FACULTY OF ENGINEERING

B.E. II/IV (Civil) II – Semester (Backlog) Examination, May/June 2018

Subject: Surveying II

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

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

PART – A

1) What is transit theodolite?

2) What are the temporary adjustments of a transit theodolite?

3) What is an analytic lens? Why it is used.

4) What is combined curve?

5) Calculate the length of curve and length of long chord for a curve with a deflection angle of 36° and radius of 40m.

6) Define the terms latitude and Departure.

7) Name the sources of error in theodolite survey.

8) What is spire test?

9) What is total station? Explain its working principle.

10) Differentiate between GIS and GPS.

PART – B

11 a) Explain the procedure for measuring the longitudinal angle by reiteration method.

b) Enumerate the permanent adjustments of a theodolite.

12 The latitude and departure of a traverse ABCDE are given below. Balance the traverse rule and compute independent coordinates of all the stations also calculate its axes of the transverse.

Line	Latitude		Departure	
	N	S	E	W
AB	235.40	-	272.65	-
BC	-	240.95	154.80	-
CD	-	185.60	-	135.50
DE	-	21.69	-	208.45
EA	208.65		-	85.50

13 Calculate the data necessary for setting out a 5° curve by tangential deflection angles method between two tangent straight BA and BC with the following information. Angle ABC 156°. Change of P.I 1320m and peg internal is 30 m.

14 A parabolic vertical curve is to be set out connecting two uniform grades of +0.8% and -0.9%. The drainage and R.L of P.I are 1664m and 238.755m. The rate of change of grades is 0.05% per chain of 20m. Calculate the RL's of the various station pegs.

15 A tachometer was setup at an intermediate point on a transverse AB and the followed observations were made on a vertically held staff. Calculate length AB and RL of B.

Staff Station	Vertical Angle	Staff intercept	Axial heir reading	Remarks
A	$8^o 36'$	2.450	2.305	R.L of A 450.500 m
B	$5^o\ 40'$	2.155	1.975	K=100, C = 0

16 a) Explain the components of reverse curve with a neat sketch.
   b) Write about adjustment of traverse by Bowditch rule.

17) Write about
   i. Various tools of representation of features in GIS
   ii. of closed traverse
   iii. What is Beaman's stadia are?

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FACULTY OF ENGINEERING

B.E. 2/4 (EEE/Instl) II - Semester (Backlog) Examination, May / June 2018

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 Give the relationship between three elastic constants.   (3)
2 Draw the stress – strain curve for Tor steel and Aluminum.   (2)
3 Define Shear Force and Bending Moment.   (2)
4 Explain point of Contra flexure and when it occurs.   (2)
5 Give any three assumptions made in pure bending theory.   (3)
6 Draw the shear stress distribution for 'I' and 'T' sections.   (3)
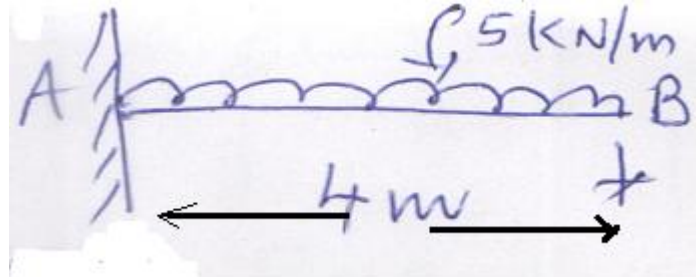7 Give the deflection of the beam shown in the figure 1 Take EI = Constant. (3)

Figure 1

8 Define Strain Energy.   (2)
9 Explain Axial Rigidity.   (2)
10 Define Helix.   (2)

PART – B (50 Marks)

11 (a) Explain with suitable sketch the compound bars.   (5)
   (b) A circular rod of 100 mm diameter and 500 mm long is subjected to a tensile
       force of 1000 KN. Determine the modulus of rigidity, bulk modulus and
       change in volume if poisons ratio = 0.3 and Young's modulus
       (E) = 2 * 10^5 N/mm^2.   (5)

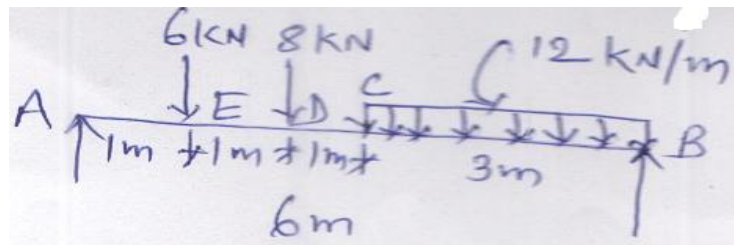12 Draw the shear force and Bending moment diagram for figure 2.   (10)

