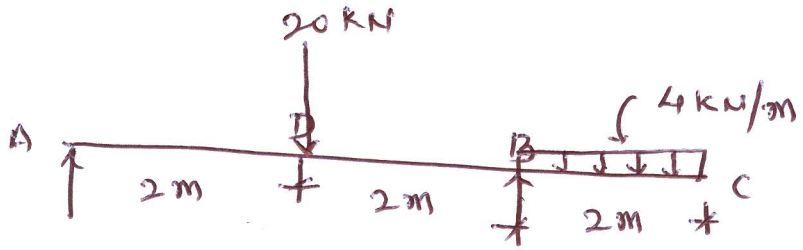

Fig. 3

16. A solid steel shaft has to transmit 75 KW at 200 r.p.m .Taking allowable shear stress as 70 MN/m^2, find the suitable diameter for the shaft, if the maximum torque transmitted on each revolution exceeds the mean by 30%. (10)

17. Determine amount of compression and maximum shear stress produced when a load of 2100 N is dropped axially on a close-coiled helical spring from a height of 240 mm. The spring has 22 coils each of mean diameter 180 mm and wire diameter is 25mm. $C=84000N/mm^2$. (10)

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Code No. 76

FACULTY OF ENGINEERING

BE. 2/4 (ECE) II – Semester (Supply) Examination, December 2017

Subject: Analog Electronic Circuits

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 is unity gain frequency? What is affect of feedback on unity gain frequency? (2)
2. A two stage amplifier has an overall gain of 80 dB. The gain of first stage is 200. Calculate the gain of second stage. (3)
3. Draw block diagram of feedback amplifier and explain the types of sampling and mixing. (3)
4. The upper cut off frequency of an amplifier is 600 KHz. Calculate its value with feedback Given A=200 and Beta=0.05. (2)
5. Draw electrical equivalent circuit of piezo electric crystals. (3)
6. Given L1=3mH, L2=10mH and C=10 Micro Farad. Calculate frequency of oscillation for a Hartley oscillator. (2)
7. What is crossover distortion and how can it be eliminated. (3)
8. Calculate efficiency of class B push pull amplifier given Vm=9V and Vcc= 12 V. (2)
9. What is a stagger tuned amplifier. Draw its frequency response. (3)
10. Draw the circuit diagram of double tuned RF amplifier. (2)

PART- B (50 MARKS)

11 a) Illustrate the affect of C_B, C_E, C_C on the low frequency of single stage RC coupled common emitter amplifier (5)

b) Using expression obtained above calculate the values of lower cut off frequency and comment as to which frequency will dominate. Given the amplifier circuit has C_B=1 micro F, C_E = 1 micro F, C_C=10 micro F, R_c=5 Kohm,R_1 = 75 K ohm, R_2=15 K ohm, R_s=1 K ohm, R_L=8 k ohm. Use approximate model and consider h_{ie} =1.1 K ohms and h_{fe} = 50. (Assume data wherever required) (5)

12 a) Calculate gain with feedback for an emitter follower amplifier (6)

b) Obtain general expression for R of for voltage shunt feedback amplifier (4)

13 a) Give the expression for oscillation frequency and condition for oscillation in an RC phase shift oscillator (7)

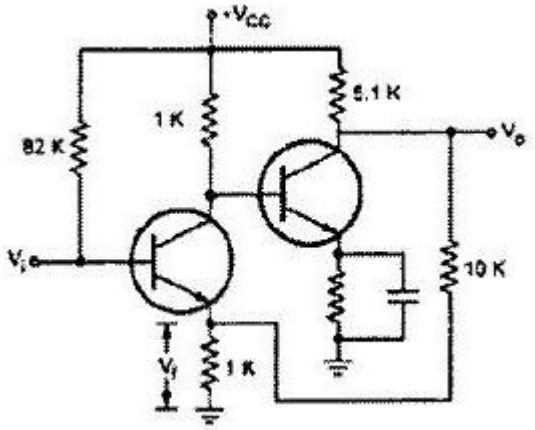
b) Calculate Ws and Wp, given L1 = 0.33 H, C=).06 pF and C' = 1pF (3)

