FACULTY OF ENGINEERING

BE 3/4 (Civil) I – Semester (Backlog) Examination, July 2021

Subject: Reinforced Cement Concrete

Time: 2 hours   Max. Marks: 75

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any seven questions.   (7x3 = 21 Marks)

1. Explain Heat of Hydration in concrete.
2. Define and explain limit state method.
3. What is curtailment explain?
4. Differentiate between singly reinforced and doubly reinforced beams.
5. How do you check minimum reinforcement in beams?
6. How do you design a member for torsion? Explain.
7. Explain how you check the design for flexure and deflection?
8. Differentiate between one way and two way slabs.
9. Explain the Advantages of yield line theory.
10. Give IS specifications for the design of footings and their limitations.

PART – B

Answer any three questions.   (3x18 = 54 Marks)

11. a) Explain different tests on cements.
    b) Explain characteristics loads and partial safety factors.

12. Design a reinforced concrete beam subjected to a bending moment of 15kNm.
    Use M25 grade concrete and Fe500 grade steel. Keep the width of the beam equal to the half of
    the effective depth. Permissible stress in steel is 240 N/mm^2, m = 13, Use working stress method.

13. Design a rectangular beam of 7m effective span which is subjected to dead load
    of 14kN/m and live load of 10kN/m^2. Use M25 grade concrete and fe500 grade steel.

14. Design a Ring beam section 60mm wide and 750 mm deep subjected to a
    bending moment of 180kNm, twisting moment of 18kNm and a sheer force of 180kNm at
    ultimate. Use M25 grade concrete and fe500 grade steel.

15. Design a roof slab for a room 5m x 7m clear in size to support a super imposed
    load is 9kN/m^2 if two of its adjacent edges are continuous and other two are discontinuous.
    Assume if any data required.

16. Design a square column 8m long to a load of 600kN if its size is restricted to
    500mm both ends of the columns are hinged. Use helical reinforcement.

17. Design a footing for a 380 mm square column reinforced with 6-25mm dia fe550
    grade bars. One side of the footing is restricted to 1.6m the gross bearing capacity of the soil is
    220kN/m^2. Assume concrete as M30 and grade of steel as fe550.

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FACULTY OF ENGINEERING
B.E. 3/4 (EEE) I-Semester (Backlog) Examination, July 2021

Subject : Power Systems - II

Time: 2 hours   **Max. Marks: 75**

Note: Missing data, if any, may be suitably assumed.

PART – A

**Answer any seven questions.**   **(7x3 = 21 Marks)**

1 Explain the influence of power factor on the performance of a transmission line.
2 Explain Surge impedance loading of a transmission line.
3 Write the advantages of per unit system.
4 Explain the theory of symmetrical components.
5 Draw a neat circuit diagram and phasor diagram for the performance of short Transmission line.
6 Define Symmetrical fault and short circuit KVA.
7 What is Shunt compensation? How is it different from series compensation?
8 Draw the connections of sequence network for a single line to ground fault through impedance Z_f.
9 How can Bewley lattice be drawn? Discuss its use.
10 Explain why travelling wave suffers reflection when it reaches a discontinuity.

PART – B

Answer any three questions.   **(3x18 = 54 Marks)**

11 a) Explain the corona loss and write its empirical formula.
    b) Determine the critical disruptive voltage and corona loss for a 3-phase line operating at 100KV which has the conductor of 1.25cm diameter arranged in 3.05m spaced. Assume air density factor of 1.07 and dielectric strength of air to be 21KV/cm. (Take $m_0=1$).

12 a) Along with advantages and disadvantages, explain in detail about static VAR compensator. (draw necessary diagrams).
    b) Explain about the tap changing transformer type of voltage control method.

13 a) Draw per unit reactance diagram for the power system network shown in figure. Take base MVA as 50 MVA and base KV as 15 KV.
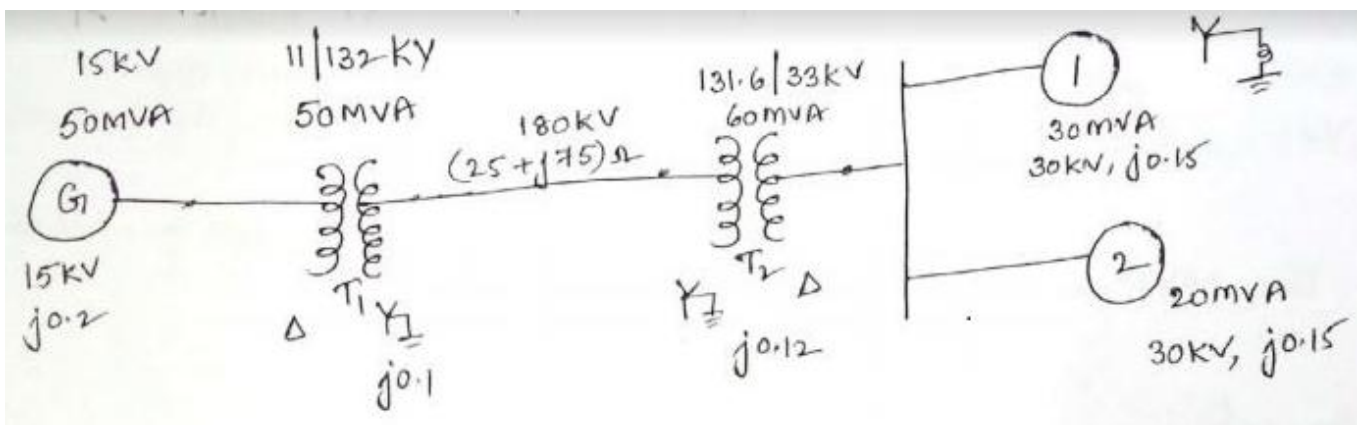
    b) Derive the expression for average three phase power in terms of symmetrical components.

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14 a) A 25 MVA, 11KV 3-phase generator has a direct axis sub transient reactance of 0.25 per unit, negative impedance of 0.35 per unit and zero sequence impedance of 0.1 per unit. The neutral is solidly grounded. Determine the sub transient current in the generator and line to line voltages for sub transient conditions when single line to ground fault occurs on the generator.

b) Write the boundary conditions of L-L and L-L-G fault.

15 a) Explain about travelling wave phenomenon over long transmission line (loss less) considering the line short circuited on the receiving end. Draw the necessary current and voltage waves over the line.

b) For a line terminated through a resistance R the surge impedance is "Z". Derive the expression for coefficient of reflection for current waves.

16 a) An overhead transmission 3 phase transmission line delivers 5000KW at 22 KV at 0.8 p.f lagging. The resistance and reactance of each conductor is 4Ω and 6Ω respectively. Determine (i) V_s (ii) % Regulation and (iii) Efficiency.

b) Explain Ferranti Effect of long transmission line.

17 a) Derive the expression for voltage and current for a single line to ground fault on a power system.

b) List out the assumptions made to perform the short circuit analysis.