Figure 2

13 A circular pipe of external diameter 70 mm and thickness 8mm is used as
   simply supported beam over an effective span 2.5m. Find the maximum
   concentrated load that can be applied at the center of the span if permissible
   stress in tube is 150 N/mm^2.   (10)

14 An I-Section beam has 340 mm* 200mm with a web thickness of 10mm and flange thickness of 20mm. It carries a shearing force of 120 KN. Sketch the shear stress distribution across the section. (10)

15 Obtain the maximum deflection if the beam for the figure shown in figure 3 (10)
Take E = $180*10^6$ kN/m^2, I = 30* 10^{-6}mm^4
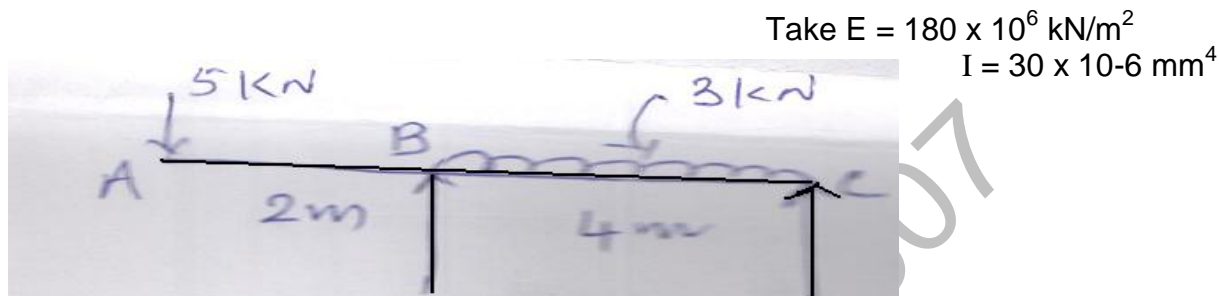
Take E = 180 x 10^6 kN/m^2
I = 30 x 10-6 mm^4

Figure 3

16 (a) List the assumptions made in pure Torsion theory. (4)
(b) Derive the equation for pure Torsion theory. (6)

17 A safety valve of 76mm diameter is to blow off at a pressure of 1.12MN/m^2. (10)
It is held by a close coiled compression spring of circular steel bar. The mean diameter is 153.0mm and the internal compression is 26mm. Find the diameter of the steel bar and the number of turns necessary if the stress allowed is 126 MN/m^2 and C = 80MN/m^2.

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FACULTY OF ENGINEERING

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

Subject: Analog Electronic Circuits

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

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

PART – A (25 Marks)

1   Give brief classification of Amplifiers.   (2)

2   What are the advantages / disadvantages of transformer coupled amplifier?   (3)

3   What are the advantages of negative feedback in amplifiers?   (2)

4   What is the effect on R_i & R_o of trans-resistance feedback amplifier?   (3)

5   Compare AF and RF oscillators.   (2)

6   What is the condition of oscillations? Explain.   (3)

7   Class-AB operation: explain briefly with its advantage.   (2)

8.   What are the advantages of transformer coupled push-pull power amplifiers?   (3)

9.   What is neutralization in RF voltage amplifiers?   (2)

10 Compare single tuned and double tuned RF amplifier-explain?   (3)

PART – B (50 marks)

11 Obtain the mid- frequency response and high frequency response of a single stage RC coupled FET amplifier.   (10)

12 a) Compare local and global feedback.   (4)

   b) Obtain expressions for Rif and Rof of current shunt negative feedback amplifier.   (6)

13 Obtain expressions for condition of oscillations and frequency of oscillations of a Colpitt oscillator. Explain its working with a circuit.   (10)

14 Explain working principle of class-B power transformer coupled push-pull power amplifier. Find its efficiency.   (10)

15 Obtain expressions for gain at resonance and bandwidth for a single tuned BJT RF voltage amplifier.   (10)

16 a) Obtain high frequency response of a transformer coupled BJT amplifier.   (5)

   b) Write about stability of feedback amplifiers.   (5)

17 Write short notes on: (10)
   a) Shunt voltage regulator.
   b) Class-D operation.
   c) Doubled tuned RF voltage amplifier.