14 a) Derive efficiency and figure of merit for Class A direct coupled power amplifier (7)

b) A class A transformer coupled power amplifier has a transformer with turns ration of 10:1 and drives a load resistance of RL = 20 ohm. Calculate its efficiency. (3)

15 Calculate the gain at resonance and bandwidth of single tuned Transformer coupled RF amplifier. (10)

16 Identify the feedback topology and calculate A_{vf}, R_{if}, R_{of}. Assume h_{ie} = 1.1K ohm and h_{fe}= 50. (10)



17 Write short notes on

a) Harmonic distortion measurement using 3 point method (3)

b) Affect of negative feedback on stability of amplifier (3)

c) Neutralization and Unilateralization (4)

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Code No. 85

FACULTY OF ENGINEERING

B.E. 2/4 (M/P) II - Semester (Suppl.) Examination, December 2017

Subject: Fluid Dynamics

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

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

PART – A (25 Marks)

1 State and briefly explain Newton's law of viscosity. (2)

2 Write the relation between absolute pressure, atmospheric pressure and gauge pressure. (3)

3 Briefly mention the characteristics of laminar and turbulent boundary layers. (2)

4 Why should circulation superimposed on flow past a body cause a lift? (2)

5 A jet propelled aircraft is flying at 1100 km/hr at sea level, calculate the Mach number at a point on the aircraft where air temperature is 20oC. (R=287 J/kg K and K =1.4). (3)

6 Differentiate between Local acceleration and convective acceleration. (2)

7 Draw a neat sketch of Pitot tube and write its working principle. (3)

8 Define the term Hydraulic Gradient Line (HGL) and Total Energy (TEL). (3)

9 A liquid has a specific gravity of 1.9 and kinematic viscosity of 6 stokes. What is its dynamic velocity? (3)

10 What do you understand by the term Magnus effect? (2)

PART – B (50 Marks)

11 (a) Explain briefly the following terms: (5)

(i) Mass density (ii) Weight density (iii) Specific gravity

(iv) Dynamic viscosity (v) Kinematic viscosity

(b) A 2-Dimensional flow is described by the velocity components $u = 6x^3$ and $V = 16x^2y$. Determine the stream function, velocity potential function and acceleration at a point P (1, 2). (5)

12 (a) With a neat sketch, explain about Micro manometers and also state the equation of pressured head. (5)

(b) A 60^o reducing bend is connected in a pipe line, the diameter at inlet and outlet of the bend being 50 cm and 25 cm respectively. Find the force exerted by the water on the bend if the intensity of pressure at inlet of the bend is 200 kN/m^2. The rate of flow is $1m^3/s$. (5)

13 (a) What is the working principle of a Venturimeter? Using Venturimeter how do you measure the discharge, obtain an expression for the same. (5)

(b) In a pipe of 200 mm diameter, the maximum velocity of flow is found to be 1.5 m/s. If flow in the pipe is laminar, find (i) the average velocity and the radius at which it occurs, and (ii) the velocity at 40 mm from the wall of the pipe. (5)

14 (a) What do you mean by Boundary layer separation? What is the effect of pressure gradient on boundary layer separation? Explain with the aid of neat sketch. (5)

(b) A plate is placed at zero angle of incidence in a fluid approach velocity 'V'. The thickness of boundary layer 2.5m from the leading edge is 0.15cm. Find the thickness of boundary layer at a distance of 4m form the leading edge. (5)

15 (a) Derive the energy equation for adiabatic flows. (5)

(b) A truck having a projected area of $6.5m^2$ traveling at 70 KMPH has a total resistance of 1960 N, of this 20% is due to rolling friction and 10% is due to surface friction. The rest is due to form drag. Calculate the coefficient of form drag. Take density of air as $1.25\ kg/m^3$. (5)

16 (a) Derive the equation of continuity in Three-Dimensional Incompressible fluid flow. (5)

(b) An oil of specific gravity 0.85 and viscosity $0.75\ N.s/m^2$ flows through a horizontal pipe of diameter 60 mm. If between two sections 150 m apart, the pressure drop is 2750 kPa. Find: (5)