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FACULTY OF ENGINEERING

B.E. 3/4 (Inst.) I-Semester (Backlog) Examination, July 2021

Subject : Instrumentation Systems

Missing data, if any, may be suitably assumed

Time : 2 Hours   **Max. Marks: 75**

PART – A

Note: Answer any Seven Questions   **(7x3= 21 Marks)**
1. Explain briefly the principle of stroboscope.
2. Explain the principle of eddy current tachometer.
3. What is the principle of thermocouple?
4. List any two applications of optical pyrometer.
5. Mention the importance of diverging cone in venturimeter.
6. Define vena contract.
7. Write the principle of Bubbler system for level measurement.
8. Define relative humidity.
9. Define PWL.
10. Two machines of equal SPL of 85dB are switched ON simultaneously. What is the resultant SPL?

PART – B

Note: Answer any Three Questions   **(3x18= 54 Marks)**
11. a) Explain in detail Drag cup rotor AC tachogenerator.
    b) Explain electro dynamic velocity transducer. Write its advantages and disadvantages.

12. a) Explain vapour pressure thermometer in detail.
    b) Explain measurement of temperature by radiation method.

13. a) Explain Pitot tube in detail.
    b) Explain Electromagnetic flow meter.

14. a) Explain in detail Measurement of P^H
    b) Explain the measurement of liquid level with variable permeability method.

15. a) SPL measured at 10m from an automobile horn is 110dB. Determine the SPL at adistance of a) 20m and b) 80m. Assume that the inverse square law holds good between intensity and distance.
    b) Discuss signal to noise ratio.

16 a) Explain the measurement of liquid level by ultrasonic method.
    b) Explain lobed impeller meter in detail.

17. Write a short note on
    a) Measurement of flow by ultrasonic method.
    b) Measurement of humidity by resistive method.

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FACULTY OF ENGINEERING
B.E. 3/4 I - Semester (ECE) (Backlog) Examination, July 2021

Subject: Linear Integrated Circuits & Applications

Time: 2 hours   Max. Marks: 75

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any seven questions.   **(7x3 = 21 Marks)**

1 Give classification of differential amplifiers.
2 Draw pin diagram of 741 IC.
3 Draw the circuit of antilog amplifier using OP-AMP and briefly explain.
4 Explain operation of OP-AMP integrator with circuit.
5 What is peak detector? Explain.
6 Draw the circuit of clipper using OP-AMP and explain.
7 What are the application of VCO?
8 Explain PLL with block diagram.
9 List various analog to digital convertors.
10 Give specifications of DAC.

PART – B

Answer any three questions.   **(3x18 = 54 Marks)**

11 For a unbalanced input and balanced output differential amplifier derive common mode gain, differential mode gain and CMRR.

12 (a) Explain with a circuit the working of differential amplifier using OP-AMP.
   (b) Design a circuit using OP-AMP to get the output $Vo = 0.6V_1 – 1.5V_2 + V_3$.

13 (a) Explain the working of sample and hold circuit OP – AMP
   (b) Obtain transfer function of second order BPF. Draw the circuit using OP- AMP

14 Explain working of triangular wave generator using OP-AMP. Derive expressions for frequency of oscillations.

15 (a) Explain how IC723 works as high voltage regulator.
   (b) Explain the working of parallel comparator ADC.

16 (a) Write about frequency compensation in OP-AMP.
   (b) Explain working of voltage to current convertor using OP-AMP with balanced load.

17 Write short notes on:
   (i) Precision rectifier
   (ii) Voltage to frequency convertor
   (iii) R-2R ladder DAC.

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FACULTY OF ENGINEERING
B.E. 3/4 (Mech.) I - Semester (Backlog) Examination, July 2021

Subject: Applied Thermodynamics

Time: 2 hours   **Max. Marks: 75**

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any seven questions.   **(7x3 = 21 Marks)**

1. Explain the effects of inter cooling and after cooling in air compressor.
2. Define volumetric efficiency of reciprocating air compressors.
3. Sketch a simple carburetor and label its parts.
4. State advantages of MPFI (Multi Point Fuel Injection)
5. What is diesel knock?
6. Define abnormal combustion in engines.
7. Differentiate between jet and Surface condenser.
8. Classify Boilers.
9. Explain co-generation in steam power plants.
10. What are different types of nozzles?

PART – B

Answer any three questions.   **(3x18 = 54 Marks)**

11. a) Compare single and multistage reciprocating air compressors.
    b) In single stage single acting air compressor of 30 cm diameter, 40 cm stroke makes 100 RPM takes air at 1bar 20°C to a pressure of 5 bar. Calculate mean effective pressure and power required to drive it when compression is isothermal and adiabatic.

12. a) State the reasons for deviation of actual cycles from air standard cycles.
    b) A single cylinder oil engine has a compression ratio of 10:1. The specific fuel consumption is 0.6kg/kWh. Calorific value of the fuel is 44,000 kJ/kg Calculate
    (i) Indicated Thermal efficiency   (ii) Relative efficiency.
    Assume engine operates on the constant volume cycle and take $\gamma = 1.4$ for air.

13. Explain in detail the knocking phenomena in CI engine and mention its after effects.

14. Explain the working of locomotive boiler with the help of a neat sketch.

15. a) Obtain the expression of velocity of steam flowing through nozzles.
    b) Dry air at a temperature of 27°C and pressure of 20 bar enter a nozzle and leaves at pressure of 4 bar. Find the mass of air discharged if area of nozzle is 200m².

16. a) Explain the process of regeneration in steam turbines with the help of a neat sketch.
    b) Explain working of any one type of Jet Condenser.

17. a) What are the different cooling systems in IC engines?
    b) Obtain the relation for perfect inter cooling for 2-stage reciprocating air compressors.

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FACULTY OF ENGINEERING

B.E 3/4 (prod) I-Semester (Backlog) Examination, July 2021

Subject: Applied Thermodynamics and Heat Transfer

Time: 2 Hours   **Max. Marks: 75**

Missing data, if any, may be suitably assumed

PART – A

Note: Answer any Seven Questions   **(7x3= 21 Marks)**

1. What is the effect of clearance volume on performance of reciprocating air compressor?
2. Define isothermal efficiency of reciprocating air compressor? How it is improved?
3. For same power output, why CI engines are more costly than SI engines?
4. List the applications of IC engines.
5. Distinguish between conduction heat transfer and convection heat transfer.
6. Draw p-ɵ diagram for a knocking SI engine with parts.
7. What is the effect of compression ratio on knocking of SI engine?
8. State Bucking ham pi theorem.
9. Define grash of number, pandtl number.
10. What are the effects of fouling in heat exchanger?

PART – B

Note: Answer any Three Questions   **(3x18= 54 Marks)**

11. For a reciprocating air compressor, prove that work done per kg of air, with and without clearance is same.

12. In detail, explain how heat balance sheet for an IC engine is arrived at ? what is the use of heat balance sheet?

13. Explain in detail the normal combustion and abnormal combustion in CI engines.

14. The wall of a furnace is made up of 250mm of fire brick K=1.05w/Mc, 120mm of insulation brick K=0.85w/Mc and 200mm of red brick K=0.85W/Mc. The inner and outer surface temperature of the walls are 85°C and 65°C respectively. Calculate the rate of heat transfer through the composite wall.

15. By applying Buckingham pi theorem. Deduce the non dimensional numbers pertaining to forced convection.

16. Give the classification of heat exchangers. Derive an expression for LMTD of parallel flow heat exchanger.

17. A single cylinder 4 stroke diesel engine running at 1800rpm has bore of 85mm and stroke of 110mm. It takes 0.56kg of air per minute. The brake power is 6kw .Air fuel ratio is 20:1. calorific value of fuel is 42,550kj/kg. Calculate BSFC and Brake thermal efficiency.