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FACULTY OF ENGINEERING

B.E. II/IV (A.E) II Semester (Backlog) Examination, May / June 2018

Subject: Fluid Mechanics & Machinery

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. Find the kinematic viscosity of water, whose specific gravity 0.96 and viscosity 0.011 poise.

2. Distinguish absolute, gauge and Vacuum pressure.

3. Define path line, Streak line and the stream line.

4. Name the different forces present is a fluid flow. For the Euler's equation of motion, which forces are taken into consideration?

5. Describe Reynold's number and its importance?

6. Find the head lost due to friction in a pipe of diameter 250 mm and length 60m, through water is flowing at a velocity of 3,0 m/s using Darey equation take; kinetic Viscosity(v) = 0.1 stoke.

7. Differentiate between impulse and Reaction turbines.

8. What is a draft tube? Why it is used in a reaction turbine.

9. What is priming? Why is it necessary?

10. Define co-efficient of discharge, slip and percent of slip of a reciprocating pump.

PART – B (10x5=50 Marks)

.11. (a) Explain Newton's Law of viscosity and give of its application.

(b) A shaft of diameter 100 mm is rotating inside a journal bearing of diameter 102 mm at a speed 360 r.p.m. the space between the shaft and bearing is filled with a lubricating oil of viscosity 5 poise. The length of bearing is 200mm. Find the power absorbed in the lubricating oil.

12. A 40 cm diameter pipe, conveying water, branches into two pipes of diameters 30 cm and 20cm respectively. If the average velocity in the 40 cm diameter pipes is 3m/s. Find the discharge in this pipe. Also determine the velocity in 20cm pipe if the average velocity in 30 cm diameter pipe is 2m/s.

13. (a)State Bernoulli's theorem for steady flow of an incompressible fluid.

(b) An oil of sp. gr O.q is flowing through a venture meter having inlet diameter 20cm and throat diameter 10 cm. The oil mercury differential manometer shows a reading of 20cm. Calculate discharge of oil through a horizontal venture meter, Take cd = 0.98

14. Derive an expression for Hagen Poiseville's formula with its assumptions.

15. Calculate the rate of flow of water through a pipe of diameter 300 mm, when a difference of pressure head between the two ends of a pipe 400 m apart is 5m of water. Take the value of f = 0.009, using Darcy eq.

16. A Pelton wheel is having a mean bucket diameter of 0.8 m and running at 1000r.p.m The net head on Pelton wheel is 400m. If the side Clearance angle is 15° and discharge through the nozzle is 150 lt/s. Find (i) power available at the nozzle, and (ii) Hydraulic efficiency of the Turbine.

17. Write a short note on

i) Cavitation and its efficient in fluid flow.

ii) Specific speed of the Turbine.

iii) Double acting Reciprocating pump.

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FACULTY OF ENGINEERING
B.E. 2/4 (M/P) II-Semester (Backlog) Examination, May / June 2018
Subject : Fluid Dynamics

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

Note: Answer All Questions From Part-A, & any FIVE Questions From Part-B.

PART-A (25 Marks)

1. Determine the mass density, specific volume and specific weight of a liquid whose specific gravity is 0.90.   2

2. Differentiate between local acceleration and convective acceleration with equations   3

3. Briefly discuss about the body forces and surface forces acting on the fluid   2

4. Define momentum equation and how it is useful in fluid dynamics   2

5. Find the pressure represented by a column of (a) 15cm of water (b) 7cm of oil of relative density 0.75 (c) 3cm of mercury.   3

6. Write the principle involved in finding velocity using Pitot tube.   3

7. Discuss the importance of Mach cone in the flow of compressible fluids   2

8. Write the energy equation for isothermal process in case of compressible fluids   3

9. Define the terms : Hydraulic Gradient and Energy Gradient Line   2

10. By equating Darcy's equation and Hagen Poiseuille's equation prove that $f=16/R_e$. Where f is friction factor and R_e is the Reynolds's number.   3

PART-B (50 Marks)

11. A) What is flow net? Show that the streamlines and the equipotential lines form a net of mutually perpendicular lines   5

    a) A 15cm diameter cylinder rotates concentrically inside another cylinder of diameter 15.10cm Both cylinders are 25cm high. The space between cylinders is filled with liquid whose viscosity is unknown. If a torque of 12 N.m is required to rotate the inner cylinder at 100 rpm. Determine the viscosity of fluid.   5