(i) Discharge in the pipe

(ii) Maximum velocity

(iii) Velocity gradient close to the pipe wall

(iv) Frictional resistance for the 150 m length of pipe

17 Write short notes on any **three** of the following: (10)

(a) Hydrostatic forces on vertical and inclined surfaces

(b) Reynolds experiment

(c) Flow net and its uses

(d) Factors affecting boundary layer

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Code No. 87

FACULTY OF ENGINEERING

B.E. 2/4 (AE) II - Semester (Suppl.) Examination, December 2017

Subject: Fluid Mechanics and Machinery

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

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

PART – A (25 Marks)

1 Differentiate between solid and fluid under influence of various forces.

2 Define surface tension and capillarity.

3 What is the difference between momentum equation and impulse momentum equation?

4 Define and differentiate rotational and irrotational flows.

5 Define and explain the terms: (i) Hydraulic gradient line and (ii) Total energy line

6 Define and explain laminar Boundary layer.

7 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.

8 What is a draft tube? What are its functions?

9 How will you classify the reciprocating pumps?

10 What is primary? Why is it necessary?

PART – B (50 Marks)

11 (a) Explain the terms: (i) Dynamic viscosity and (ii) Kinematic viscosity

(b) An oil of viscosity 5 poise is used for lubrication between a shaft and sleeve. The diameter of the shaft is 0.5m and it rotates at 200 rpm. Calculate the power cost in the oil for a sleeve length of 100 mm. The thickness of oil film is 1.0mm.

12 (a) Define and differentiate stream line and streak line.

(b) A 30 cm diameter pipe carries oil of sp.gr. 0.8 at a velocity of 2 m/s. At another section the diameter is 20 cm. Find the velocity of this section and also mass rate of flow of oil.

13 (a) Define continuity equation and Bernoulli equation.

(b) A horizontal venturimeter with inlet and throat diameter 30cm and 15cm respectively is used to measure the flow of water. The reading of differential manometer connected to inlet and throat is 10 cm of mercury. Determine the rate of flow. Take Cd=0.98.

14 A viscous flow is taking place in a pipe of diameter 100 mm. The maximum velocity is 2 m/s. Find the mean velocity and radius at which this occurs. Also calculate the velocity at 30mm form the wall of the pipe.

..2

15 (a) What do you understand by the terms: major energy loss and minor energy losses in pipe.

(b) An oil of kinematic viscosity 0.5 stoke is flowing through a pipe of diameter 300 mm at the rate of 320 lt/s. Find the head cost due to friction for a length of 60m of the pipe.

16 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 extream edge of the runner at outlet is 15^{o} and flow ratio is 0.6. Draw the velocity triangles and find:

(a) Diameter of the runner,

(b) Diameter of the boss and (c) Discharge through the runner the velocity of whirl at outlet is given as zero

17 (a) What is an air vessel? Describe the function of the air vessel for reciprocating pumps.

(b) How does the specific speed of centrifugal pump differ from that of a turbine?

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Code No. 90

FACULTY OF ENGINEERING

B.E. 2/4 (CSE) II – Semester (Suppl.) Examination, December 2017

Subject: Object Oriented Programming Using Java

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	Differentiate abstract class and interface.	2
2	Define an 2D-array of different row size.	3
3	What is the use of Print Writer class?	3
4	What is the use of finally keyword?	2
5	Which class is used to print elements in the reverse order?	3
6	What is the use of Iterator?	2
7	List the different event listener interfaces.	3
8	List the different text handling classes with example.	2
9	Write a code to read an integer and find its last digit.	2
10	What is Serialization? Which type of variables cannot be serialized?	3

PART – B (50 Marks)

11	a)	Explain the typecasting and type conversion.	4
	b)	Write a program to demonstrate the 3 uses of super keyword with example.	6
12	a)	Write a program for stack operation using user-defined exception for overflow and underflow condition.	5
	b)	Write a program to demonstrate multiple thread creations.	5
13	a)	Write a program to print the tokens in a given sentence.	5
	b)	Explain the different classes and functions used for memory management in the JAVA.	5
14	a)	Write a program for keyboard event handling.	5
	b)	Write a program to create form to read two numbers and display the sum.	5
15	a)	Write a program to find the occurrence of a given string in a file.	5
	b)	Write a program to read the ‘n’ integer values from console and find the sum of all values.	5
16	a)	Explain the different access specifiers used in the JAVA.	5
	b)	How inter thread communication takes place in JAVA.	5
17	Write a short note on any two of the following: a) Date b) Creating menu with submenus c) Character Stream.		5+5