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FACULTY OF ENGINEERING

BE 3/4 (A.E) I-Semester (Backlog) Examination, July 2021

Subject: Automotive Diesel Engines

Time: 2 Hours   Max. Marks: 75

Missing data, if any, may be suitably assumed

PART – A

Note: Answer any Seven Questions   **(7x3= 21 Marks)**

1) What are the differences between 2 stroke and 4 stroke engines?

2) Define mean effective pressure and compression ratio

3) Define self ignition temperature and what is its value for diesel fuel?

4) Name the different types of fuel injection nozzles used in diesel engines

5) Explain why swirl movement is required in diesel engines during suction period?

6) What are the functions of combustion chamber?

7) Explain about turbo lag

8) Draw a neat sketch of turbo charger

9) What are the pollution norms used in India?

10) Explain the parameters to be consider for reducing pollutants from an automobile

PART – B

Note: Answer any Three Questions   **(3x18= 54 Marks)**

11 Why the efficiency of actual is lower than that of air standard cycles? List the various losses in actual cycles.

12. What is the purpose of governor CI engine? With a neat sketch explain the working principle of a mechanical governor

13. Describe with suitable sketches, the various stages of combustion in a diesel engine.

14. Explain the working principle of super charging and turbo charging with suitable neat Sketches.

15. What are the different methods to analyse the exhaust gasses and explain each of them?

16. Derive an expression for mean effective pressure of an air standard diesel cycle

17. a) What is PTFI pressure wave system? Explain in details
    b) What are the design considerations for good combustion chambers?

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FACULTY OF ENGINEERING
B.E. 3/4 (CSE) I-Semester (Backlog) Examination, July 2021

Subject: Database Management Systems

Time: 2 hours   Max. Marks: 75

Note: Missing data, if any, may be suitably assumed.
PART – A

Answer any seven questions.   **(7x3 = 21 Marks)**
1   What is physical and logical data independence?
2   What is difference between a weak and strong entity?
3   Differentiate primary key and super key with an example.
4   What is a correlated sub query? Give an example.
5   Write short notes on integrity constraints.
6   Why do we normalize tables? Explain briefly.
7   What is Cascading Rollback?
8   Write short notes on ACID properties.
9   Explain lock compatibility matrix.
10 Define checkpoint and when it is used.

PART – B

Answer any three questions.   **(3x18 = 54 Marks)**
11 (a) Explain the purpose of database systems.
     (b) Explain different types of attributes in E-R diagram? Give an example for each.

12 (a) Explain extended relational algebra operations.
     (b) Consider the following schema.
          member(memb no, name, age)
          book(isbn, title, authors, publisher)
          borrowed(memb no, isbn, date)
     Primary keys are underlined. Write SQL statements for the following.
     (i) Print the names of members who have borrowed any book published by
         "McGraw-Hill".
     (ii) Print the names of members who have borrowed all books published by
         "McGraw-Hill".
     (iii) Print the names of members who have borrowed more than three books.

13 (a) Explain 1NF, 2NF, 3NF & BCNF with suitable examples.
     (b) Write short notes on closure of attribute set considering suitable example.

14 (a) Differentiate Static and Extensible Hashing.
     (b) Construct a B+-tree for the following set of key values:
          (2, 3, 5, 7, 11, 15,17, 19, 20,23, 29, 31, 43, 51)
        where the number of pointers in one node is Four

15 (a) Discuss Deadlock prevention techniques?
     (b) Write in detail about ARIES Recovery Algorithm.

16 (a) Explain the concept of generalization, specialization and aggregation.
     (b) Differentiate between Sparse and Dense indexing techniques.

17 Write short notes on
     (a) Bitmap Indices
     (b) Dynamic SQL
     (c) Validation based protocol

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FACULTY OF ENGINEERING

B.E. 3/4 (IT) I-Semester (Backlog) Examination, July 2021

Subject: Database Management Systems

Time : 2 Hours   Max. Marks: 75

Missing data, if any, may be suitably assumed

PART – A

Note: Answer any Seven Questions   **(7x3= 21 Marks)**

1) What is DBMS? What are the advantages of DBMS?
2) Define select and create statements.
3) Define the terms primary key constrains and foreign key and check constrain
4) What are the properties of Decomposition?
5) What is normalization? What are the conditions required for a relation to be in 1NF, 2NF?
6) How is data organized in a hash based index?
7) Define deadlock with an example.
8) What is locking protocol?
9) Give a brief note on Static Hashing?
10) Explain Failure with loss of nonvolatile storage?

PART – B

Note: Answer any Three Questions   **(3x18= 54 Marks)**

11) a) Develop an E-R Diagram for Banking enterprise system.
    b) Explain the functions of Database Administrator.

12) a) Explain the fundamental operations in relational algebra with examples.
    b) Explain various DML functions in SQL with examples.

13) a) Write the need for schema refinement in relational database design.
    b) Define Join dependency. Explain 5NF with suitable example.

14) a) Make a comparison between the tuple relational calculus and domain relational calculus.
    b) What are nested queries? What is correlation in nested queries? Explain

15) a) Explain the Time Stamp - Based Concurrency Control protocol. How is it used to ensure serializability?
    b) Explain the Check point log based recovery scheme for recovering the data base

16) a) Construct a B+ tree to insert the following key elements (order of the tree is 3)
       5, 9, 12, 16, 21, 25, 32, 34, 38, 42, 51, 55, 61, 65.
    b) Compare and contrast Hash based indexing and tree based indexing.

17) a) Explain the Remote Backup system
    b) Explain about storage structure

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FACULTY OF ENGINEERING
BE V-Semester (CE) (AICTE) (Main) Examination, July 2021

Subject: Structural Analysis-I

Time: 2 Hours　　　　　　　　　　　　　　　　　　　　　　**Max .Marks: 70**

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions.　　　　　　　　　　　　　　**(5x2=10 Marks)**

1　What are the assumption required in slope deflection method?
2　Write down the merits of kanis method of analysis?
3　Clearly state the difference between fixed end moment, rotation moment and final moment at the support?
4　A parabolic cable 80m length central dip 12m is subjected to 10kN/m over entire span. Find horizontal thrust?
5　Write the difference between through type warren truss and deck type Pratt truss?
6　Explain rotation factor and distribution factor?
7　What are the conditions for absolute BM when several concentrated loads crosses the girder from left to right?
8　Explain ILDS of BM and reactions of a simply supported girder when a single point load crosses the girder from left to right?
9　What are the condition for maximum BM at the section when a UDL shorter than span cross the girder left to right?
10　Write the uses of static indeterminacy and kinematic indeterminacy?
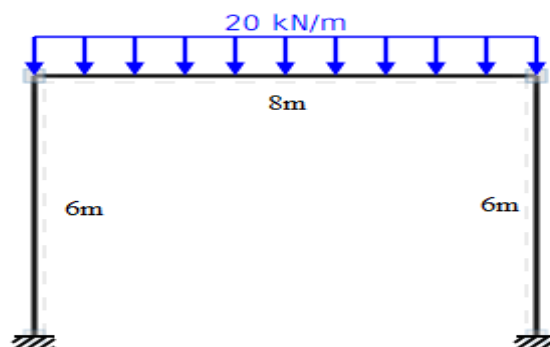
PART – B