12. a) While stating the assumptions made in the derivation. Derive Bernoulli's equation from Euler's equation of motion   5

    b) A 60° reducing bend is connected in 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) Explain with the help of a neat sketch the working of an Inverted U-tube manometer and write the gauge equation to obtain an expression for the pressure difference. 5

b) A venturimeter with 180mm diameter a inlet and 150 mm at throat is laid with its axis horizontal and is used for measuring the flow of oil of specific gravity 0.95. The oil mercury differential manometer shows a gauge difference of 250mm. Calculate the discharge. Assume the coefficient of venturimeter as 09.98. 5

14 a) Derive Bernoulli's equation for compressible fluid flow under adiabatic process. 5

b) An airplane travels in air of pressure $1.5 kgf/cm^2$ at $19^o C$ at a velocity of 1800 km/hr. Find Mach Number, Mach angle and type of flow. Take K=1.4 and $R=29.27 m/^o K$ 5

15 a) Drive Hagen Poiseuille's equation for head loss due to friction in laminar flow through a circular pipe 5

b) An oil of viscosity $0.1 NS/m^2$ and relative density 0.9 is flowing through a circular pipe of diameter 50 mm and length 300m. The rate of flow of fluid through the pipe is 3.5 litres/sec. Find the pressure drop in a length of 300m and also the shear stress at the pipe wall. 5

16 a) A 2-D steady flow is given by the stream function ψ=2xy. Determine the velocity at a point P (1,4) in the field. Find out the value of velocity potential function passing through the point 'P'. 5

b) A pipe 300 meters long has a slope of 1 in 100 and tapers from 1.0m diameter at the higher end to 0.5m diameter at lower end. Quantity of water flowing is 90lts/sec. If the pressure at higher end is $70 kN/m^2$. Find the pressure at the lower end 5

17 Write short notes on the following: 10

a) Development of laminar and turbulent boundary layer on a flat plate

b) Derivation of an expression for velocity of sound in compressible fluids.

c) Discharge formula for weirs and notches.

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FACULTY OF ENGINEERING

BE. 2/4 (C.S.E) II-Semester (Backlog) Examination, May / June 2018
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	Why is java called as "robust"?	3
2.	What is byte code?	2
3.	Under which contexts do you use "final" and "finalize"	3
4.	Define Garbage Collection in java	2
5.	Differentiate between string and string buffer	3
6.	What are the advantages of using enumerations?	2
7.	What is annotation in java?	2
8.	Differentiate component and container in AWT.	3
9.	What method is used to read a byte from System. In?	2
10.	Why user input for primitive types is is not permitted directly in java?	3

PART-B (50 Marks)

11. a) Describe the structure of a typical java program and give the steps to execute it 6
    b) Write about static members of java? 4

12. Illustrate with an example the throw statement by manually throwing an arithmetic exception. 10

13. a) Demonstrate to Upper Case () and to Lower Case () 6
    b) What are the types of wrapper classes? What are their uses? 4

14. a) What is event handling Explain steps involved in it . 5
    b) Discuss about checkbox group with a program 5

15. a) Can an interface reference variable refer to an object that implements that interface? 6
    b) Write a program to display the contents from a text file. 4

16. a) How is the use of 'Event listners' in Java 4
    b) How do you restrict access to an object to one thread at a time? 6

17. a) How do you use character streams, show with example? 6
    b) What is the importance of serialization in Java 4

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FACULTY OF INFORMATICS

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

Subject : OOP Using JAVA

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	List down Java Buzzwords.	3
2	What is the difference between throw and throws keyword?	2
3	What is the difference between method overloading and overriding?	2
4	What are the difference between applet and application?	2
5	Explain the delegation event model.	3
6	What is the purpose of Garbage collection?	3
7	Draw the hierarchy of collection interface.	3
8	What are the uses of final keyword?	2
9	Draw a figure for exception hierarchy.	3
10	What is the difference between vector and array list?	2

PART – B (50 Marks)

11 a) What are the benefits of object oriented development?   8
   b) Why is Java, a strongly typed language?   2

12 What is the difference between Interfacer and abstract classes? Write a program for
   Dynamic method dispatch.   10

13 Differentiate between thread and process. Write a program for creating three
   threads using any one method.   10

14 Write a program for accessing a collection via a list iterator.   10

15 a) Illustrate the differences between swing and AWT. Draw MVC architecture and
      explain.   6
   b) Explain different layout managers.   4

16 What is serialization? Explain the concept of serialization with a program.   10

17 Write short notes on following :
   a) String Tokenizer class   4
   b) Packages   3
   c) Adapter classes   3

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