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Code No. 97

FACULTY OF ENGINEERING

BE. 2/4 (I.T) II – Semester (Suppl) Examination, December 2017

Subject: OOP Using JAVA

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 is byte code? What is the significance of it? 2
2. What is the difference between an instance variable and a class member? 2
3. Why java doesn't support multiple inheritance directly? Explain. 2
4. What is the use of final keyword in Java 3
5. What are the differences between checked and unchecked exceptions? 3
6. What is a daemon thread? 2
7. What is the difference between Iterator and List Iterator? 3
8. Explain the differences between byte stream and character stream 3
9. What are adapter classes? 3
10. What is the difference between a paint() and repaint() methods? 2

PART-B (5X10=50 Marks)

11. a) Explain Java Buzz words in Detail 8
    b)What are inner classes? 2
12. a) What are the differences between method overloading and method overriding? 5
    b) Explain super keyword uses with an example program 5
13. What is multithreading? What are two different ways to create multithread program with example program? (2+8)
14. Explain the concept of thread synchronization with help of a program? 10
15. Write a program for mouse event handling. 10
16. Explain the following classes with suitable example. BufferedReader, FileInputStream, PrintWrite 10
17 Explain the AWT component classes with suitable example program. 10

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Code No. 17

FACULTY OF ENGINEERING

B.E. II - Semester (Suppl) Examination, December 2017

Subject: Engineering Chemistry - II

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. Represent Calomel electrode and write the electrodic reaction for reduction process and mention its S.R.P. Value.
2. Define Single electrode potential. How Z_n / Z_n^{2+} electrode potential is determined?
3. Write the changing and discharging reactions in Lead – acid battery.
4. Write the advantages of fuel cells.
5. Iron corrodes under drops of salt solution. Give reason.
6. What is impressed current cathodic protection?
7. Define octane number. How will you improve the anti – knocking value of fuel?
8. What is LPG? Give the typical composition, calorific value of LPG.
9. Explain the types of composites.
10. Give any two examples of clean technology.

PART-B (50 Marks)

11. a) State and explain Kohlrausch's law. How do you measure the conductance of acetic acid at infinite dilution. 5

    b) The e.m.f. of a cell consisting of a quinhydrone electrode and a saturated calomel electrode is 0.2640 Volts at 300k, what will be the PH of a solution?

    Give E^0_{SCE} = + 0.242 V and $E^0_{(CH,^+Q,QH_2)}$=+0.6996 V. 5

12. a) What are fuel cells? Explain $H_2 – O_2$ fuel cell. 5

    b) Explain the concept of solar energy conversion. 5

13. a) What is meant by corrosion?? Explain the factors which influence corrosion. 5

    b) Write in detail about galvanizing and tinning 5

14. a) What are chemical fuels? How are they classified? Give suitable examples for each class. 5

    b) A sample of coal was found to have the following percentage composition: C = 75%; H = 5.2%; O=12.1%; N = 3.2% and ash = 4.5%. Calculate the minimum amount of air necessary for complete combustion of 1 Kg .of coal. 5

15 a) Explain different types of composites. Write the applications of composites. 5

b) What are liquid crystals? Explain chemical constitution and Liquid crystalline behavior. 5

16. a) The electrolytic conductivity of a 0.1N acetic acid solution at 291K is 0.000471 $S.cm^{-1}$ and that of a 0.001N Sodium acetate solution is 0.000781$S.cm^{-1}$. What are the equivalent Conductivities of acetic acid and sodium actate? 5

b) Write a note on Lithium ion batteries. 5

17. a) Explain Pilling-Bedworth rule and its significance. 5

b) What are corrosion inhibitors? Explain about Cathodic inhibitors. 5

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