Answer any four questions.　　　　　　　　　　　　　　**(4x15=60 Marks)**

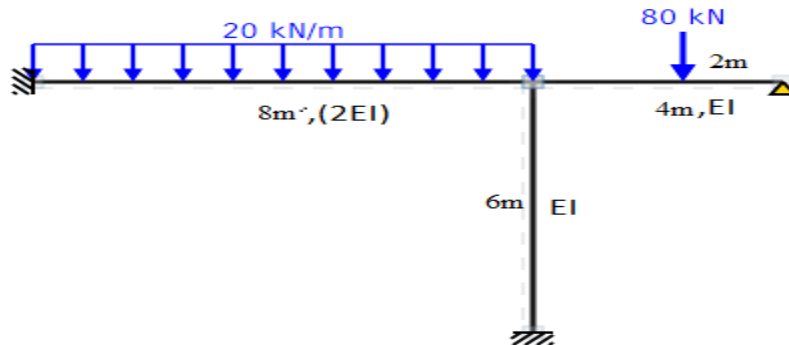11　Analyze the continuous beam by slope deflection method. Show the absolute values of SFD and BMD.
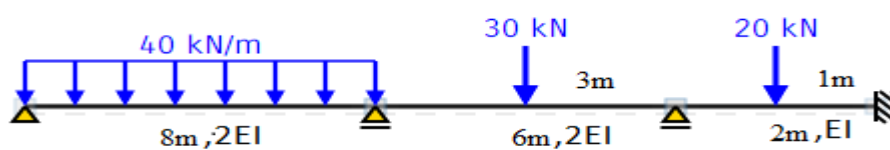
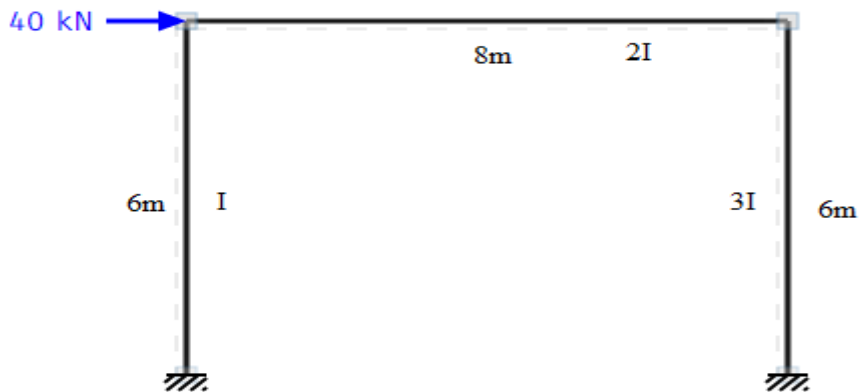12　Analyze the given portal frame by using kanis method of analysis?

..2..

13 Analyze the given simple frame by using moment distribution method.

14 Analyze the given portal frame by moment distribution method?

15 Draw SFD and BMD envelops for a simply supported girder of span 16m. if a UDL of instancing 8kN/m spread over a length of 4m is moving on a girder left to right.

16 A Pratt truss has a 6 panels of 5m each and height 4m. draw the ILDS of bottom chord, top chord and inclined member of third panel from left to right.

17 Write a short note on the following?
    a) Classification of structural analysis
    b) Use of enveloping parabola in EUDL
    c) Focal length in structural analysis

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FACULTY OF ENGINEERING
BE V-Semester (EEE) (AICTE) (Main) Examination, July 2021

Subject: Electrical Machines-II

Time: 2 Hours   Max .Marks: 70

Note: Missing data, if any, may be suitably assumed
PART – A

Answer any five questions.   **(5x2=10 Marks)**

1   Draw the torque-slip characteristics of 3-phase induction motor under various modes of operation.
2   A center zero ammeter connected in the rotor circuit of a 3-phase, 6 pole 50 Hz induction motor makes 90 oscillations per minute. Solve slip and speed of the motor.
3   List various methods of reducing starting current of induction motor.
4   List the applications of induction generator.
5   List the advantages using rotating field type construction in an alternator.
6   Define synchronous impedance.
7   List the special features of a synchronous motor compared to other motors.
8   What is a synchronous condenser?
9   Draw the torque-speed characteristics of a single phase induction motor.
10 List the applications of Switched Reluctance Motor.

PART – B

Answer any four questions.   **(4x15=60 Marks)**

11 (a) Explain in detail, how the equivalent circuit parameters will be obtained for a 3ϕ induction motor.

(b)   A – phase, 6 pole, 50Hz induction motor has rotor resistance of 0.2 Ω per phase and a maximum torque of 160 Nm at 800 rpm. Solve for the full load torque at 4% slip.

12 (a)   Illustrate star-delta starting method with a neat diagram.
(b)   Explain the principle of operation of induction generator.

13 (a)   Develop the expression for pitch factor, distribution factor and also EMF equation of an alternator.
(b) A 3-phase, 8 pole, 50 Hz star connected alternator has 120 stator slots with 10 conductors per slot. The coil span is 12 slots. If the flux per pole is 0.12 Wb, solve for the induced emf per phase.

14 (a)   Explain the effect of varying excitation on power factor and armature current of a synchronous motor.
(b) A 15 kW 400 V, 3-phase, star-connected synchronous motor has a synchronous impedance of 0.4 + j4 Ω. Determine the voltage to which the motor should be excited to give a full-load output at 0.866 leading pf. Assume an armature efficiency of 93%.

15 (a)   Utilize double field revolving theory and show that single phase induction motor cannot produce starting torque.
(b)   Explain the construction and principle of operation of BLDC motor.

16 (a)   Illustrate the method of construction circle diagram of induction motor.
(b)   Explain any two speed control methods of induction motor.

17 (a)   Explain V curves and inverted V Curves .
(b) Explain the construction, principle of operation and applications of universal motor.

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FACULTY OF ENGINEERING

B.E. V – Semester (AICTE) (EIE) (Main) Examination, July 2021

Subject: Instrumentation Systems

Time: 2 Hours   Max.Marks: 70

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions.   **(5x2=10 Marks)**

1 Explain the principle of piezo-electric transducer.
2 What is see back effect and peltier effect?
3 Define quantity meter and give examples.
4 Define pH value of a solution with an example.
5 Compare sound pressure level (SPL) and sound power level with related equations.
6 What are the significant characteristics of dynamic microphone?
7 What does vena contracta mean?
8 Explain the basic principle of electromagnetic flow meter.
9 What do you meant by tachogenerator? Explain.
10 State relative humidity, what is the name of the instrument used for humidity measurement?

PART – B

Answer any four questions.   **(4x15=60 Marks)**

11 a) Distinguish between DC and AC tachogenerator.
   b) Briefly explain seismic displacement velocity type of accelerometer.

12 a) State and explain the laws of thermocouple.
   b) Discuss various types of torque measurement transducer? Explain any two methods with proper diagrams.

13   What is the function of rotometer in an instrumentation system? With a neat sketch explain the construction and working principle of rotometer.

14 a) Explain with typical example the importance of measurement of humidity in an industry.
   b) How can liquid level be measured with gamma rays? Explain the method with a neat diagram.

15 a) What is a sound level meter? Explain with relevant diagram.
   b) The noise signal of certain machinery in a workshop was processed in an AF analyzer which was equipped with the standard octave filter. The results obtained as follows:

Frequency (Hz)	63	125	250	500	1000
SPL (db)	84	85	82	84	70

Determine overall SPL

16 a) Explain stroboscopic method for speed measurement in detail.
   b) Describe hot wire hot film anemometer and derive its equation.

17   Write short notes on:
       a) Ultra sonic method
       b) Force balance transducer
       c) Orifice meter

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FACULTY OF ENGINEERING

B.E. V – Semester (AICTE) (ECE) (Main) Examination, July 2021

Subject: Analog Communication

Time: 2 Hours   **Max.Marks: 70**

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions.   **(5x2=10 Marks)**

1   A transmitter radiates 7 kW without modulation and 20.125 kW after modulation. Determine depth of modulation.

2   Define complex and pre-envelops of the signal.

3   Distinguish between frequency modulation and phase modulation.

4   Compute the bandwidth required for the transmission of a FM signal having a frequency deviation of 85 kHz and an audio bandwidth of 30 kHz.

5   Define sensitive and selectivity in radio receivers.

6   List out the advantages and disadvantages of TRF receiver.

7   Explain briefly about flat-top sampling.

8   Compare AM and PAM.

9   What are the various sources of noise?

10 Define atmospheric noise and noise band width.

PART – B

Answer any four questions.   **(4x15=60 Marks)**

11 a) Draw the circuit of a switching modulator and explain how an AM signal can be generated using it.

   b) A carrier with an unmodulated power of 60 Watts is modulated simultaneously by, four modulating signals with coefficient of modulation $m_1=0.4$ and $m_2=0.6$. Find i) Effective modulation index ii) Sideband powers and iii) Total transmitted power.

12 a) Differentiate between narrow band and wideband FM signals. Discuss the generation of narrow band FM, signal with a diagram and mathematical analysis.

   b) How foster Seeley discriminator performs demodulation of FM signal? Explain with circuit and phasor diagrams.

13 a) Explain generation and detection of PWM signal.

   b) Draw the frequency spectrum of sampled signal if sampling rate (f_s) is greater than, less than or equal to Nyquist rate.

14 a) Explain in brief, the factors must be considered while selecting the intermediate frequency in radio receiver. What is the value of IF chosen in India for radio broadcasting?

   b) Find image frequency and its rejection ratio (IFRR) for a AM super heterodyne receive tuned to 800 KHz if the antenna of this receiver is connected to the mixer via a tuned circuit whose loaded Q is 60.

15 a) Derive the expressions for SNR and figure of merit in FM system.

   b) A mixer stage has a noise figure of 30 dB and a stage before it is an amplifier with a noise figure of 8 dB and an available power gain of 20 dB. Find out the overall noise figure referred to input.

16 a) i) Define Hilbert transform
      ii) Find Hilbert transform of impulse signal

   b) What is the need of the following in a radio receiver, explain giving examples.
     (i) AGC (ii) Mixer (iii) Intermediate amplifier

17   a) Compare different angle modulation schemes.
     b) Discuss about the spectra of PWM signals
     c) Noise in two-port network

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FACULTY OF ENGINEERING
BE V-Semester (Mech) (AICTE) (Main) Examination, July 2021

Subject: Fluid Mechanics and Hydraulic Machinery

Time: 2 Hours   Max .Marks: 70

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions.   **(5x2=10 Marks)**

1 Define   (a) Vapour (b) Specific gravity
2 Differentiate between solid and fluid.
3 What is stream tube?
4 Define uniform and non-uniform flow.
5 Define boundary layer separation.
6 Define viscous flow.
7 Classify Turbines.
8 Define specific speed.
9 Draw an indicator diagram for reciprocating pump.
10 What is manometric efficiency of centrifugal pump?

PART – B

Answer any four questions.   **(4x15=60 Marks)**

11 (a) Explain the working of Bourdan pressure gauge used for pressure measurement.
    (b) Calculate the density, specific weight and weight of one litre of petrol of specific gravity 0.7.

12 (a) Define velocity potential function and give its significance.
   (b) Water is flowing through a pipe of 5cm diameter under a pressure of 29.43 N/cm^2 (gauge) and with mean velocity of 2m/s. Find the total head or energy per unit weight of the water at a cross section which is 5m above the datum line.

13 (a) Explain the phenomenon of flow of viscous fluid between two parallel plates.
   (b) Explain the concept of hydraulic gradient line and total energy line.

14 (a) What is the significance of Draft tube. What are its different types.
   (b) A Pelton wheel has a mean bucket speed of 10m/s with a jet of water flowing at the rate of 700 lit/s under a head of 30m. The buckets deflect the jet through an angle of 160°. Calculate the power given by water to the runner and hydraulic efficiency of the turbine. Assume coefficient of velocity is 0.98.

15 (a) What is the function of air ressels in reciprocating pumps.
   (b) A centrifugal pump is to discharge 0.118m^3/s at a speed of 145 r.p.m. against a head of 25m. The impeller diameter I 250mm, its width at outlet is 50mm and manometric efficiency is 75%. Determine the vane angle at the outlet periphery of the impeller.

16 (a) Give the principle and working of gear pumps.
   (b) Derive Euler's equation of motion.

17 (a) Sketch and explain the working of Kaplan turbine.
   (b) What is Newton's law of viscosity?

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FACULTY OF ENGINEERING
BE V -Semester (Prod) (AICTE) (Main) Examination, July 2021

Subject: Machine Tool Design

Time: 2 Hours   Max .Marks: 70

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions.   **(5x2=10 Marks)**

1   State the objectives of machine tool.
2   Give the classification of machine tools.
3   What are kinematic drives? State the types of kinematic drives.
4   What is Ray Diagram?
5   What are the types of feed gearboxes?
6   What arte materials used for machine tool structures.
7   What are materials used for spindles.
8   State the factors to be considered for spindle design.
9   What are the various types of pumps used in hydraulics?
10 State the importance of directional control valves in machine tool.

PART – B

Answer any four questions.   **(4x15=60 Marks)**

11 (a) Explain with neat diagrams about the mechanisms used for intermittent motion.
    (b) Explain about Numerical Control of machine tools with neat diagram also state the advantages.

12 (a) Prove that Rn=RvXRD considering the standardization of speeds.
    (b) What are the Rules for layout of gear box having sliding clusters?

13 (a) Explain in detail about the design of columns with neat diagrams.
    (b) State the different types of guide ways.

14 (a) Explain in detail with neat diagram about spindle design.
    (b) Explain about the hydro-dynamic action of bearings.

15 (a) Explain in detail about the components of hydraulic circuit with neat diagrams.
    (b) Explain about flow control valves.

16 (a) Explain about mechanisms used for rotary motion with neat diagrams.
    (b) Explain the advantages of CNC machines.

17 Write short notes on the following:
        (a) Actuating devices
        (b) Stepless regulation
        (c) Components of Pneumatic system

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FACULTY OF ENGINEERING
BE V -Semester (AE) (AICTE) (Main) Examination, July 2021

Subject: Internal Combustion Engines

Time: 2 Hours   Max .Marks: 70

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions.   **(5x2=10 Marks)**

1 Define the following:
   a) Compression ratio
   b) Cetane number
2 Why diesel engine volumetric efficiency is more compare to petrol engine?
3 How Knocking occurs in petrol engine?
4 What are the factors controlling the combustion chamber design?
5 List out merits and demerits of supercharging.
6 Define the following:
   a) Swirl
   b) Turbulence
7 Why engine cooling is necessary in IC engine.
8 What are the emissions from petrol and diesel engine?
9 Why isn't a carburetor used in diesel engines?
10 What do you mean by HCCI engine?

PART – B

Answer any four questions.   **(4x15=60 Marks)**

11 (a) Derive the expressions for thermal efficiency, work output and mean effective pressure of the Diesel cycle.
   (b) Differentiate between actual and air standard cycles.

12 (a) In an engine working on Otto cycle with temperature at the beginning and end of the compression stroke are 50ºC and 373º find the compression ratio and air standard efficiency of the engine.
   (b) Draw the valve timing diagram of 4-sroke petrol engine with a neat sketch?

13 (a) What are the factors that affect the power output of an engine? Explain how supercharging helps to improve the engine.
   (b) Differentiate between direct and indirect combustion chambers.

14 Explain the following:
       (a) Simple carburetor with neat sketch.
       (b) What are the different types of governors used in diesel engine?

15 (a) Sketch and explain the working principle of a Solex carburetor involving starting, High speed circuits.
   (b) Briefly explain the phenomenon of Knock Diesel engine.

16 (a) Explain the different types of turbochargers and list their relative merits.
   (b) Explain the following:
       (i) Exhaust gas recirculation
       (ii) Charge cooling

17 (a) Explain about the Homogeneous Charge Compression Ignition engine.
   (b) What are bharath stage emission norms for diesel engines?
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FACULTY OF ENGINEERING

B.E. V – Semester (CSE) (AICTE) (Main) Examination, July 2021

Subject: Software Engineering

Time: 2 Hours   **Max.Marks: 70**

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions.   **(5x2=10 Marks)**

1   Why is software engineering said to be a layered technology?
2   What is process assessment?
3   What is system engineering? Why is it important?
4   What is the importance of validating requirements?
5   Differentiate between cardinality & modality.
6   What do you understand by the term "design quality"?
7   What are the uses of transform mapping and transaction mapping?
8   Define archetypes.
9   How is debugging different from testing? What are the goals of debugging?
10 What are the errors commonly found during unit testing?

PART – B

Answer any four questions.   **(4x15=60 Marks)**

11 a) Distinguish between incremental and evolutionary process models. Explain spiral model in detail.
   b) Explain CMMI model.

12 a) What is requirements engineering? Explain about elicitation in detail.
   b) What is risk? Explain how is risk managed?

13 a) How to create a behavioral model? Explain about the state representations.
   b) Explain design concepts.

14 Explain the golden rules performed in user interface design in detail.

15 What are different levels of testing? Explain the usefulness of each level.

16 Write short notes on:
   a) Data centered architecture styles.
   b) Integration testing strategies.

17 Explain about:
   a) Context level DFD
   b) Umbrella activities of software process framework

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FACULTY OF ENGINEERING

B.E. V – Semester (IT) (AICTE) (Main) Examination, July 2021

Subject: Software Engineering

Time: 2 Hours   **Max.Marks: 70**

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions.   **(5x2=10 Marks)**

1   Differentiate between software product and software process?
2   What is agility in software process?
3   What are software myths?
4   Discuss the need of requirements engineering.
5   Define risk in software development. What are the characteristics of risk?
6   What is RMMM plan in risk management?
7   What is white box testing?
8   What is verification and validation in software testing?
9   What are different SPI processes?
10 What are the software configuration management (SCM) elements?

PART – B

Answer any four questions.   **(4x15=60 Marks)**

11 a) Discuss the principles of agility.
    b) Explain Extreme Programming (XP) in detail.

12 a) Describe different types of process flows.
    b) Explain the types of evolutionary process models.

13   Explain the different tasks that are performed in requirements engineering.

14 a) Explain software quality attributes and software quality guidelines in the design of software project.
    b) What are the design classes? Explain in detail.

15 a) Describe framework of SPI. Explain elements of SPI framework.
    b) Discuss COCOMO models for software project estimation.

16 a) What is SQA in software development? Discuss the elements of SQA.
    b) Explain goals of SQA.

17 a) Explain test strategies for conventional software.
    b) Explain the concept of Basis path testing.

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FACULTY OF ENGINEERING

B.E. V – Semester (CE) (CBCS) (Backlog) Examination, July 2021

Subject: Reinforced Cement Concrete

Time: 2 Hours   Max.Marks: 70

Note: Missing data, if any may be suitably assumed
PART – A

Answer any five questions   **(5x2=10 Marks)**

1 What are the assumptions made in working stress method of design?
2 Calculate maximum flexural reinforcement required for RC beam section of size 230mm x 500mm. Assume Fe 500 steel
3 What is affect of water content in compressive strength of concrete show its relationship with help of a sketch?
4 Calculate the reinforcement for a short column of size 230mm x 450mm, subjected to an axial load of 600 kN.
5 Differentiate between one-way slabs and two-way slabs.
6 What do you understand by 'short term' and 'long term' deflections of RC beam.
7 Determine the area of circular footing for a column which carries a factored load of 1000kN. Permissible SBC of soil is 175 kN/Sqm.
8 What is the minimum reinforcement to be provided in an isolated footing of thickness 450mm?
9 What are the assumptions made in the design of axially loaded short columns?
10 A concrete section 3000mm x 550mm overall depth (M25 grade) which is reinforced with 1.0% of tension steel find its shear strength.

PART – B

Answer any four questions   **(4x15=60 Marks)**

11 A RC beam 230mm x 450mm deep is subjected to a udl of 14 kN/m including self-weight. It has a span of 5.5m. Determine the necessary tension reinforcement required for the beam using working stress method. $\sigma_{cbc} = 5$ N/mm^2 and $\sigma_{st} = 275$ N/ mm^2.

12 A rectangular beam 250 x 600mm effective depth is reinforced with tension steel of 4-Nos 20mm diameter. Determine the moment of resistance and check if the section is safe to resist a moment of 120 kNm. Use M25 grade concrete and Fe 500 steel. Use limit state method.

13 A beam 250mm wide and 550mm deep subjected to a factored bending moment of 120kNm, torsional moment of 15kNm and a shear force of 140kN. Design the shear reinforcement using limit state method. Use M205 grade concrete and Fe 500 steel.

14 Design a slab panel of size 4.0m x 6.6m with two adjacent edges discontinuous which carries a super imposed load of 7kN/m^2 at collapse. Use M20 grade concrete and Fe500 steel. Draw sketch showing reinforcement details.

15 a) Write briefly procedure for design of dog legged stairs.
   b) Give assumption made in analysis of slabs using yield line theory.

16 Determine longitudinal reinforcement and lateral ties for a short column of size 300x300mm subjected to an axial factored load of 1900 kN a factored moment of 20 kNm about one axis. Assume M20 grade concrete and Fe 550 steel.

17 Write short notes on:
   a) Code checks for control of deflection in RC structures.
   b) Curing of concrete.
   c) Tests on fresh and hardened concrete.

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FACULTY OF ENGINEERING

B.E. (CBCS) (EEE) V-Semester (Backlog) Examination, July 2021

Subject: Power Systems – II

Time: 2 Hours   **Max. Marks: 70**

Missing data, if any, may be suitably assumed

PART – A

Note: Answer any Five Questions   **(5x2= 10 Marks)**

1. Explain the practical importance of corona.

2. What do you mean by the term regulation of a transmission line? Why its knowledge is essential?

3. Explain the effect of variation of voltage as a function of distance of line.

4. How will you determine the synchronous, transient and sub transient reactances from the oscillogram of the short circuit current.

5. The generator emf is 1pu and the sub transient reactance is 25% Find the transient current.

6. Draw the connections of sequence networks for line to ground fault through and impedance which is the parallel combination of Z_i and Z_p.

7. Explain the working principle of thyristor controlled reactor

8. Discuss the behavior of a travelling wave when it reaches the end of a short circuited transmission line.

9. Write the significance of practice, negative and zero sequence components.

10. What is the importance of voltage control in power system.

PART – B

Note: Answer any Four Questions   **(4x15= 60Marks)**

11 a) Determine the corona loss for a three phase line operating at 110KV which has conductor of 1.25cm diameter arranged in a 3.05m configuration. Assume polished wires and air density of 1.07

   b) Draw the receiving end and sending end power circle diagram for a 300km line having R=0.08 ohms per km and Y = $5.15 \times 10^{-6} \angle 90^0$ S/KM. From the diagram find the sending end voltage, current and power factor angle when the line is delivering a load of 192 MW at 0.8 pf lagging and 275KV. Assume π – configuration.

12   Along with its advantages and disadvantages explain the following with necessary diagrams.
a) Explain the operation of induction regulator
b) Thyristor switched capacitor

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13 a) Three phase 30 MVA, 33KV alternator has 4% reactance (internal) and negligible resistance. Find the external reactance per phase to be connected in series with the alternator so that the steady state current on the short circuit does not exceed 10 times the full load current.

   b) The pu impedance of 100 MVA 11/33KV step-up transformer is 0.3 ohms on its own base. Determine i) actual impedance of the transformer referred to HV as well as LV side ii) base impedance referred to both sides

14 A 30 MVA, 13.8KV, 3-phase alternator has a sub transient reactance of 15% and negative and zero sequence reactance of 15% and 5% respectively. The alternator supplies two motors have rated inputs of 20 MVA and 10 MVA both 12.5KV with 20% sub transient reactance and negative and zero sequences are 20% and 5% respectively. Current limiting reactors of 2 ohms each are in the neutral of the alternator and the larger motor. The 3-phase transformers are both rated 35 MVA, 13.2/115KV with leakage reactance of 10% and series reactance of the line is 80 ohms. The zero sequence reactance of the line is 200 ohms. Determine the fault current when L-G fault takes place at point P. Assume V_f = 120 KV.
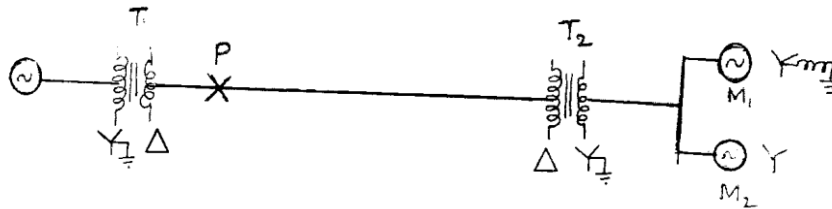
15 a) Explain in detail about Bewely Lattice diagram.
   b) Starting from the first principles show that surges behave as travelling waves. Find the expression for surge impedance and velocity.

16 a) Write the comparison between series and shunt compensation.
   b) Derive the expression for visual critical voltage.

17 a) Obtain the formula for fault current in case of LLG fault in 3 phase abc phase sequence power system.
   b) Explain the method or reduce the corona effect.

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FACULTY OF ENGINEERING

B.E. (EIE) V-Semester (CBCS) (Backlog) Examination, July 2021

Subject : Power Plant Instrumentation

Time: 2 Hours   **Max. Marks: 70**

Missing data, if any, may be suitably assumed
PART – A

Note: Answer any Five Questions   **(5x2= 10 Marks)**

1. What is meant by steam circuits?

2. Explain the importance of I & C in TPP?

3. Explain the basic principle of Rankine cycle?

4. What are the basic control loops in steam boiler instrumentation?

5. Draw the process diagram of steam temperature control?

6. What are the types of Glands for controlling exhaust Pressure in steam turbine?

7. What is a combined cycle power plant?

8. How many types of condensate systems are present in TPP?

9. What is water hammering in Hydel power plant?

10. Draw the correct position of economizer in feed water control.

PART – B

Note: Answer any Four Questions   **(4x15= 60Marks)**

11. a) With a neat diagram explain the boiler following mode?
    b) Write briefly about pressure distribution curve in drought control?

12. With a neat diagram explain power generation using Nuclear power plant and write importance of control rods?

13 With neat diagrams explain the steam temperature control?

14. With a neat diagram explain Hydrogen generator cooling system in Turbines control?

15. a) With a neat block diagram explain TSI (Turbine supervisory instrumentation)
    b) Discuss about lubrication oil temperature control in turbines?

16 Explain the transducers used for metal temperature measurement in boilers? Also discuss about importance of flame monitoring?

17. Write short notes on
    a. P & I diagram of boiler
    b. 3 element boiler drum level control system

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FACULTY OF ENGINEERING

B.E. (ECE) V - Semester (CBCS)(Backlog) Examination, July 2021

Subject: Linear ICs and Applications

Time: 2 hours   Max. Marks: 70

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any five questions.   **(5x2 = 10 Marks)**

1 Define Slew Rate.

2 Define input bias current, input offset voltage.

3 What are the desirable characteristics of Instrumentation Amplifier?

4 Explain OPAMP sub tractor circuit.

5 What are the advantages of higher order filters over first order filters?

6 Draw Astable Multivibrator using OPAMP.

7 Define lock range and capture range of PLL.

8 Draw the functional diagram of NE555 and represent all pins.

9 What do you understand by current fold back in IC 723 regulator?

10 Define the terms Resolution and Conversion time of A/D converters.

PART – B

Answer any four questions.   **(4x15 = 60 Marks)**

11 a) Obtain the expression for differential voltage gain, common mode voltage gain, input impedance and output impedance of dual input unbalanced output differential amplifier.
   b) What is the need for frequency compensation of OPAMP? Explain about any one frequency compensation technique.

12 a) Explain the operation of sample and Hold circuit with neat diagram and waveforms.
   b) Design a practical differentiator which operates between 150 Hz to 1.5 KHz.

13 a) Draw the circuit diagram of narrow band pass filter and derive the expression for its voltage gain.
   b) Explain the operation of Peak detector circuit.

14 a) Draw the circuit diagram of Monostable multivibrator using 555 timer and explain its operation. Also derive the expression for its pulse width.
   b) Explain the operation of Schmitt trigger using OPAMP.

15 a) Explain the operation of IC 723 as a High voltage regulator.
   b) Explain the operation of Successive approximation A/D converter with an example.

16 a) Explain the operation of Practical logarithmic amplifier.
   b) What are the different ways to improve CMRR of OPAMP? Explain any one method.

17 Write short notes on
   a) All pass filters
   b) Voltage controlled oscillator

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FACULTY OF ENGINEERING

B. E. (M/P/AE) (CBCS) V – Semester (Backlog) Examination, July 2021

Subject: Dynamics of Machines

Time: 2 hours **Max. Marks: 70**

Note: Missing data, if any, may be suitably assumed.

PART – A

Answer any five questions. **(5x2 = 10 Marks)**

1. Explain method of superposition in static analysis.
2. What do you understand by gyroscopic couple? Give an expression for its magnitude.
3. Why spring loaded governors are superior to dead weight type governors?
4. What is controlling force? What is the use of controlling force diagram?
5. Explain (i) Hammer blow and (ii) Swaying Couple as applied to locomotive balancing.
6. State the conditions for balancing of multi cylinder inline Engine.
7. State the use of Rayleigh's method for vibration of single Degree of freedom.
8. Explain the Whirling Phenomenon in shafts.
9. What is damped vibration?
10. Define: Torsionally Equivalent shaft, give the expression.

PART – B

Answer any four questions. **(4x15 = 60 Marks)**

11. The rotor of the turbine of a ship has a mass of 2500kg and rotates at a speed of 3200 rpm counter-clockwise when viewed from stern. The rotor has radius of gyration of 0.4m. Determine the gyroscopic couple and its effect when:
    (i) the ship steers to the left in a curve of 80m radius at a speed of 15 knots (1 knot=1860 m/h);
    (ii) the ship pitches 5 degrees above and 5 degrees below the normal position and the bow is descending with its maximum velocity-the pitching motion is simple harmonic with a periodic time of 40 seconds;
    (iii) the ship rolls and at the instant, its angular velocity is 0.4 rad/sec clockwise when viewed from stern. Also find the maximum angular acceleration during pitching.

12. In a spring loaded governor of Hartnell type, the length of the horizontal and the vertical arms of the bell crank lever are 40 mm and 80 mm respectively. The mass of each ball is 1.2 kg. the extreme radii of rotation of the balls are 70mm and 105mm. The distance of the fulcrum of each bell crank lever is 75 mm from the axis of rotation of the governor. The minimum equilibrium speed is 420 rpm and the maximum equilibrium speed is 4% higher than this. Neglecting the obliquity of the arms, determine the (i) spring stiffness, (ii) initial compression and (iii) equilibrium speed corresponding to radius of rotation of 95 mm.

13. A constant torque motor of 2.5kW drives a riveting machine. The mass of the moving parts including the flywheel is 125kg at 70 mm radius of gyration. One riveting operation absorbs 1kJ of energy and takes one second. Speed of the flywheel is 240rpm before riveting. Determine the (i) number of rivets closed per hour, and (ii) reduction in speed after the riveting operation.

14. Two outer cranks of a four-crank engine are set at 120^0 to each other with each reciprocating mass as 400 kg. the spacing between the planes of rotation of adjacent cranks are 450 mm, 750mm and 600mm. Determine the reciprocating mass and the relative angular position of each of the inner cranks if the engine is to be in complete primary balance. Also, determine the maximum secondary unbalanced force if the length of the crank and the connecting rod are 300mm and 1200 mm respectively and the speed is 240rpm.

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15. A shaft of diameter 10mm carries at its centre a mass of 12kg. It is supported by two short bearings, the centre distance of which is 400mm. Find the wrhirlig speed, (i) Considering the mass of the shaft: (ii) Neglecting the mass of the shaft. The density of shaft material is 7500kg/m$^{.3}$.

16. A machine mounted on springs and fitted with a dashpot has a mass of 60 kg. There are 3 springs, each of stiffened 12N/mm. The amplitude of vibrations reduces from 45 to 8 mm in two complete oscillations. Assuming that the damping force carries as the velocity, determine the
    i. Damping coefficient.
    ii. Ratio of frequencies of damped and undamped vibrations.
    iii. Periodic time of damped vibrations.

17. (a) A torsional system is having a shaft carrying 3 rotors A, B and C. The mass moment of inertias are 30, 90 and 50 kg.m^2. The shaft portion between rotors A and B is 2m length and 45mm diameter. The shaft between B and C is 4m long and 40mm diameter. The modulus of rigidity (G) of the shaft material is 84 x 10^9 N/m^2. Find the two mode natural frequency.
    (b) Explain Holzer's method for Multi rotor system.

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FACULTY OF ENGINEERING

B.E. V – Semester (CSE) (CBCS) (Backlog) Examination, July 2021

Subject: Database Management system

Time: 2 Hours   Max.Marks: 70

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions.   **(5x2=10 Marks)**

1   Write about data mining analysis.
2   What is an attribute?
3   What is a phantom record? Why do they occur?
4   What is RDBMS?
5   What is join?
6   What is a checkpoint in DBMS?
7   What is ARIES?
8   Define DDL and DML.
9   What is the purpose of group clause?
10 What is SQL?

PART – B

Answer any four questions.   **(4x15=60 Marks)**

11 Explain the following with an example entities, attributes and relationship?

12 Discuss in detail the basic structure of SQL?

13 Discuss in detail the advanced SQL features?

14 Compare static and dynamic hashing show the extendable hash structure for the search key values 2,3,5,7,11,17,19,23,29,31 where h(x)=x mod 8 and buckets can hold 3 records.

15 Discuss in detail the log-based recovery?

16 a) Write about weak levels of consistency with example.
    b) List out the functions of DBA? Explain it briefly?

17 Write short notes on:
    (a) Database system structure
    (b) Database languages

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FACULTY OF ENGINEERING
BE V - Semester (IT) (CBCS) (Backlog) Examination, July 2021

Subject: Software Engineering

Time: 2 Hours   Max .Marks: 70

Note: Missing data, if any, may be suitably assumed

PART – A

Answer any five questions.   **(5x2=10 Marks)**
1 Brief about process framework?
2 List Hewlett Packard quality factors.
3 Define Aggregation and denote it with its notation.
4 Define requirement engineering? and list tasks in requirement engineering.
5 Define cohesion and coupling.
6 What is extensibility mechanism?
7 What rare the principles of modeling?
8 Define debugging and list various debugging techniques.
9 Differentiate between verification and validation.
10 Define software Reliability.

PART – B

Answer any four questions.   **(4x15= 60 Marks)**
11 Describe the content, advantages and disadvantages of Spiral & Incremental process models with a neat diagrams.

12 What is basic behavioral modeling and explain activity diagram and swim lane diagram with an example.

13 (a) Explain the concept of classes and their relationships with an example.
   (b) Explain how a draw flow is mapped into architecture.

14 (a) What is a component? Explain component diagram in detail.
   (b) Differentiate between sequence diagram and collaboration diagram.

15 (a) Explain Tom McCabe basis path testing with an example.
   (b) Write short notes on Boundary Value Analysis (BVA).

16 (a) Distinguish between black box and white box testing techniques.
   (b) Write short notes on System Testing.

17 Write notes on:
    (a) Art of Debugging
    (b) SQA

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